



# 19<sup>TH</sup> INTERNATIONAL CONFERENCE ON BUSINESS MANAGEMENT

*"Equitable Recovery Amidst Economic  
Crisis: Post Pandemic Challenges and the  
Way Forward"*

**CONFERENCE PROCEEDINGS BOOK**

**8<sup>th</sup> & 9<sup>th</sup> December 2022**



**Faculty of Management Studies and Commerce  
University of Sri Jayewardenepura  
Nugegoda, Sri Lanka.**

Proceedings of  
19<sup>th</sup> International Conference on Business Management

*“Equitable Recovery Amidst Economic Crisis:  
Post-Pandemic Challenges and the Way Forward”*

**ICBM 2022**



**8<sup>th</sup> and 9<sup>th</sup> December 2022**  
**Faculty of Management Studies and Commerce**  
**University of Sri Jayewardenepura**  
**Sri Lanka**

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## **Proceedings of the 19<sup>th</sup> International Conference on Business Management, ICBM 2022**

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Tel: +94 11 2803052

Fax: +94 11 2803653

## Preface

The *International Conference on Business Management (ICBM) 2022* was convened for the 19<sup>th</sup> consecutive year by the Faculty of Management Studies and Commerce (FMSC), the University of Sri Jayewardenepura on the 8<sup>th</sup> and 9<sup>th</sup> of December. The FMSC hosts the ICBM annually as the apex event of the Faculty calendar to create a forum for the academia, the practitioners, and the industry to deliberate on contemporary challenges facing the economy. Thus, ICBM 2022, in keeping with its forerunners, selected a perfectly fitting theme for the critical times of the present era: *Equitable Recovery Amidst Economic Crisis: Post-Pandemic Challenges and the Way Forward*. Exacerbated by the COVID-19 pandemic, the present economic crisis is the worst economic crisis faced by countries around the world in more than a century. The FMSC, as the *Centre of Excellence* in Management education in Sri Lanka, earnestly believes that the key focus of the recovery efforts of the crisis should be equitable, where finance plays a central role in the recovery process. Hence, the ICBM 2022 brought together scholars and practitioners around the world to exchange and share their experiences and research findings on all aspects of recovery from the present economic crisis.

Despite the challenging economic condition of the country, the ICBM 2022 assured that research publications are invited not only from local researchers but also from the international community to ensure that timely research findings from the global arena are published at ICBM 2022.

The conference was held at the University of Sri Jayewardenepura in the hybrid mode, ICBM 2022 included 52 research papers of high academic standard from both local and foreign authors, thus proving

that the Conference is truly international in scope. The research papers, selected after a stringent blind review process by eminent experts in the respective fields, were presented according to 12 track categories. The papers with the highest academic quality would be directed for publication in refereed journals. Furthermore, there were plenary speeches held under each track making the sessions academically stimulating.

In addition to the main conference, ICBM 2022 featured two other events: the PhD Colloquium and the Business Forum. As a sub-arm of ICBM 2022, the PhD Colloquium offered the next generation of national/international academic researchers an opportunity to further hone their research skills by presenting their PhD study-in-progress to an international scholarly audience. Whilst providing the opportunity to meet and network with experts in different research fields in business management, the ICBM 2022 opened doors for junior academics in pursuing their higher doctoral studies.

The Business Forum, on the other hand, secured industry representation. In a background where some businesses were able to survive the global pandemic, whereas some of the businesses totally collapsed due to the inability to adopt timely survival strategies, the majority of the businesses are now being challenged with a hyper-inflationary situation caused by a severe economic crisis. As such, the Business forum instigated a timely dialogue between the practitioners and the academia on this year's pertinent theme, in order to leap ahead of the challenges posed by the drifts in the economy. Thus, ICBM 2022 team intends to explore and reveal the strategies adopted by the local corporates to overcome the current economic crisis while examining

the post-pandemic challenges and the way forward. We believe that FMSC, as the center of excellence in management in Sri Lanka needs to study such efforts of the corporates so that the outcomes of such an exploration could be used as teaching and learning aids for the academics and students of FMSC which will also bridge the gap of case studies in the Sri Lankan context. Thereby, six main business organizations were selected to develop case studies, in exploring their equitable recovery strategies in facing a severe economic crisis at the offset of a post-pandemic condition. In addition, the strategies adopted by the FMSC during the pandemic are also included in the case study series. The stories will be presented at the Business Forum organized as another sub-arm of the main conference.

The Committee wishes to extend its gratitude to Snr. Prof. Sampath Amaratunge, Chairman, University Grants Commission for the immense support and guidance rendered in organising this event. The Committee also expresses deep gratitude to Snr. Prof. Sudantha Liyanage, Vice Chancellor, University of Sri Jayewardenepura for the encouragement and support given throughout. Also, the continuous leadership, inspiration, and guidance of Prof. P.D. Nimal, Dean of the Faculty of Management Studies and Commerce is noted with much appreciation and gratitude. The Committee expresses sincere thanks to the panel of reviewers for their priceless contribution to maintain the academic standards of the ICBM and to the academics of the Business Communication Unit for their unstinting support in editing and proofreading the papers. Further, sincere appreciation goes to the Information Technology Resource Centre for all their untiring efforts from the inception to the very end of the Conference.

A special word of gratitude is due to all the sponsors of the Conference for their generous contributions in making this event a reality. The Committee notes with heartfelt appreciation the support given by all the academics of the Faculty as well as by the officers and the staff of the faculty office of the FMSC without which this event would not have been possible. The assistance rendered by the administrative staff and the non-academic staff of the University is also deeply appreciated. Finally, the Committee extends its heartfelt gratitude to all the presenters and participants who surmounted the challenges of the present times and contributed to making ICBM 2022 accomplish its excellence in academic standards.

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## Message from the Vice- Chancellor



It is with immense pleasure that I write this message for the 19th International Conference on Business Management (ICBM 2022) of the Faculty of Management Studies and Commerce, University of Sri Jayewardenepura.

The University of Sri Jayewardenepura (USJ), a pioneering institution of higher education in Sri Lanka, plays a significant part in knowledge creation through promoting and fostering research and development. The ICBM 2022, the 19th in the line of fruitful and outstanding conferences held so far, has picked a timely theme addressing the present turbulence and uncertainty that we find ourselves in: “Equitable Recovery Amidst Economic Crisis: Post- Pandemic Challenges and the Way Forward”. In this context, the ICBM 2022 offers a platform to instigate a dialogue among the members of the academia and the industry, revisit innovative practices, and identify how best to brace challenges in managing crises. This is a good opportunity for young researchers to exchange ideas about their studies and share their discoveries.

I have no doubt that ICBM 2022 will bring together academics and industry professionals from all over the world to discuss and share their knowledge and research on all facets of crisis management.

I would like to express my gratitude to the organizing committee members, the conference co-chairs, and the Dean of the Faculty for all of their hard work and devotion to making this event a success. I also want to express my gratitude to the business community and local and foreign scholars for sharing their knowledge and skills. I send my best wishes to the writers, speakers, and other contributors while recognizing and praising the commitment of the organizing committee of ICBM 2022.

Let's work together to build a brighter tomorrow for us all.

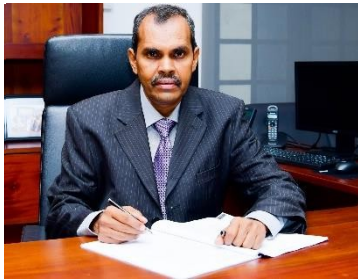
**Senior Professor Sudantha Liyanage**

*BSc (Hons) (USJ), PhD (Cardiff), C Chem, FRSC, FIChem C, FPRISL*

Vice-Chancellor

University of Sri Jayewardenepura

## Message from the Dean



It gives me great honour to write this message on behalf of the 19<sup>th</sup> International Conference on Business Management (ICBM) 2022 organized by the Faculty of Management Studies and Commerce (FMSC) of the University of Sri Jayewardenepura.

As the Centre of Excellence in Management Education in Sri Lanka, the FMSC is dedicated to high-quality teaching, learning, and research in the field of management for over 60 years. It focuses on promoting an intellectually stimulating, multidisciplinary environment for its stakeholders through influential industry and community engagement as well as international orientation.

The FMSC is pleased to host the ICBM for the 19<sup>th</sup> consecutive year as it is the apex event in the research calendar of the faculty. The theme selected after careful consideration for this year is, 'Equitable Recovery Amidst Economic Crisis: Post-Pandemic Challenges and the Way Forward'. This conference aims at promoting and publishing research to disseminate knowledge regarding this particular theme to a broader community. It also aims at enhancing links and strengthening the network between academics and practitioners.

I firmly believe that this enormous endeavour, ICBM 2022, will ensure a significant impact on the community and that it will create a firm platform for academia and the industry to meet and deliberate over different perspectives. I convey my best wishes for the conference, and to the authors, paper presenters, and other contributors while appreciating and admiring the commitment of the Organizing Committee for the ICBM 2022.

Thank you.

**Professor P.D. Nimal**

Dean

Faculty of Management Studies and Commerce

University of Sri Jayewardenepura

## Message from the Co-Chairs



It is with great honour that we welcome all the distinguished invitees, scholars, and other participants to the main conference, Ph.D. Colloquium and Business Forum of the 19<sup>th</sup> International Conference on Business Management (ICBM) 2022, which is organized by the Faculty of Management Studies and Commerce (FMSC), the University of Sri Jayewardenepura on the 8<sup>th</sup> and 9<sup>th</sup> of December 2022 at the University of Sri Jayewardenepura, Sri Lanka.



Considering the present health and economic crisis, the theme of the 19<sup>th</sup> ICBM was set as “Equitable recovery amidst economic crisis: post-pandemic challenges and the way forward.” Economic recovery is a key component of governments' long-term agendas, whether actively controlling pandemics or re-

establishing normality. The need for an equitable recovery is emphasized due to the severity of the pandemic and its diverse effects on various groups in society.

As the centre of excellence in management education in Sri Lanka, the FMSC is of prime importance in revisiting the strategies organizations have adopted during the pandemic and rebuilding strategies to face the ongoing economic crisis in Sri Lanka. Accordingly, the conference aims to bring scholars and practitioners together to share their experiences and research findings on all aspects of post-pandemic challenges and managing economic crises.

In parallel to the main conference, a PhD colloquium and a Business Forum are organized to encourage researchers and strengthen industry-university collaborations. PhD colloquium stands as a platform to present the research findings of doctoral students to fellow PhD

students, researchers, and academics. Representing different industries, seven organizations were selected to develop case studies which will be published as a case study book entitled “Surviving Through Adversities: A Compendium of Sri Lankan Case Studies in Management” and will be presented at the Business Forum.

Finally, on behalf of the organizing committee of ICBM 2022, we are highly grateful to all the presenters, participants, paper reviewers, keynote speakers, plenary speakers, session chairs, sponsors, discussants, all the officials of the university, members of the FMSC and all the others who contributed in different capacities to make this event a great success.

### **Co-Chairs**

Dr. Prathap Kaluthanthri	Department of Estate Management and Valuation
Dr. Janaka Fernando	Department of Business Economics

## **Keynote Speech**

19<sup>th</sup> ICBM, 08 December 2022

### **The Complexities of Post-Pandemic Economic Recovery**

Professor Brett Inder,

*Professor in Econometrics and Business Statistics,  
Monash Business School, Monash University, Australia*

Thank you very much for the opportunity to contribute to this conference. And it is my pleasure to talk to you on this very important topic of post-pandemic economic recovery. Here we are at the end of 2022, continuing to feel the effects of COVID 2019, which of course had its worldwide impact mainly during 2020 and 2021. And now in 2022 we continue with the challenge of working out how to recover from this significant disruption to the global economy, to the global society and to people's everyday lives. I am concentrating here, as expected, on economic impacts and economic recovery. And so I will, in this presentation, touch on a range of ways of thinking about what's happened and how that has affected responses to this point and how it is likely to affect things into the future. Sometimes I will touch on what is happening in Sri Lanka. Most of the time I will talk about the issues more broadly than that.

But first, some personal background. I have a long connection to Sri Lanka because many years ago I joined an organization in Australia that supported Sri Lankan tea producers, the Tamil Tea workers, and we have been regularly buying beautiful Ceylon tea for many years. I have visited Sri Lanka a few times, including visiting the tea plantations. I have a great affection for the people of Sri Lanka and for the beautiful tea country in particular, but other parts of the country as well.

Over the years as a university academic, I have had a few PhD students from Sri Lanka. One of my students most recently studied tea plantation workers, particularly looking at the impacts of the mid-day meal programs in the childcare centres that are provided on the plantations. In my long time at Monash, I have tried to learn about how the economy affects people's daily lives, including in Sri Lanka and in other places.

#### **Pandemic Impacts**

Now let's talk about the pandemic. First, let's remind ourselves of the impacts of the pandemic, the economic impacts in particular. Here are a few brief

points.

1. A significant impact of the pandemic was on government budgets. Governments had to spend a lot more money than they normally do, for example, on health and in social protection measures as economies were effectively shut down. This had a major impact on government budgets, and many countries found themselves with significant debts as a result of the direct impacts of the pandemic response.
2. Secondly, the pandemic had a significant impact on the costs of doing business. Businesses had to adapt and do things differently. Shops had to introduce online sales or restrictions on entry into their shops. Restaurants and cafes had to change the way they operated. Transportation costs increased dramatically as various barriers were put up to people movement, everything became more expensive. Most businesses tried to avoid passing those costs on to the consumers. This becomes relevant to us when we look at 2022, because what happened in 2022, as things resumed, demand increased. A lot of businesses found themselves short of revenue, even though they were busy, they were actually losing money. So costs had increased and tended to stay up for different reasons in 2022, and businesses were unwilling or unable to respond quickly enough on the revenue side. And so you have got a lot of businesses going bankrupt this year.
3. The other very obvious impact was a dramatic drop in people movement. It was not a good time to be running an airline. It was not a good time to be a country that was heavily reliant on tourism because there was an 80-90% decline in air traffic and hotels were 90% empty, if not more.

In Sri Lanka, that is one of the areas where there's been the greatest impact, with such a strong reliance on Tourism. Having said that, I just would remind us that whilst tourism is a very important sector in many countries, including Sri Lanka, it is good to keep the scale of the problem in perspective. Tourism represents 10-15% of the Sri Lankan economy. If you have up to 15% of GDP that all of a sudden disappears, that is a loss, a significant loss to an economy. There's a little bit of substitution into other sectors, but most of that will be a decline. There will be a significant decline in GDP just because of that one sector virtually closing down, but the other 90% of the economy continues on, mostly unaffected. Costs have gone up, sure, but whole industries were not closed down. In the

scheme of things, if that is all that took place during the pandemic, the impact of significant reduction in people movement should not have had a massive and lasting influence on an economy.

4. There was a move towards online business activity, which actually benefited a number of businesses and members of society and penalized others depending upon which side of the digital divide we are.

If you are in the kind of business or occupation which can operate equally well sitting in your office at home compared to sitting in the office at work, then you actually benefited in the form of saving commuting time and potentially an improvement in your lifestyle. Employers noticed improvements in productivity of employees in those situations. My academic colleagues were pleasantly surprised at the number of papers they were able to produce in the 2020 and 2021 period. They were actually more productive than they were in normal years, with fewer day-to-day distractions of being in the office. So, yes, those on that side of the digital divide actually benefited from this change. But many, of course, on the other side where their jobs could not easily switch to online or partially online. It could work, but in a very unhelpful and fragmented way, and many found it very difficult. Education can be thought in that category, particularly school education, where in theory we can teach our children online, but in practice trying to get an eight year old to sit in front of a computer screen and concentrate on a school lesson where the teacher is at the other end of the screen is very difficult, while a parent who's supposed to be supervising them to do their learning is also supposedly working at home. It was a very difficult time for those people in those situations, let alone many others.

In summary, the pandemic had significant economic impacts at the time, and it is useful to remind ourselves of those impacts before we think solutions.

How did governments in particular cope with those kinds of substantial detrimental impacts? In broad terms, some governments absorbed it fairly well. They spent a lot of money. They incurred big deficits, but they had the buffer in their budgets to cope with those deficits. In Australia, our governments went into massive deficits, which will take a few years to recover from. However, there is no great concern about their

sustainability and it is just a matter of waiting a few years for the economy to bounce back, the tax revenues to come in and the debt will be cleared. Other countries, and I probably put Sri Lanka in this category, started the pandemic experience already fragile, either because of weaknesses in their economy or because of high levels of debt even prior to the pandemic. When the pandemic comes, requiring them to incur significant additional debt, plus cope with a slowing economy generally due to the drop in tourism and other increased costs of business, meant that those countries tipped over the edge of sustainability of their debts. And that's what we ended up with, in the case of Sri Lanka in particular. Countries in this situation did not have enough buffer built in to cope with potential disaster. Nobody really believed that a disaster of this magnitude could actually happen.

## **RISK**

And it is that point that we take as our first key message from the pandemic: Risk. We must learn to take risks seriously. Countries cannot go to an insurance company and insure against risk, the same as you or I can take out insurance on our car so that if we have an accident, the insurance company will pay to replace our car. Countries can't do that. They have to work out how to manage risks themselves by effectively self-insuring against risk. You cannot live too close to the edge as a country. You must have ways of coping when there is a harmful event or natural disaster or anything like that. Countries need access to reserve funds that help them to cope with a downturn, not massive debts that tip them over the edge when they are forced to increase due to circumstances outside their control. And as you know, Sri Lanka has found itself in a situation where in the last 6 to 12 months they have been starved of foreign currency and heavily indebted. And as a result, the country is really struggling to pull themselves out of that situation.

At a personal and community level, it is interesting to observe in different countries how different people in the society cope with risk. I do some of my work in Timor-Leste. When the pandemic came, the government imposed significant restrictions and a lot of the activity in the capital city was closed down because it involved a lot of people movement. What did the people do? A significant portion of the population left the capital city, went back to visit their relatives in the rural areas on the small family farm, and reverted to the lifestyle that they and their parents had grown up with. They coped with the adversity by essentially using the broader family networks and going back to the subsistence lifestyle that they were comfortable with and able to manage.

So in a strange way, sometimes the poorest of the poor are actually more able to cope with downturns because they don't really rely much on the system to work well. They have learnt how to survive on not much, but it is more difficult for those of us who have forgotten how to work the family farm or no longer have those connections. We find ourselves living in urban areas, now no longer employed potentially, or with a significant loss in income, because, for example we cannot get fuel to run our taxi business. There is a significant cost without any real way of protecting ourselves from it.

So there are equity considerations in any of these impacts, there are some who will suffer more than others. But I just highlight that it's not always the poorest of the poor that suffer more than others because they often demonstrate remarkable resilience. Often not, but many times they can.

## **GLOBALISATION**

Let me just reflect on one other aspect of the pandemic, which is relevant to the recovery and to moving forward: the response to globalization. Effectively, you could argue that the pandemic was an example of a failure of globalization. Globalization allows us to operate as one very highly integrated economic system. Globalization allows people to move almost anywhere at any time. For example, the volume of people movement in Australia in one year in and out of the country exceeds the population of the country. Before 2020, we were living in a highly globalized society, people and goods and services, and we have experienced the benefits of that in terms of significant growth in wealth globally, but also the risks of it. That is the great challenge of globalization which has been exposed during the pandemic, we become very vulnerable to shocks. All it takes is one ship in the Suez Canal to become stuck because of poor navigation, and the whole of the global trade supply chain is affected. Sitting in Australia as a building business, waiting for the additional building materials to come, I lose two weeks work or more because of that one event that took place on the other side of the world. That's the reality of globalization. We are a highly efficient but also very sensitive system.

It was observed frequently in 2020 that not only does globalization creates these risks for the movement of goods, but also, of course, with all this movement of people comes the risk of a spread of a disease or a pandemic. Commentators predicted that in response, there will be a retreat towards autarky - away from globalisation, towards self sufficiency. Countries have learnt now that we can't trust the global system to provide us with our basic needs. To an extent, this took place. For example, countries like Australia

realised it was a bad idea to effectively offshore all of our pharmaceutical industry and therefore be reliant on other countries such as China, India and the US to supply us with our vaccines in response to the pandemic. So we have rapidly rebuilt our local pharmaceutical industry capacity, ready for the next pandemic. Other countries, like Timor-Leste, discovered that to be reliant on the global supply of daily essentials such as rice left you vulnerable when the shipping industry was heavily affected and people were short of rice.

And there are many other examples of that throughout the world. So a retreat to Autarky was talked about and there were a few steps taken in that direction over the last couple of years. But interestingly, those generally have not been maintained. Mostly as the world has opened up again in 2022, we have quickly reverted to the globalized model. The global supply chains are actually really efficient and it is difficult to replace them with locally produced and locally supplied goods. Costs will be higher and there will be competition from the imported goods that will eventually drive out local production. There is a natural market mechanism at work here that keeps the world globalized.

Of course, governments can intervene on that and set up barriers and other mechanisms to slow the spread of globalization. But post-COVID, that generally has not happened. The natural market forces have been left to drive us back in the direction of globalization. We still live in a globalized world.

In this context, it is probably the case that we have not taken to heart the lessons of the risks of that particular world system. There is some more appreciation of the risks in terms of the health risks and the spread of disease, but not much recognition of the risks in terms of our reliance on global trade for our day to day needs and therefore our vulnerability to one or two aspects of that global system shutting down and all of a sudden cutting off the supply of essential goods or services.

There indeed lies one of the challenges of our recovery from the pandemic. How do we take the risks associated with globalisation seriously? This is an area that is going to require public intervention because in the private sector, the globalised company will always aim for the most cost effective solution and they will be looking for relatively short term gains. They don't want long term reputational damage, but that is the only reason they care about the long term. What they care about in the short term is profit maximization. This mindset is not going to be sufficient for countries to protect themselves against the risks of globalisation. We need governments to take those kinds

of issues seriously and address them. Some of the same kind of attitudes that we have in relation to health risks need to be applied to economic and security risks.

There are a few areas where the risk dimension is handled relatively well. Take oil reserves as an example. In Australia, oil importers and refineries are required by law to retain a stock of about two months worth of oil in case there's all of a sudden shutdown in oil supply around the world. This buffer stock gives us a couple of months to sort out a response to a sudden global shortage. There are at least some reserves. Here is an example where Government acknowledges it is an absolute essential which we cannot afford to run out of. So we build into the regulation of that particular sector some degree of buffer, because if we left it to the oil companies, they wouldn't keep two months worth of reserves. That is an unnecessary cost of doing business - additional capital costs associated with those reserves. Left to their own devices, companies will cut reserves to one month or to two weeks and then, of course, run the risk that a delay in a ship will lead the country to run out of oil.

This example with oil reserves provides an example of how Governments can intervene to regulate the behaviour of sectors, to protect against downside risk. We need to spread that thinking more and more amongst our political decision makers.

### **A Confusing 2022**

In general terms, for most countries of the world, 2022 has been a very confusing year economically.

In 2020 and 2021, Government interventions created what you might describe as pent up demand. A large number of people like myself sitting at home earning just as much as I was before, but not allowed to travel anywhere, not allowed to spend the money that I'm earning. There's only so much I can spend on going to my local cafe and buying coffee or getting home delivery food. So I end up at the end of 2021, bored from sitting at home all that time with a whole lot of money in the bank and wanting to get out there and spend. Private savings were very high in 2020-2021, and consumption has been the name of the game in 2022 in many countries of the world, especially amongst the middle class, who drive most consumer spending. As a result, there have been inflationary pressures because businesses have not been able to recover quite as quickly as demand. For example, in the airline industry they were still busy half way through 2022 recommissioning their planes that have been mothballed during the COVID

period, re-employing staff who had moved on to other things, catching up with re-equipping themselves for the kind of volume of demand that they had pre 2020. As a result, demand far exceed exceeded supply, resulting in this inflationary pressure. Alongside this we had the global supply chain disruptions of a Ukraine conflict and ongoing COVID restrictions in China. In other words, we have significant growth in demand, sluggish improvement in supply and blockages to improvement in supply, All leading to inflation. In this artificially created bubble, we have businesses going broke just at a time when they should be booming because they could not gear up sufficiently to cope with this increased demand and they had not adjusted to the higher costs.

There are a very strange combination of things happening in different countries of the world in 2022, and this is a very messy, confused picture of the global economic situation. Reflecting a lack of confidence to sort out the confusion, there is continued pessimism about global recession in 2023, which actually seems rather strange in a time when demand is actually so high.

These are factors which, from a Sri Lankan point of view, are mostly external to Sri Lanka because Sri Lanka had some additional unique experiences, which I'm sure you are far more familiar with and understand far better than I do. So I will not go into in any depth at all about the unique situation facing Sri Lanka. All of those circumstances I just described would be relevant to Sri Lanka. But in addition to that, you had these major debt problems that preceded COVID, but where COVID came along and made an already unsustainable debt level into a crisis. They have a political dimension to them, as well as a global and international political dimension associated with who the money was borrowed from, and what the attitudes of other neighbouring nations might be to that. So there are significant additional factors that have really hurt Sri Lanka just at a time when the global economy was also very confusing, and of course a very strong political sett of issues overlay all of that.

### **Business Cycles**

So this is not a great time for us to be coming out of a pandemic in 2022. It's a messy recovery in every country of the world, particularly in Sri Lanka. Now, that's a very pessimistic view, but let me just give a little few reflections on how things might be seen in a more favourable light. The good news is what we're experiencing this year is what's typically described as like a business cycle. It's a little bit of an unusual business cycle because it was

prompted by the 2020 pandemic. But effectively, we have an overcooked economy that's inflationary, which is likely to lead next year to recession. This is a classic business cycle type phenomenon. And the business cycle is called a business cycle for a reason. A cycle implies that things will get better and things then will get worse. And then after a while of being in the trough, we turn around and we move back up again and recover until we hit a peak. And on the cycle goes. The reason cycles happen is that in an economy there are built in built mechanisms that tend to lead to us recovering from the downturns and prevent us from overheating the economy and cause it to slow down again. Now, usually a business cycle takes a few months, maybe a year or two for recovery to happen. But it does happen.

As I mentioned that this is not a classic business cycle because it was prompted by the pandemic. So exactly how the recovery in the world economy will happen is a bit unclear. But it's true that even in more substantial crises that countries face, there are still reasons why we can be optimistic in the midst of the crisis. Recovery takes place. I was explaining to some of my students recently the history of economic development in Rwanda. Rwanda was a middle ranking African country through the 1970s and 1980s, which means it wasn't performing particularly well, but it was surviving amongst other African countries. And then, of course, we had the genocide and the internal fighting between different ethnic groups and significant amount of loss of life, as well as loss of economic activity associated with that. That is a very depressing story looking just purely at the economic and social situation for Rwanda during that period. However, if we wind the clock forward 10 years, you see a Rwanda that that steadily recovered and is now one of the leaders in its part of Africa in both economic and to some extent democratic, political and social landscapes. So countries can recover from the worst of crises.

Let's dig a little bit deeper and think a little bit more about what is this inbuilt mechanism that tends to lead to recovery in economies. A better understanding of these mechanisms will give us clues about where interventions might take place to help accelerate recovery.

### **Production Functions**

We need to digress a little into some economic thinking. Economists think about economic activity as being built around a series of factors of production. The things that we produce in an economy are the outputs. The inputs are a series of things that are used to make that production. They include:

- Land - for primary production or to locate a business
- Labour - you need people to work that land or to work in the factories or offices.
- Capital - buildings, tools, equipment, many other capital expenditures.
- Technology - the appropriate ways of making use of the equipment, and the best choices of equipment in order to maximize the productivity of this business.

So land, labour, capital and technology all combine together to produce output. That's your standard, what's called **Production Function** understanding of the economy. The more you invest in capital or in technology or in labour and to some extent land, the more you will increase your national Gross Domestic Product (GDP) or your company's output. That is a simple production function story.

But there is another factor in our standard production functions, which is called a scale factor, which effectively is capturing the effectiveness of how those investments are actually used and how those inputs translate into actual economic outputs - to economic activity, to livelihoods and economic growth.

### **The X Factor**

It is very important for us to understand the Scale Factor - let's call it the X Factor. Two countries sitting side by side can have the same amount of land, the same amount of quality labour, equally well educated labour, the same amount of money spent on capital, the same amount of technology available to them. And yet one of them can be far more successful than the other, have much higher incomes. Why? It's because their X Factor is better engineered. They've got a better way of scaling up all of those inputs and translating them to output. So we need to think about that X Factor a little bit more. What does it depend on?

**Global economic conditions** - a pandemic, a conflict, etc. Those things are global and they'll affect those two countries the same. So that can't explain why one country does better than another, but it still affects the effectiveness of translating our inputs into our output.

**The Quality of Governance** - I use governance broadly, to define the direction a government is taking the country and the services the government delivers both to businesses and to its residents, and also the functioning of civil society in holding the government accountable and providing much of

the social fabric that helps a society work well.

The reality is that some countries are better governed than others. While governance is a broader concept than just the workings of government, mostly we need to focus on government. Government is the institution that organizes our inputs in a sensible and hopefully optimal way to produce the outputs. Government, for example, can regulate the use of land and to provide security of tenure, so land can be used for productive purposes. Land regulation can also be used with good purpose to protect the environment, or sometimes with less noble purposes to protect private interests of particular influential landowners who want to profit exceedingly from the land that they own. The government can invest in innovations in technology or can promote the adoption of technology that is sourced internationally, or it can make the promotion of new technologies difficult. The government can invest in a strong education system that results in a productive labour force. The government can make strategic decisions about how their budget is managed, about how their foreign currency is managed, all of which have substantial impacts on the ability of a company or a business to use its inputs to produce its outputs. Governance is absolutely critical.

**The experience of shocks.** This is where some countries can regularly cop it worse than others. An environmental shock, natural disaster or a health shock may be global but often it is localized to a particular country. It may be a conflict or a geopolitical scenario which a country is faced with. All of those things make it more difficult for some countries to leverage their inputs and produce outputs.

When considering the economic health and resilience of a country, we cannot neglect these X Factors, especially in the recovery phase of the economic cycle. Why is it that some countries were able to recover better than others? Part of it would be because of the quality of their governance and also their effectiveness in coping with shocks. Those are the areas where we want to focus our research in how to see improvements in effectiveness. The X Factor really matters, and yet it is the most poorly understood aspect of how an economy works, and the most difficult to achieve change.

Do we have cause for optimism? To some extent we can be optimistic because land, labour, capital and technology are what we call stocks. Before COVID, we had this much land, this much labour, this much technology and this much capital sitting inside the country. Covid put a pause to many of the activities we do, but it didn't take away our land, it didn't take away our labour

except a very small fraction, it didn't take away our capital or our technology. So when the economy reopens, we have just as much of those resources because they are stocks. And therefore, assuming the X Factor is working for us, we can reactivate them and the economy can rapidly recover. This is the basic reason why business cycles tend to work - there is a stickiness in the economy due to the presence of these slowly built up stocks of capital, human capital, labour and other resources, other inputs to production, which do not disappear quickly even in the worst of crises. That is the reason why we can be optimistic that we can recover to the levels of GDP and of income that we had before a crisis.

I would like to reflect briefly on the 2004 Indian Ocean Tsunami, which, as you all well know, had a significant impact on Sri Lanka. The first time I came to Sri Lanka was in early 2005 with an aid organisation to help them to do an assessment as to what they might do to support recovery. And my reflection as an outsider, with just a few visits through the course of 2005, was two-fold. First, the damage was devastating, terrible destruction and death in coastal communities, physical damage, loss of life and psychological damage to many, which was very long lasting.

But alongside that terrible damage was amazingly rapid recovery. I remember seeing the bridge that was built in Galle on the main highway, literally only days after the original bridge was washed away, because it was such a vital bridge to transport. And then, of course, a more permanent structure was built later. Responses to disasters like that can be rapid, both from government, from the international community and from communities themselves. Aid poured in, government got moving. Things were restored relatively quickly, given the scale of destruction. Of course, it was far from perfect. There were many harmful impacts on particular communities, which took a lot longer to recover, including for example the internally displaced persons camps. The temporary housing became a lot more than just temporary, as it took a long, long time for communities to be rebuilt and relocated. People with disabilities found it even more and more difficult to be mobile when you've got so much infrastructure destroyed. Some children were unable to attend school for long periods of time because their schools were used for other purposes. Women had to spend more time at home cooking because they were working in many cases with temporary facilities or damaged houses. There was significant impact on daily life, and particularly on the marginalised.

Despite these many obstacles, recovery from even that traumatic event took place with time. And the reason that that happens is partly because those

land, labour and capital and technology stocks are still there. But also people display remarkable resilience. We are inherently built to survive and survival is what we revert to when we are faced with a crisis. I have the greatest admiration for the way in which the people of Sri Lanka survived that crisis.

Of course, 2004-5 was very different crisis to the situation we have in 2022. In 2022 the X factor for Sri Lanka is the very high levels of international debt and the lack of foreign reserves. The servicing requirements of that debt are unsustainable - that is not going to be easy to recover from. You can't just wipe it out, and do the equivalent of rebuilding the bridge, as it were. It's going to take time to bring those debts down.

The good news is, again, though, that this is not the first time this has happened to countries. In the 1980s and 1990s, there was a recognition of a large percentage of the national wealth of many countries of the world, particularly poor countries of the world, who became known as the HIPC countries, heavily indebted poor countries. And they had typically inherited odious debts - called that because they were typically inherited from corrupt political leaders who had borrowed money, made themselves wealthy, and then disappeared off the scene.

That was the situation that dozens of countries found themselves in during the eighties and nineties. In response, the global community rallied together. The NGO movement campaigned. The World Bank and the IMF worked hard to come up with solutions. Partner governments came up with cash and together the international community started to help those HIPC countries to recover, to bring down their debts. There was debt cancellation that took place and countries began to get on their feet and to look forward to a more hopeful future.

For the future of Sri Lanka, these X-Factor issues are going to have to be tackled. They are not just about dealing with debt: they centre around political leadership and stability and appropriately engaging with the external support that's available. The problems that Sri Lanka faces right now are too big to be solved internally. You do need the international community, but the international community will only come to the party if it is demonstrated that Sri Lanka is able and willing to tackle the problems internally in the best interests of the country. Once that is there, then the international community is likely to jump in to help.

The message of all of these anecdotal situations is that sometimes the best response to a crisis is to be patient. To focus on strong use of our land, our labour, our capital, and our technology, and to address our attention to the X

Factor, the things that are causing those inputs to not translate well into a productive society that helps everybody's well-being.

### **Policy Responses**

What does that mean in practice for a policy response and also for research activities that we need to do in a country that's facing a post-pandemic crisis?

**Land:** We need to continue to think about how we we utilize our land in the best possible ways. Let's protect the land. Let's utilize it in a way that gives us the best social and economic benefits. Bearing in mind we are facing another crisis, a long term crisis of climate change in the decades ahead. Without land, we can do very little. So we must think at a policy level about protecting and making best use of our land. That is a long term one, but it is vital to never drop off the agenda.

**Labour:** Let us continue to invest in a strong quality education system. Do not get distracted with the crisis matters and neglect continuing to educate our children. Rreflecting back on the Tsunami in 2004, local schools were often used as a place of refuge for households who no longer had a home to live in, at least in the first few weeks. This made it difficult for schooling to be restarted. But miraculously, getting kids back in school was seen as a very high priority. Communities, government and international agencies really worked hard at that. They recognized the importance of education for the long term, even though in the short term it might not feel the most urgent thing to do. It is the best thing to invest in. Let's also invest in inclusive labour, in women's economic empowerment and providing employment opportunities for people with disabilities. These are long term things that don't go away in the midst of a crisis.

**Capital:** In a time of crisis, companies often cut corners when it comes to investing in capital expenditure, and countries sometimes neglect the investment in strategic resources that help economies to thrive. And here is a time when we can use a crisis like this as an opportunity to think differently about how we use capital. For example, it is time to emphasise the importance of digital resources. Let's use this as a time to strengthen our digital network, our access to international information, our access to the means of communicating and doing business, which is online as much as possible, learning what we have from the pandemic about the efficiency that delivers to us.

It is vital to keep working on those land, labour, capital and technology dimensions so that they remain strong and continue to become stronger.

On the X Factor side:

**Governance:** Whatever position we have in society, we need to contribute to challenge the government and broader the society to improve governance, which will equip us with the X Factor to make the best use of our inputs. We can work on quality of governance and on a civil society that holds our government accountable. This has to be the biggest factor. Government is how a group of people living in a country organise themselves: without good government we will not have a good society. Sometimes an amazing amount of good happens in a society despite the government, and that is inspirational when it takes place. But without improvements in governance, then those things will not be able to have the nationwide impact that they need to.

**Global Economic Conditions:** we cannot control global economic conditions. We can be ready in times of strength to protect ourselves better against their impacts. And that is the lesson we must learn about resilience and risk at a national level.

**Shocks:** Countries need to be better prepared to absorb shocks - environmental shocks, health shocks, geopolitical shocks. Individuals have been taught that we take insurance, we protect our properties in different ways, but countries have often neglected that in the hope that it would all solve itself and it doesn't.

### **Concluding Remarks**

I'd like to conclude with a quotation from a former Monash PhD student whom I helped supervise. She is well known in Sri Lanka for her work on in the labour market, and particularly on women's economic empowerment: Ramani Gunatilaka.

*“Even though the world has moved forward considerably in terms of ensuring gender equality in the workforce through laws and policies, Sri Lanka is yet to improve and update its labour laws, most of which are archaic. Due to the unavailability or the lack of laws that match today's society, females are greatly inconvenienced, and it is hindering them from achieving their full potential and contributing to the country's economy and strengthening their own and their households' economies.”*

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I wonder whether her comments here, again relate to governance. Sri Lanka ranks 178 out of 186 countries when it comes to representation of women in

parliament. 5.7% of the parliamentarians in Sri Lanka are women. And Sri Lanka lives with what Ramani describes as archaic labour laws when it comes to women. As a result, we are drastically underutilizing this amazing potential input into productive labour, particularly women's labour. You can see how these all tie together: improvement in representation of women in society and in the political system will strengthen their influence and will cause better governance, which translates to better economic participation, and a more prosperous society for all.

I use this comment and issue as a local example of giving voice to those who challenge us to break down the barriers and open up opportunities for people who are so often excluded economically, socially and politically. Herein lies the heart of the challenge we face at every level, from the personal to the national to the global.

Thank you.

## **Keynote Speech**

19<sup>th</sup> ICBM, 08 December 2022

### **Technological Innovation, the Fourth Industrial Revolution and its Impact on the Changing World of Work**

Professor Pi-Shen Seet,

*Professor of Entrepreneurship and Innovation, School of Business and Law,  
Edith Cowan University (ECU), Australia*

Thank you for the kind invitation to address this prestigious conference organised by the University of Sri Jayewardenepura in Sri Lanka on this important topic. Speaking of which, it is because of this highly disruptive innovation that is facilitated by high-speed Internet, namely the virtual platform Zoom that is allowing me to join you ‘live’ from Edith Cowan University, Perth, Western Australia. Platforms like Zoom and MS Teams and WebEx have changed the way we work in the last 3 years especially during the COVID19 pandemic. However, there are many other emerging technologies that are going to be making just as significant an impact in the near future.

In my speech, I will be covering the background for this phenomenon called the Fourth Industrial Revolution and showing what some of the research has been conducted on it and how this is already impacting Sri Lanka. I will also be presenting some of the research that me and a team of researchers in Australia have conducted and what Sri Lanka can learn from it.

I will start by providing an overview of the changing world of work by taking a broad perspective on the trends occurring in technology, in the Australian economy, labour market, and demographic and social factors relevant to my presentation.

We’ve all read the headlines about robots taking our jobs and heard about job cuts because of automation and changing consumer behaviour. And we’ve all heard about businesses moving production offshore and the decline of manufacturing.

The research is largely driven by research done in the last 10 years by Carl Frey and Michael Osborne from the University of Oxford. If you have the opportunity, you can enter your job into the website and see if it is susceptible to automation. The websites use an algorithm based on to calculate how likely jobs can be automated, by implementing a novel methodology to estimate the probability of computerisation for 702 detailed occupations in

the US labour market. So whether it is entirely relevant to Sri Lanka may be debatable. But if you think that some jobs are similar regardless of the country that you are in, for example, an accountant in the US or Australia is likely to be doing the same tasks of auditing, financial management and control as they would be in Sri Lanka, then some of the results may be quite relevant.

However, technology innovation and change has been happening for some time. A growing global technology innovation engine continues to create rapid widespread disruption across enterprise and consumer markets. This is essential for sustained economic development as researchers like Drucker and Schumpeter have noted over the years as this will lead to productivity gains, cost efficiencies and increased customer value. However, quicker innovation cycles have also led to changes in work and employment, which this research is concerned with. Some of these emerging technologies have significant multiplier effects due to technologies interacting with each other and can lead to major disruptions. One such example is Nokia, the Finnish mobile phone company, that at its peak in the early 2000s, was employing 55,000 people and dominated the mobile phone sector. However, their slowness in capitalizing on smartphone and mobile internet technology has seen them losing significant market share and laying off about half of their workforce.

The global consulting firm, McKinsey has identified 12 disruptive technology categories. Mobile internet is one of them, but there are 11 others which are predicted to cause as much, if not more disruption to industries over the next 10-20 years. Some are already having an impact in Australia like energy storage – for example, Elon Musk’s giant battery in South Australia. Working together, these technologies will result in a 4th Industrial Revolution.

To understand why it has been called an industrial revolution, we need to go back further in time.

- The First Industrial Revolution took place from the 18th to 19th centuries in Europe and America. It was a period when mostly agrarian, rural societies became industrial and urban. The iron and textile industries, along with the development of the steam engine, played central roles in the Industrial Revolution.
- The Second Industrial Revolution took place between 1870 and 1914, just before World War I. It was a period of growth for pre-existing industries and expansion of new ones, such as steel, oil and electricity, and used electric power to create mass production. Major

technological advances during this period included the telephone, light bulb, phonograph and the internal combustion engine.

- The Third Industrial Revolution, or the Digital Revolution, refers to the advancement of technology from analog electronic and mechanical devices to the digital technology available today. The era started during the 1980s and is ongoing. Advancements during the Third Industrial Revolution include the personal computer, the internet, and mobile phone technology.

A little over 100 years ago, agriculture was Australia's largest employer, before the mechanisation of manufacturing and mass production took over. More recently, the advent of computers and the internet have changed the way work is done. Other changes, such as trade liberalisation and globalisation, have also transformed Australian workplaces.

- And finally, the phrase 'Fourth industrial revolution' was first used in 2016, by World Economic Forum.

The difference now, however, is the combination of significant changes occurring simultaneously which are amplifying one another. The result is faster, bigger and exponential shifts, vastly different from those previously experienced. These impending changes, sometimes called the 'Fourth Industrial Revolution', offer great promise for both future prosperity and job creation, as well as major challenges for people, corporations, societies and governments planning for and negotiating fundamental changes in the way we work and live and consequently skills and training required.

Technological advancements brought about by declining costs of technology and increasing capabilities and computational power are having a profound impact. The explosion in data volumes and rapid advances in automation and artificial intelligence, are producing robotic devices and other computational systems that can perform numerous tasks more quickly, more safely and more efficiently than humans (Hajkowicz et al, 2016). In the past, technologies affected manual jobs rather than knowledge-based jobs. Now, the level of routine in tasks determines a jobs vulnerability. Codifiable, conceptual jobs on the highly skilled end of the skill distribution as well as manual jobs at the bottom end of the skill distribution are vulnerable. The growth in technological advances is reshaping the labour market, workforce and jobs. It has also empowered consumers (think Trip Advisor).

A quick exercise for those of you who were old enough to watch movies in 2000. What was the most watched movie of 2000?

The slide shows the answer and it may surprise you.

So, the question is, why did I show this video clip? How did this movie/ video disrupt skills, learning, and work in the entertainment industry and beyond?

But it is not just technological innovation that is driving such changes. Australia has experienced nearly 27 consecutive years of economic growth, an enviable record. In this time, the economy has undergone changes which are reflected in the composition of the labour market. More of us are working today compared with 30 years ago, as measured by increasing participation in the paid labour force. This has been driven mainly by women; female participation has increased dramatically from around 40% to 60% in the last 30 years, with most in part-time work. Since the 1970s, male labour force participation has fallen from 80% to 70%. And part-time work has become more common in Australia. According to ABS data (ABS 2017), part-time employment now accounts for nearly a third of all jobs and about 68% of employed people in Australia work for small to medium size employers.

In Australia, the 4<sup>th</sup> Industrial Revolution is normally referred to as Digital Disruption, as most of the technologies involved are digitally enabled. There have been a number of studies showing the impact of these technologies and some of the worst case scenarios see up to 40 percent of jobs being threatened, as highlighted in the Productivity Commission report in 2016. However, a study by the Australian Industrial Transformation Institute found given the large amount of service sector jobs in Australia, only about 9% of jobs will be automated. In examining how will automation change the way we do our jobs, which is at the heart of *The Automation Advantage* recently released by the Australian firm AlphaBeta. By analysing 20 billion work hours each year, it finds over the past 15 years alone, Australians have reduced the amount of time spent on physical and routine tasks by 2 hours a week. Most of that change hasn't come from the loss of physical or routine jobs. Rather, it has come from workers switching to different tasks within the same jobs, as machines take on an increasing amount of the repetitive, routine work. The study also forecasts Australians will spend on average 2 hours per week more on interpersonal, creative and synthesis tasks and less time on routine and manual tasks.

What about Sri Lanka? The Sri Lankan government has also identified the need to upskill future workers. But the private sector is not waiting for the government and there are a number of companies who are now investing in these new industry 4.0 technologies or equipping their employees to be ready for these technological disruptions.

This slide summarises the drivers and impact of the 4<sup>th</sup> Industrial Revolution. Not all the drivers are technology related – some are socio-demographic ones. The Changing Nature of Work is more significant than the Changes to

Technology. Most significantly, at the bottom left, and of relevance to the VET sector, there is significant concern in industry about skills and re-skilling which dominates the other solutions. As for short, medium or longer term effects, in terms of impact of work – as you can see, many respondents are saying that this is already impacting them. For example, our research has found that employers report difficulties in finding public and/or private providers with the capacity to provide education and training in specific disruptive technologies.

On the internet and social media age, there also appears to be a growing gap between perceptions and reality. For example, most researchers including prominent Nobel prize winners have found that technology contributes about 3 times as much to job changes than globalisation, which is the core economic principle of Trump’s “Make America Great Again” campaign.

Increasingly, there is also consensus that it is not just the technology that will disrupt things but also the business models. Just like the internet disrupted the airline industry about 20 years ago by allowing budget airlines to operate through customers booking directly, today, we are seeing mobile phone apps facilitating peer-to-peer business models like Uber and Airbnb disrupting the taxi and hotel industry. But as you can see, there is a lack of consensus about the impact of the Fourth Industrial revolution with many seeing it as an opportunity but some seeing it as a threat. In many ways, unlike typical consumers and employees, who are generally positive about this, as research by Citibank has shown, while researchers are more techno-pessimists but the general picture is that there is significant lack of consensus. And this is also something that bugs the industry and employers.

If we just take the example of consensus in the implementation of these new technologies in the area of work, there is significant lack of consensus e.g. Gig Economy or Sharing Economy platforms. As you can see, academics are generally pessimists. Curtin Uni, Griffith Uni and University of South Australia researchers have been debating about the insecurity level of Australian jobs. However, some like the University of Queensland research has found that there are more positives than negatives.

It was because of this lack of consensus that a group of researchers led by me received competitive research funding about 6 years ago. It involved a research team of 4 researchers

- Myself as the Lead Chief Investigator at the School of Business and Law, Edith Cowan University
- Dr Janice Jones, Senior Lecturer at Flinders Business School, Flinders University

- Professor John Spoehr and Dr Ann-Louise Hoardacre from the Australian Industrial Transformation Institute, Flinders University

Our research was concerned with the question of understanding the relationship between these disruptive technologies and skill development needs in the VET sector, mainly from the perspective of the industry – whether they be technology users or technology innovators. There were 4 related research objectives that we wanted to understand:

- The nature of the relationship between disruptive technologies and the demand for skills.
- The balance between specialist skills and generic skills.
- Whether there was consensus in the industry
- And what were the barriers to VET students and graduates acquiring these skills in the next 5-10 years.

We adopted a qualitative methodology for the research

- We interviewed 23 CEOs and CTOs from 2 industries that were predicted to be significantly affected by disruptive technologies – Advanced manufacturing and IT
- Then based on the findings of the industry interviews, we interviewed 18 key VET sector stakeholders
- We also developed 2 case studies, a power technology firm, REDARD and Swinburne Uni's Factory of the Future testlab.

The main findings of the research are highlighted on the slide.

- **Reduced need for some jobs but main issue = changing the nature of existing jobs** and in doing so has **expanding the range of tasks**, such as problem-solving and collaboration, creating the need for additional skills and knowledge.
- While **larger firms implement in-house training** to help fill gaps, including those that exist in VET courses, **smaller firms tend to hire workers with the required skill set.**
- **Specialist technology-related skills** are important from a range of engineering disciplines, as well as software development and computer programming

- **Importance of generic non-technical skills** and competencies to include team working, creativity and problem-solving to explore and deploy technologies effectively in workplaces.
- Probably most importantly in our research, Consensus among technology innovators and employers on the need to enhance skill development for disruptive technology. But when considering specific technologies, there is **substantial uncertainty about the skills needed and how the training should be delivered.**
- Some employers reported difficulties in **finding public and/or private providers with the capacity to provide education and training in specific disruptive technologies.**

The first case study comes from industry. REDARC Electronics was founded in August of 1979 by electronics engineer, Robin (Bob) William Mackie in South Australia. Bob started the business by designing and manufacturing vehicle ignition systems and voltage converters. In fact, the name REDARC is believed to have come from the spark developed in the first ignition system having a “red arc”. In 1997, Anthony and Michele Kittel along with Michele’s Father, Denis Brion purchased the business following the premature death of its founder. REDARC has grown from these humble beginnings to become a world-class, advanced electronics manufacturer, servicing both domestic and international markets. In 1997 they were operating out of a tin shed in Lonsdale, South Australia. At the time, they only had 8 employees. Today REDARC Electronics operates in a state-of-the-art advanced manufacturing facility, employing 190 people across 2 locations of which 40 are full time engineers. In terms of the future strategy, it has looked at its need to develop a workforce skilled in computer systems, electronics, mechanical/mechatronics, materials skills and chemical engineering. However, given the lack of Industry 4.0 training available in Australia and specifically, in South Australia, they have taken the initiative to prepare employees to become Industry 4.0-ready by:

- Engaging one of the German-based Fraunhofer Institutes to run dedicated sessions on Industry 4.0 capability-building,
- Sending staff to conferences and engineers to Japan to study lean manufacturing and Industry 4.0-compatible machine lines.

CEO Anthony Kittel says that the cyber-physical nature of Industry 4.0 means that there is a need to develop the application of an overarching Industry 4.0 lens across the core competencies. And a need for “some sort of intensive fast track program for the people that deliver these courses so that they are actually brought up to speed with what’s happening”

In the state of Victoria, they are doing things differently. In Melbourne, there is a partnership between Swinburne University, the employers Ai Group, Siemens and the Victorian government. They have set up a factory of the future testlab or what they call an advanced manufacturing and design centre. It is a key platform for developing and teaching Industry 4.0 technologies in a state-of-the-art facility providing strong links across the higher education, research, vocational training and manufacturing sectors. They have recently completed the first cohort whereby their students complete a diploma in Applied technologies and underwent training and apprenticeships in cutting-edge manufacturing technologies, including 3D metal printing, machine vision and virtual reality applications before moving on to complete an engineering degree. These were skills considered by the stakeholders as necessary to enable graduates to respond to disruptive technologies in all industries.

So what can Sri Lanka learn from this research?

- Firstly, one of the effects of disruptive technologies is the likelihood that a range of routine, and, increasingly, some complex tasks, will be subject to automation. While this is likely to change the nature of existing jobs, it is also likely to profoundly impact on the demand for skills and qualifications over time, requiring some offerings to be modified, some abandoned but others created.
- Secondly, in terms of Industry 4.0, most of the research has been done in Europe, notably in Germany. The sociologist, Hirsch-Kriensen has predicted that besides the automation or technology-centred scenario, there are 2 other possible scenarios where technology can have an impact but in a different way and focus others besides the technology-centred/ automation scenario.
  - The Hybrid scenario where monitoring and control tasks are performed via cooperative and interactive technologies, networked objects and people. Under this scenario, the distribution of tasks between employees and machines is based on the relative strengths and weaknesses of workers vis-à-vis machines. Employees will however face increased demand to be highly flexible.
  - And the Specialization scenario where people use systems, and cyber-physical systems are used as a tool to aid decision-making. Thus, the dominant role of qualified workers remains.
- Thirdly, to cope with the changes introduced by disruptive technologies, the VET sector and employers need to work together

to support the continual updating and upgrading of the skills of VET graduates after they have qualified and entered the workforce, by developing systems that support lifelong learning.

- Fourthly, there is a need to develop cross-industry units, skill sets and qualifications, and their adoption across multiple industries should be applauded and extended.

To illustrate the point for greater collaboration between research, government and industry sectors, I would like to highlight a case study from ECU's perspective. This concerns a start-up Juggler that we have been doing research with.

- It had a sharing economy platform for the gig economy helping mothers and we helped it conduct research into whether this could help employability of mothers.
- The research findings helped Jugglr to pivot focussing more on B2C business model and secure further funding and support e.g. Joondalup Innovation Fund and the Australian Government Landing Pad in Silicon Valley.
- We are now conducting further research with the City of Wanneroo on waste and recycling innovation.

In conclusion, thank you for the opportunity to share some of my research at this conference. If any of you would like to collaborate further or understand various aspects of how changing technology and societal trends are affecting work, the links to some of our research and my contact email is provided in the slide.

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# **PROCEEDINGS**

# **Analysis of Private Student Accommodation and Rental Values in Public Universities: Case Study in University of Sri Jayewardenepura**

N. Randeniya<sup>1\*</sup>, K.G.P.K. Weerakoon<sup>2</sup>, and U. Jayampath<sup>3</sup>

<sup>1\*</sup>milandeniya@gmail.com

<sup>2</sup>kgpk@sjp.ac.lk

<sup>3</sup>udithajayampath@gmail.com

## **ABSTRACT**

*Every student has a basic right to an education. Students relocate to other parts of the nation or even abroad for educational purposes. The bulk of students relocate from rural to urban areas to pursue higher education. In Sri Lanka, the gross enrolment rate for higher education is 19.8%. Higher education enrolment is increasing year after year, and Sri Lankan universities are unable to offer on-campus housing for them. As a result, there is a need for private student housing, which is mostly driven by students, and private housing providers are providing this demand in the current market. The majority of students that enroll at Sri Jayewardenepura Institution come from rural locations, most of which are more than 30 kilometers away, making daily travel to the university from their homes impracticable. Approximately 60% of undergraduate students at the University of Sri Jayewardenepura do not have access to the university's dormitory facilities. As a result, student housing has become a basic requirement for undergraduates to complete their higher education. However, a considerable majority of students (60%) do not obtain university student accommodation amenities (hostel facilities), as provision is becoming restricted with the rising number of undergraduates each year. As a result, students are required to locate private housing near the institution, yet about 90% of undergraduates confront several challenges while selecting private housing in a short period of time. Because most students are unfamiliar with the region, it would be extremely beneficial if the institution could give adequate suggestions for selecting private housing. Through the research itself, a comprehensive statistical framework for analyzing private student accommodations in public universities with rental value variation estimations is established. There are two key influencing factors for private student accommodations: level of convenience in Accommodation (0.929\*\* Correlation/ R<sup>2</sup> 0.855) and level of convenience in Accommodation (0.919\*\* Correlation/ R<sup>2</sup> 0.844). In addition, the level of Services (0.870\*\* Correlation/ R<sup>2</sup> 0.805) indicated a high Relationship, whereas the level of Utility in Accommodation indicated a moderate Relationship.*

**Keywords - Private Student Accommodation, Rental values, Student Facilities**

## INTRODUCTION

Students everywhere have a fundamental entitlement to an education. Students move to various locations within the country or even overseas for educational purposes. The majority of students move from rural to urban regions primarily to seek higher education. Considering 170 million additional students since 1990, the gross enrolment rate in higher education is predicted to be 160% globally (Sharma, 2012). However, the gross enrolment rate for higher education in Sri Lanka is shown as 19.8%. The average yearly growth rate has increased from 11.1% in 1970 to 19.8% in 2015 (Knoema Corporation (US), n.d.). Governments in many developing nations now have to accommodate university students, which is a huge burden for many. This seems to be caused by an increase in the rate of higher education enrolment. Therefore, a need for private student housing has emerged, driven mostly by students, and private housing providers are meeting this demand in the present market.

About 60% of the University of Sri Jayewardenepura's undergraduate students do not have access to the university's hostel facilities (student council – 2020). As a consequence, there is now an opportunity for private housing businesses to provide student accommodation. The responsible parties should take a few things into account when it comes to private accommodation options, nevertheless. There are laws and regulations for university hostel accommodations, but there is no legislation passed by the parliament to manage or regulate student private housing. As a result, the majority of lodging accommodate client needs for private lodging. Those students who are not eligible for university housing must obtain private housing. When choosing private housing for students, they consider a variety of factors, including location, accessibility to the institution, rental costs, safety and security, amenities, quality, and independence (RealEstateRama, 2020). To provide a useful tool to help students identify appropriate housing, this study will examine the private accommodations that are currently available.

The majority of students who enter the university of Sri Jayewardenepura are from rural areas, mostly beyond 30 kilometers, which makes daily travel to the university from their residences impractical. Hence, student accommodation has become a basic need for undergraduates to accomplish their higher education. However, among the undergraduates, a large proportion (60%) do not receive university student accommodation facilities (hostel facilities) as the supply is becoming limited with the increasing

number of undergraduates yearly. Therefore, students are compelled to find private accommodation around the university, but about 90% of undergraduates face numerous problems when choosing private accommodation in a short time (KII findings, 2022) Since most students are not very familiar with the area, if the university can provide proper guidelines about choosing private accommodation, it will be very useful for students.

### **Research Problem**

Existing private student accommodations are not registered in the university and accommodation is provided without proper standards. Hence, students are not guaranteed good security and the basic infrastructure required. The university authorities are unaware of the facilities of those private boarding houses, and the private accommodation providers have no recommendations given by the university as well. Those factors may affect student security and education. There are no proper guidelines or databases to identify private student accommodations for anyone. Everyone must visit the accommodations in person and check them when choosing an accommodation. It has become a major problem for both undergraduates and property owners. This is real research gap focused on following research questions. Apart from that, this particular research is more aimed to identify the influence key factors for Private student accommodation.

What are the different types of student accommodations located surrounding the University?

Is it appropriate facilities available in the student accommodation located surrounding the University?

What is the relationship between Status of student accommodation and rental value?

### **Research Objectives**

the main objective of this research is to identify relationship between the facilities and rental values of private student accommodation surrounding of the university of Sri Jayewardenepura. For achieve this main objective following specific objectives were developed.

To identify type of private student accommodation in the surrounding area of the university?

Analysis of the facilities of student accommodation located surrounding the University

To analyze the relationship between rental value and Status of the student

accommodation located surrounding the University.

## **LITERITURE REVIEW**

Education is the primary means of increasing knowledge and typically achieving certain objectives. Education is a lifetime experience that aids in the growth of the individual on the inside (Anon, 2013). University housing should be made available to the majority of students since it is a basic requirement. Most students who pursue higher education often come from diverse rural areas. The government is the main provider of dorm space for higher education institutions in underdeveloped countries. A facility that has been made available to students whose homes are far from their educational institution is known as student housing, sometimes referred to as a student hostel or housing (Chiguvi & Ndoma, 2018).

Universities are frequently found in nearby cities. Metropolitan locations have fewer open spaces than rural places. The housing market eventually attracts private providers to fill the hole by providing students with private homes due to a lack of resources. Private housing for students most often includes landlords who live in the same home as a portion that is rented out. The students can often share the room with others, depending on its size. Many universities place a strong emphasis on providing impressive resources to attract students, particularly those from outside the city and overseas students who should consider the availability of suitable and affordable accommodation. College funding has been reduced recently, and large infrastructure projects like housing may compete for the remaining discretionary funds (Clement, 2003).

Most college freshmen are between the ages of 19 and 20. The majority of them have never lived away from home or been in a hostel. Thus, by spending a significant amount of time away from home, young pupils may learn a lot about life. They may pick up skills such as how to manage their daily duties, live independently, collaborate and work with roommates, share bathrooms and kitchens, etc (Ghani & Suleiman, 2016). Additionally, Garg, et al. (2014) pointed out that relocating away from their families to seek higher education has had a major influence on students' personalities and psychological well-being. Days of classwork may be missed by students while they hunt for suitable student accommodation. In addition, students often miss class, assignments, and practices, which might occasionally affect their grades (Chiguvi & Ndoma, 2018). Furthermore, substandard student housing may lead to arguments between housemates. Students must be able to adapt to any

type of private student housing to ensure the comfort of property owners. There are times when a student's only criteria are to share a room with two or more other students and have a furnished room (Rugg, et al., 2010). Only a small portion of students can and desire to live alone at the moment. Private homes for students solely aren't generally constructed with that objective in mind. They are first constructed as family homes before being converted into student housing. Thus, the facilities required for students' educational activities are inadequate and of poor quality (Ghani & Suleiman, 2016). The bulk of private accommodations falls well below the minimal minimum norms, which supports the aforementioned statement about their poor quality. If the university maintains many boarding houses and its caliber as a database with locations, students may easily find boarding homes.

In Sri Lanka, giving university students lodging is a necessary condition for their capacity to learn (University Grant Commission, 2004). But there isn't enough accommodation for all of the university students who are enrolling every year. The University Grants Commission has proposed several factors to identify students who would essentially be provided hostel residence due to the limited supply of university housing, including academic year, distance from home, and parental income. The following table describes the University of Sri Jayewardenepura's student housing.

**Table 1: Hostel Facilities of the University of Sri Jayewardenepura**

Hostel facilities of the University of Sri Jayewardenepura						
Faculty			No: of undergraduates in the university		No: of undergraduates who are eligible to get hostel facility	
			girls	boys	girls	Boys
<b>Management</b>	<b>Studies</b>	<b>&amp;</b>	3019	1776	1229	343
<b>Commerce</b>						
<b>Humanities and Social Science</b>			2786	659	1853	322
<b>Applied Science</b>			1402	870	200	110
<b>Engineering Faculty</b>			123	359	48	167
<b>Technology Faculty</b>			388	549	188	357
<b>Medical Science</b>			493	303	109	125
<b>Paramedical Science</b>			210	55	124	44
<b>Total</b>			8421	4571	3751	1468

*Source:* student council – 2020

The University of Sri Jayewardenepura has (8421 + 4571) 12,992 undergraduate students enrolled in its degree programs, according to the table. Only (3751 + 1468) 5,219 freshmen are selected for university residence, though. 40% of the student population, or the remaining 60%, must find private housing. This fraction includes undergraduates who commute from their homes and reside in private housing.

Students who are not chosen for university housing must find a private apartment to live in throughout their undergraduate studies. Most university students in Sri Lanka do not have the necessary resources to find affordable, high-quality private housing. As a result, the institution needs to find and add private lodgings to its database (student council – 2020). For this, it is planned that GIS, a system based on maps, will be used. It is a capable tool for geographical analysis that can input, store, process, and produce spatial data. Several scholars have used GIS to find more acceptable residential accommodation.

### **The Review of Factors Influencing Rental Values**

Rental values are influenced by several factors in the majority of markets. These include infrastructure, government taxation, supply and demand, interest rates, inflation, and affordability (Ghani & Suleiman, 2016) (2014) Jeremy & Wu Assets for businesses are frequently ones that may be rented out. These include residential residences as well as structures like offices, retail businesses, and industries that may be very profitable for investors and landlords in Nigeria. "Housing is vital because everyone needs a place to live with amenities and a place to live for shelter," says the lecture note for macroeconomics (2012). In contrast, most households in developed nations purchase more than they truly require, and as a result of this level of consumption, housing is frequently viewed as a luxury good (RealEstateRama, 2020). The majority of countries consider owning real estate to be an investment. So, housing might be good to buy and investment. Even if some households opt to rent from public (social) landlords, this is a practice that is becoming less common worldwide. The following are the main factors that influence rental values, according to Jack Harvey's book Urban Land Economics: Harper (1996)

**Table 2: Urban Land Economics of Jack Harvey the Main Factors Influencing Rental Values**

Determinants	Independent Variables	Dependent Variable
<ul style="list-style-type: none"> <li>• Size of the bed room/Floor area per person</li> <li>• Number of bed rooms</li> <li>• Age of the building</li> <li>• Quality of construction</li> </ul>	Physical attributes of the building	Rental Value of residential property
<ul style="list-style-type: none"> <li>• Distance to bus route</li> <li>• Distance to Wijerama Junction</li> <li>• Distance to University of Sri Jayewardenepura</li> </ul>	Locational factors	
<ul style="list-style-type: none"> <li>• Availability of electricity</li> <li>• Availability of water</li> <li>• Neighbourhood characteristics</li> <li>• Characteristics of tenants</li> <li>• Practices of comparisons</li> </ul>	Amenities services and other factors	

*Source* - Jack Harvey's book Urban Land Economics: Harper (1996)

Jack Harvey claims that the physical attributes of the buildings, their location and orientation, as well as their amenities, services, and other features, are the main factors influencing the dependent variable of rental value. In their essay Key factors affecting the rent of buildings: a case study on Taipei, Hsing and Perng also noticed the following table of variables (Hsiung & Perng, 2019). Hsing and Perng have identified five crucial factors that affect building rent. At level 2, there are indicators for each scale element. 25 important symptoms have been highlighted.

**Table 1: Hsing and Perng, Key Factors Affecting the Rent of Buildings: Case Study in Taipei**

Goal	Level 1	Level 2
Key factors affecting office building rent	Building facilities	1. Ceiling height
		2. Seismic damper
		3. High-grade building materials
		4. Independent air conditioning
		5. Backup power supply
		6. Main business district
	Geographical location	7. Shopping district
		8. Restaurant selection
		9. Zoning
		10. Recreational space
		11. Public facilities
		12. Business facilities
	Nearby facilities	13. Two power stations supply
		14. Healthcare resources
		15. Accommodation selection
		16. Proximity to Taipei Mass Rapid Transit (MRT) stations
		17. Proximity to highway interchanges
	Transportation convenience	18. Parking space
		19. Public transportation
		20. Road connection to major networks
		21. Renowned landmark
		22. Green building and smart building[10]
	Image	23. Friendly neighbors
		24. Social image
		25. Adequate property management

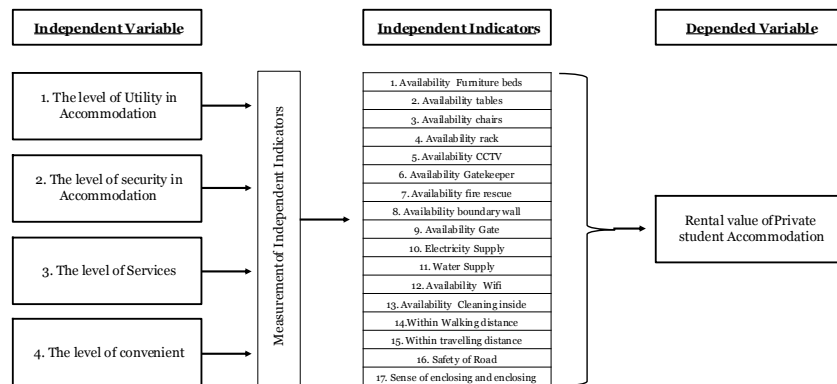
*Source* - Key factors affecting the rent of buildings: a case study on Taipei, Hsing and Perng

## CONCEPTUAL FRAMEWORK

This conceptual framework is divided into three parts: one with four independent variables, one with seventeen independent indicator measurements, and the last one with a dependent variable of the rental value of private student accommodation.

The independent variables are the level of status and characteristics described by the many literature reviews (in table 5) and it elaborate that the sensitivity or variability of the dependent variable. In the first phase, the independent variable varies with the variation of Measurement of Independent Indicators, which has a direct impact on the variation of the dependent variable of Rental value of Private Student Accommodation in the case study of the University of Sri Jayewardenepura.

**Table 4: Conceptual Framework**



### Selected Factors which influence Private accommodation in USJ

A statistical model was created using around 17 measures, or indicators, according to earlier research that was done along with a variety of literature. The selection process of the most appropriate and effective parameters to be employed took into account the following criteria and variables, including frequency of use, convertibility for quantitative analysis, applicability for statistical models, availability of data, and problematic data.

**Table 5: Selected Factors which Influence the Private Accommodation in UOJ**

Parameter	N o	Measures	Calculation/Equation/ Measurement/ Method of Presentation	Study and supporting literature
<b>The level of Utility in Accommodation</b>	1	Availability Furniture beds	Availability (Physically Appearance)	Marcus, 2010; Sayyar & Marcus, 2013
	2	Availability tables	Availability (Physically Appearance)	
	3	Availability chairs	Availability (Physically Appearance)	Harvey, 1996)
	4	Availability rack	Availability (Physically Appearance)	(Hsiung & Perng, 19
<b>The level of security in Accommodation</b>	5	Availability CCTV	Availability (Physically Appearance)	Harvey, 1996)
	6	Availability Gatekeeper	Availability (Physically Appearance)	(Hsiung & Perng, 2019).

		7	Availability fire rescue	Availability Appearance)	(Physically	Harvey, 1996)
		8	Availability boundary wall	Availability Appearance)	(Physically	Harvey, 1996)
		9	Availability Gate	Availability Appearance)	(Physically	Marcus, 2010; Sayyar and Marcus, 2013
<b>The level of Services</b>		1 0	Electricity Supply	Availability providing like Free, Added to Rent)	(Method of	(Hsiung & Perng, 2019).
		1 1	Water Supply	Availability providing like Free, Added to Rent)	(Method of	(Hsiung & Perng, 2019).
		1 2	Availability Wifi	Availability providing like Free, Added to Rent)	(Method of	(Hsiung & Perng, 2019).
		1 3	Availability Cleaning inside	Availability providing like Free, Added to Rent)	(Method of	Marcus, 2010; Sayyar & Marcus, 2013
<b>The level of convenient</b>		1 4	Within Walking distance	within 500 m buffer zone		Harvey, 1996)
		1 5	Within travelling distance	within a 2km buffer zone		Marcus, 2010; Sayyar & Marcus, 2013
		1 6	Safety Road	of personal preference - Likert Scale	(Hsiung & Perng, 19	
		1 7	Sense enclosing and enclosing	of personal preference - Likert Scale	(Hsiung & Perng, 2019).	

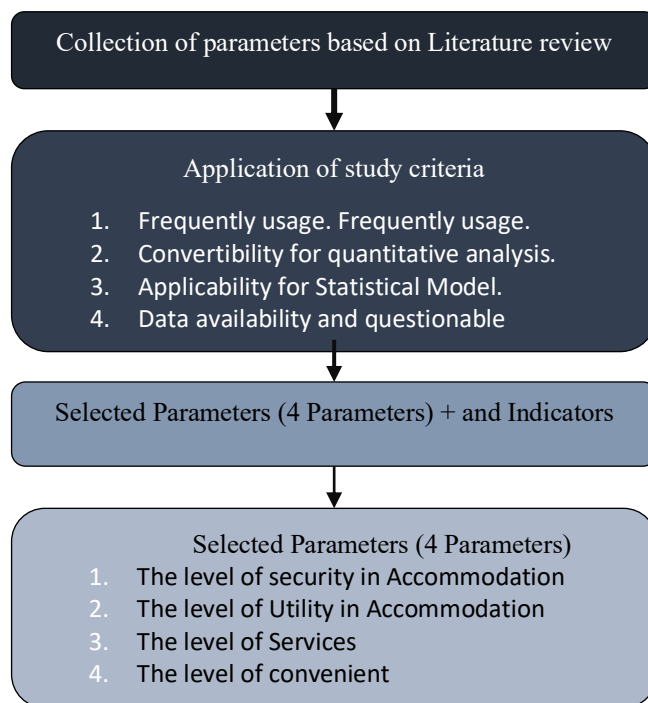
*Source* – Compiled by Author

## Parameter Selection Process

The procedure for choosing the study's parameters and measurements is depicted in the flowchart below. The parameters are determined based on four major study criteria: frequency of data usage, convertibility for quantitative analysis, applicability for statistical models and data availability, and data questionability. The primary goal of this critique is to figure out the appropriate parameters for study.

With reference to the preceding paragraph, four major study criteria have been identified as the four parameters that determine the status of rental value for private student accommodation in public universities. These selected parameters are the level of security in private student accommodation, the level of utility in private student accommodation, the level of services in private student accommodation, and the level of convenience in private student accommodation. In addition, to indicate those selected parameters, the research itself identified the 17 measurements (Indicators).

**Figure 1: Parameter Selection Process**



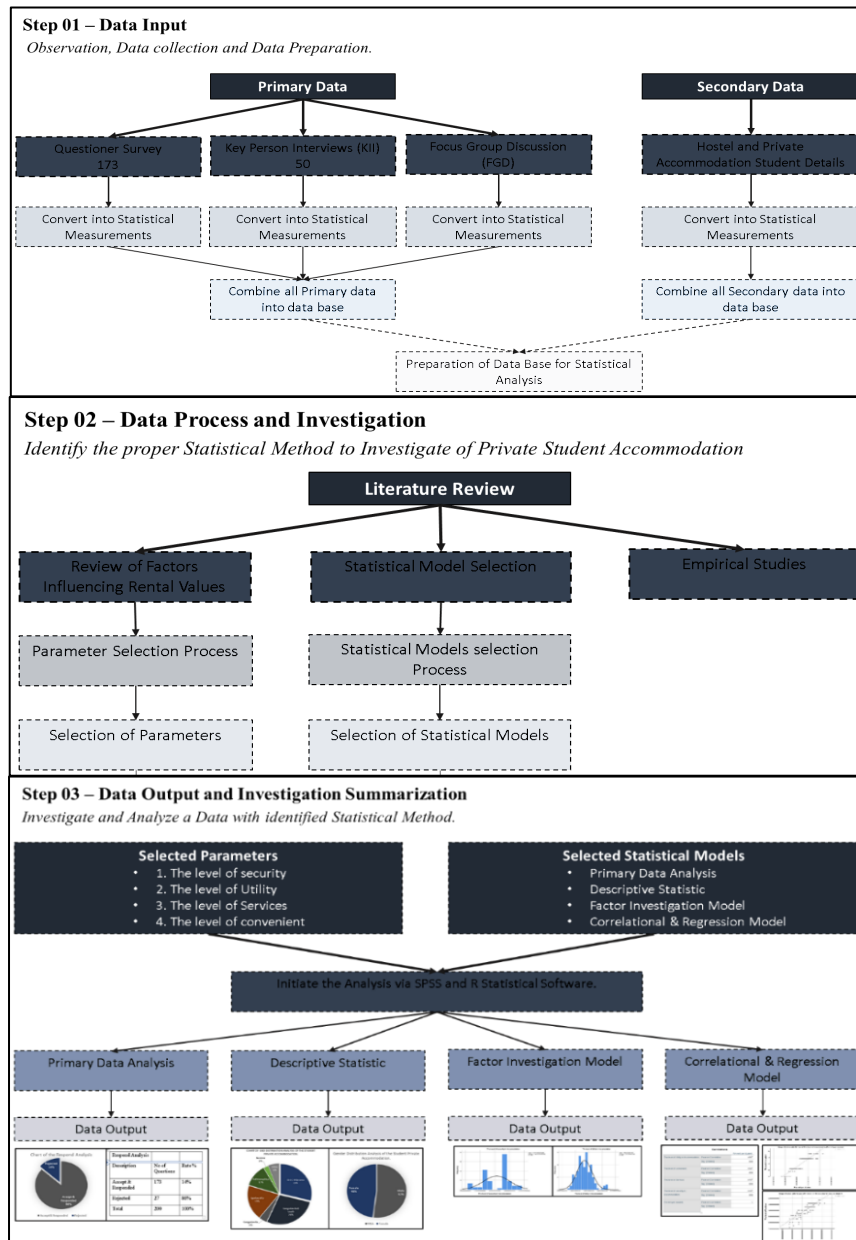
*Source – Compiled by Author*

## The Research Process

Suggested Research Process has three main phases that correspond to the study's necessity for an investigation of private student Accommodation utilizing a framework with the cooperation of statistical methods. To get a general overview, the observation and data-collecting technique's first phase was completed. The next step was to choose the best statistical approach to analyze the data that was gathered. Investigating and Analyzing Data Using

a Statistical Method is the Third and Last Step.

**Figure 2: Proposed Conceptual Framework**



Source – Compiled by Researcher

## DATA AND METHOD

The research design consists of 3 key stages. Each stage has been discussed in the following sections- whereas a detailed discussion has been carried out about the proposed framework under chapter 3

Literature review of the existing investigations of the Accommodations.

Stage 01 involved the examination of the literature review. The numerous types of empirical research and investigations that relate to student housing have been recognized through literature. Additionally, the analysis of the employed methodologies has revealed their shortcomings. Finally, taking into account the aforementioned restrictions, a unique investigation statistical measurement was found and created to do away with those restrictions and contain the new information and planning approach.

### Data Collection and Data Preparation

The primary component of the research design was Stage 02, which involved data collection and data preparation. The practical and ground-level works are processed in stage two. The primary and secondary data had been utilized at Stage 2. Participatory rural appraisal served as the primary data source and the primary learning strategy (PRA Methods). The strategy attempts to include public knowledge and opinions in the formulation and administration of development initiatives and programs. 200 Household questionnaires were collected using PRA procedures, and only 176 answer sheets were collected. 50 Key Informant interviews (Semi-Structured Interviews) and Focus Group Discussions (FGD) were conducted with Owners of private student accommodations. The following is a summary of PRA methodologies.

**Table 6: Primary Data Collection Process**

No	PRA Method	Number of interventions
1	Household Questioners (Owners of private student accommodations)	200
2	Key Informant interviews ( Semi – Structured Interviews) (Owners of private student accommodations)	50
3	Focus group Discussions (Owners of private student accommodations)	

*Source* – Compiled by Author

The University Hostel Office is the secondary data source, and it has collected information on a variety of hostel amenities, current restrictions on providing hostel amenities, and the number of students who would have private lodgings.

## **Data Preparation**

Software like R and SPSS were used to prepare the data. This software allowed us to locate the three main types of data, including statistical and spatial data. only acknowledged in this study by the inventive structure for gathering statistical data. As statistical data, some of the data were classified, some were scaled, and others were paragraphed. I'll now go into more detail about how these three data kinds are transformed into analytical and static data.

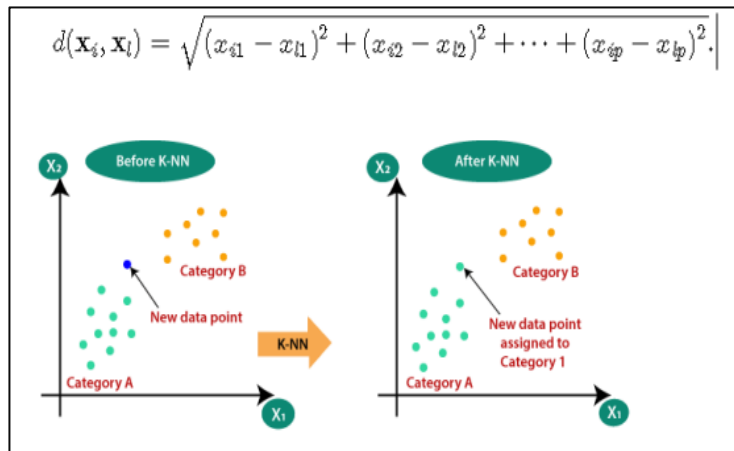
### **Classified Data Convert into Statically and Analytical Data via R**

Using the class Labels (AI Algorithm) under the K Nearest Neighbor primary AI Algorithm scheme, this categorized data was transformed into statically and analytical data through R.

### **K-Nearest Neighbour (KNN)**

When there is little or no prior knowledge about the distribution of the data, K-nearest-neighbor (KNN) classification should be one of the first options considered for classification research. The necessity to perform discriminant analysis when accurate parametric estimates of probability densities are unknown or challenging to calculate led to the development of K-nearest-neighbor classification (Peterson, 2009) The Euclidean distance between a test sample and the designated training samples is the basis for the k-nearest-neighbor classifier in most cases. Let  $n$  be the total number of input samples ( $i=1,2,...,n$ ) and  $p$  be the total number of features ( $j=1,2,...,p$ ) for input sample  $x_i$  with  $p$  features ( $x_{i1}, x_{i2},...,x_{ip}$ ). Samples  $x_i$  and  $x_l$ 's Euclidean distance ( $l=1, 2, n$ ) is given by,

**Figure 3: K-Nearest Neighbor (KNN)**



Source – Compiled by Author

### **Likert Scale Data Convert into Statistical and Analytical Data**

The data from the Likert scale was effectively utilized as a rating scale to gauge people's opinions and general levels of contentment. But these data must be converted into statistical and analytical data to be used in a statistical model. Utilizing SPSS IF - Compute a Variable for a Selection of Cases, the conversion was carried out. (Whereas DO IF can have an impact on other transformations, such although RECODE or COUNT, IF is a conditional COMPUTE command.)

### **DATA ANALYSIS**

The questionnaire was hand-delivered to 200 respondents and collected the next day, and it took 1 week to compile all of the interviewees' replies. Twenty-seven (27) of the response sheets were eliminated for not fully completing the questionnaire after receiving all of the submissions. As a result, there were 100% of the total replies, and 98% of those were examined.

#### **Basic Data Analysis – Descriptive Analysis**

Gender Distribution Analysis of the Student Private Accommodation.

There were 173 responders, of whom only 48% were female students living in private accommodations and the remaining 52% were male students. Therefore, the sample population's gender distribution is not evenly

distributed.

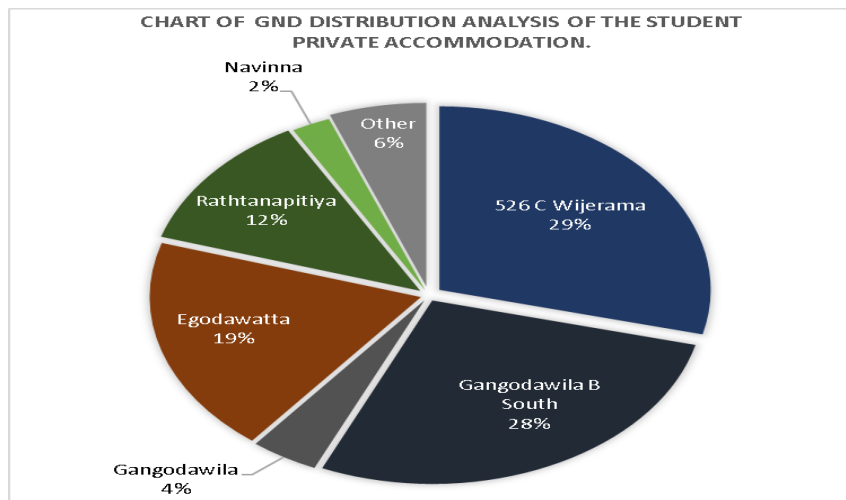
### **GND Distribution Analysis of the Student Private Accommodation**

**Table 4 :GND Distribution Analysis of the Student Private Accommodation**

Description	No	Rate %
526 C Wijerama	50	29%
Gangodawila B South	48	28%
Gangodawila	7	4%
Egodawatta	33	19%
Rathtanapitiya	21	12%
Navinna	4	2%
Other	10	6%
Total	173	100%

The Grama Niladhari Division Analysis of the Student Private Accommodation was computed from a total of 173 responding populations. According to the research, 29% and 28% of respondents, respectively, said that the majority of student private lodgings were located in Gangodawila South (B) GND and Wijerama (526 C) GND. In addition, Raththanapitiya made 12% and Egodawatta GND noted 19%, respectively. Only 2% of

**Figure 4: GND Distribution Analysis of the Student Private Accommodation**

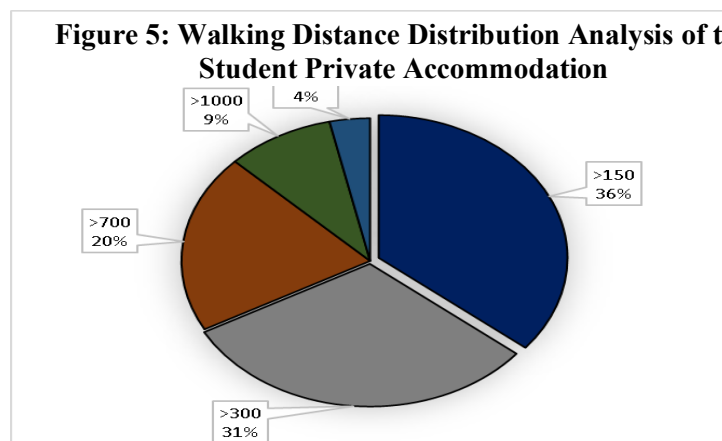


respondents, from the Navinna GND, had the lowest percentage of students living in private accommodations.

### **Walking Distance Distribution Analysis of the Student Private Accommodation**

The Walking Distance Distribution Analysis of the Student Private Accommodation was computed from a total of 173 responding populations. According to the data, 36% of the population under investigation and the bulk of the student's private rooms were located within 150 meters of each other. The second-highest frequency, which represents around 31% of the overall population, occurred between 150 and 300 meters. Then, 20% for a range of 300 to 700 meters and 9% for a range of 700 to a kilometer. The smallest distance was over a kilometer, and just 4% of the population was affected.

**Table 5: Walking Distance Distribution Analysis of the Student Private Accommodation.**

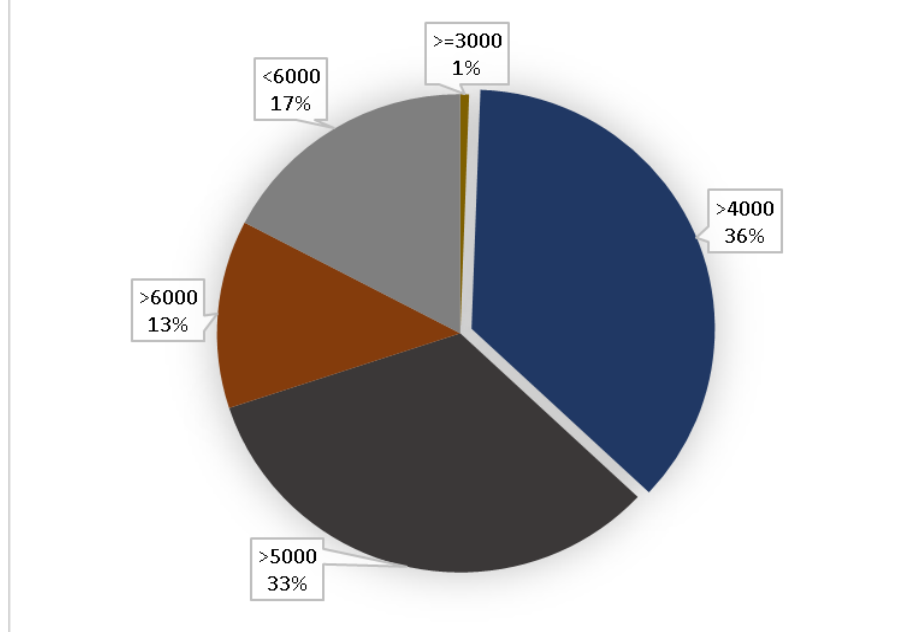


Distance to the university	Corded	Frequency	%
>150	1	62	36%
>300	2	54	31%
>700	3	35	20%
>1000	4	16	9%
<1000	5	6	4%

## Monthly Rent Distribution Analysis of the Student Private Accommodation

The Monthly Rent Distribution Analysis of the Student Private Accommodation was calculated from a total of 173 responding. According to the analysis, the majority of Student private accommodations have monthly rent values between 3000 and 4000 LKR and account for about 36% of the population under investigation. The second-highest monthly rental amount, which represented around 33% of the entire population, ranged from 4,000 to 5,000 LKR. Then, 20% for amounts between 5000 and 6000 LKR and 17% for sums greater than 6000 LKR.

**Figure 1: The Monthly Rent Distribution Analysis of the Student Private Accommodation**



**Table 6: The Monthly Rent Distribution Analysis of the Student Private Accommodation**

rent per student	Code	Frequency	%
>=3000	1	1	1%
>4000	2	63	36%
>5000	3	57	33%
>6000	4	22	13%
<6000	5	30	17%

## DATA ANALYSIS

### Reliability Test via R

The well-known statistical measurement known as Cronbach's alpha looks at the internal consistency (reliability) of various sample sets of data. When creating a scale out of several Likert items in a survey or questionnaire, Cronbach's alpha approach is frequently utilized. If the scale is accurate, the result of this analysis will be the solution. It is regarded as a gauge of scale dependability. Technically speaking, Cronbach's alpha is a coefficient of dependability or consistency rather than a statistical test.

### Reliability Analysis for Independent Variables

Internal consistency, which is represented in the table number, is recognized as the independent variable under the reliability analysis.

**Table 7: Reliability Analysis for Independent Variables**

Scale: independent variable	Cronbach's alpha	No of items
The level of security in Accommodation	0.355	5
The level of Utility in Accommodation	0.796	4
The level of Services	0.833	4
The level of convenient	0.607	4

*Source* – Compiled by Author

The level of Services has an alpha coefficient of 0.833 among all independent

variables, which indicates that the items have a substantial degree of important internal consistency. The amount of Utility in Accommodation, an independent variable, had the second-highest consistency, with an alpha value of 0.796. Additionally, it was discovered that the convenience level had a high alpha coefficient of 0.607. The amount of security in accommodations has an effect that has rather low internal consistency, with a Cronbach's alpha coefficient of 0.355. The disadvantage of the coefficient is that it lacks internal coherence.

The following table 13 elaborates on the mean values for the degree of utility in accommodations, level of security in accommodations, level of services, level of comfort, and rent amount per person based on descriptive data. The degree of Utility in Accommodation has the biggest standard deviation, with a maximum of 0.556. This indicates that there is a somewhat bigger variety in the amount of utility in accommodations. The level of security in lodging has a 0.200 variation factor, which is the minimum variance. This shows that, in comparison, there is little variation in the level of security in Accommodation. All of the skewness coefficients fall between -1 and +1. According to this, data are typically disseminated. Absolute kurtosis levels are less than three times the kurtosis standard error. This demonstrates that the data are typical. As a result, the analysis can use parametric methodologies.

**Table 8: Descriptive Analysis**

Statistics	The level of Utility in Accommodation	The level of security in Accommodation	The level of Services	The level of convenient	Fin rent per student
Mean	2.6	4.1	4.1	4.0	3.7
Median	2.67	4.3	4.28	4.4	3.79
Mode	2.833	4.33	4.57	4.4	3.32
Std. Deviation	.556	.44	.47	.53	.38
Variance	.310	.200	.221	.282	.148
Range	2.83	1.66	2.28	1.8	1.79

*Source* – Compiled by Author

## The Histogram Representation

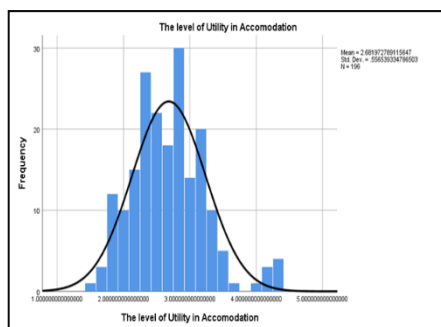
Histograms are computed following the variance components and data distribution. The generated histogram is detailed in terms of how frequently events occur about the indicators.

The frequency with which a value falls into each bin is shown by a histogram. The height of each bar indicates how many values in the data set fit into a particular bin. When the y-axis is labelled as "count" or "number," the numbers along the axis typically consist of discrete positive integers.

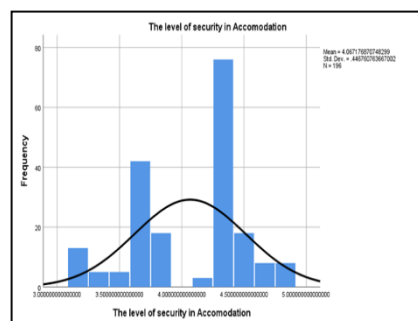
## The Histogram of the Level of Utility in Private Accommodation and Level of Security in Private Accommodation

A variety of classifications are divided into columns along the horizontal x-axis in the histogram's portrayal of data for the Level of Utility in Private Accommodation. The bell curve and histogram representing the utility level in private accommodations are symmetric, with the mean and median being equal. An asymmetric histogram will be split in half if we draw a line through its center. The two parts will be exact replicas of one another. It is argued that the asymmetric histogram has zero skewness (no skewness). Since the standard deviation is 0.55 and the histogram's mean value is 2.69, the data points are likely to be near the mean. The histogram of the level of Security

**Figure 3: The histogram of the Level of Utility in Private Accommodation**



**Figure 3: The histogram of the Level of Security in Private Accommodation.**



Source – Compiled by Author

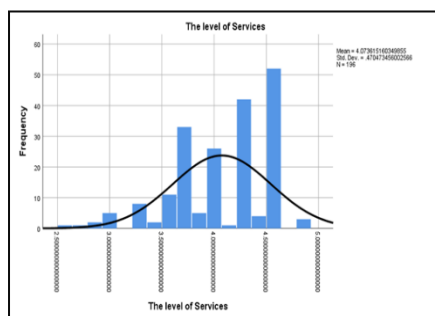
in Private accommodation Since it has two peaks or two highest primary points, the level of security in the private accommodations histogram is bimodal and is depicted in the upper figure. The two peaks indicate that the two groups in the frequency table have the highest frequency of occurrence even though these points are not the same height. The histogram's mean value

was 4.06 and its standard deviation was 0.44, both of which show that the data points are close to the mean.

The histogram of the level of Service and level of convenience in Private accommodation.

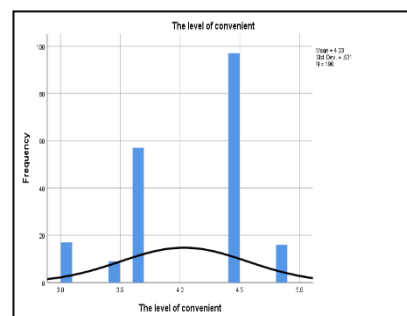
The following figure shows the histograms for the level of service in private accommodations and the level of convenience. Both of these histograms are left-skewed because their peaks were to the right of the center and subsequently tapered to the left. It is unimodal, with the mode being more pronounced and situated to the right of the mean and median. The mean is smaller than both the median and the mode and is located more to the left.

**Figure 4: The Histograms for the Level of Service in Private Accommodations**



Source – Compiled by Author

**Figure 10: Histograms for the Level of Convenience**



Overall Multiple Regression Analysis – All Independent variable variation with Dependent variables.

Multiple regression analysis was used to find the various traits of the All-Independent variable variance with Dependent variables. When it comes to output, the Model Summary (see table below) can show the various iterations of the model.

The R2 is 0.855, which suggests that a significant percentage of the variance for a dependent variable is explained by one or more independent variables, according to the Summary. As a result, this model has a sizeable coefficient of determination.

The adjusted R-squared value, which is the same as R2, indicates that the model can be explained by chance. The Durbin-Watson statistic, which similarly lies on 1.566 and denotes positive autocorrelation, follows. When

an error of a certain sign tends to be followed by an error of the same sign, the stated positive autocorrelation occurs. The final Significant of F change is 0.00, which shows that the performed multiple regression analysis was Significant with the variability of independent variables fluctuation to the dependent variable when everything is taken into account.

**Table 9: Overall Multiple Regression Analysis – All Independent Variable Variation with Dependent Variables**

Model Summary						
Model	R	R Square	Adjusted R Square	Std. The error in the Estimate	Change Statistics	
					R Square Change	F Change
1	.924 <sup>a</sup>	.855	.854	.1468	.855	0.000

The residual of the mean square for the Anova table is 0.022, indicating that the model has a good line that fits a single data point. The beta coefficient shows how much the outcome variable varies for each unit of variance in the analyst variable. In terms of the coefficients table, the interactive management unstandardized coefficients beta value had been decreasing, hovering at -0.484. This demonstrates that the outcome variable will drop with every 1-unit increase in the predictor variable, which represents the performance of the logistic branch.

**Table 10: ANOVA Table**

*ANOVA*

<i>Model</i>		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	24.590	1	24.590	1140.052	.000 <sup>b</sup>
	Residual	4.184	194	.022		
	Total	28.774	195			

*a. Predictors: (Constant), The level of convenient*

*b. Predictors: (Constant), The level of convenience, The level of Utility in Accommodation*

*c. Predictors: (Constant), The level of convenience, The level of Utility in Accommodation, The level of Services*

*d. Predictors: (Constant), The level of convenience, The level of Utility in*

*Accommodation, The level of Services, The level of security in Accommodation*

*e. Dependent Variable: Fin rent per student*

	B	Std. Error	Beta	
<i>(Constant)</i>	1.015	.081		12.595
<i>The level of convenient</i>	.669	.020	.924	33.765
<i>(Constant)</i>	.428	.037		11.671
<i>The level of convenient</i>	.654	.008	.903	83.185
<i>(Constant)</i>	.184	.015		12.478
<i>The level of convenient</i>	.459	.006	.634	75.750
<i>The level of Services</i>	.248	.007	.303	36.351
<i>(Constant)</i>	-	.000		.000
	9.548			
	E-15			
<i>The level of convenient</i>	.250	.000	.345	41956801.996

Regarding the multiple regression analysis mentioned above, the table shows that there are four major independent variables—the level of convenience, the level of utility in lodging, the level of services, and the level of security in lodging—that significantly affect the dependent variable, the rental price of private lodging.

The significant indeed imputable variables are The level of convenience, The level of Utility in Accommodation, The level of Services, and The level of security in Accommodation. Of those major 3 Imputable variables, the level of convenience is the extreme Imputable variable and it's around 0.669 of significant impact recorded in Beta Value. Deceptions that 0.878. (87% of Rental value variation) These factors are the major impactable independent variables that impact dependent variables.

**Table 11: Pearson Correlation Table**

		<b>Fin rent per student</b>
<b>The level of Utility in Accommodation</b>	Pearson Correlation	.406**
	Sig. (2-tailed)	.000
<b>The level of convenient</b>	Pearson Correlation	.924**
	Sig. (2-tailed)	.000
<b>The level of Services</b>	Pearson Correlation	.870**
	Sig. (2-tailed)	.000
<b>The level of security in Accommodation</b>	Pearson Correlation	.919**
	Sig. (2-tailed)	.000
<b>Fin rent per student</b>	Pearson Correlation	1
	Sig. (2-tailed)	

### Scatter Plot Diagram Pairs of Numerical Data

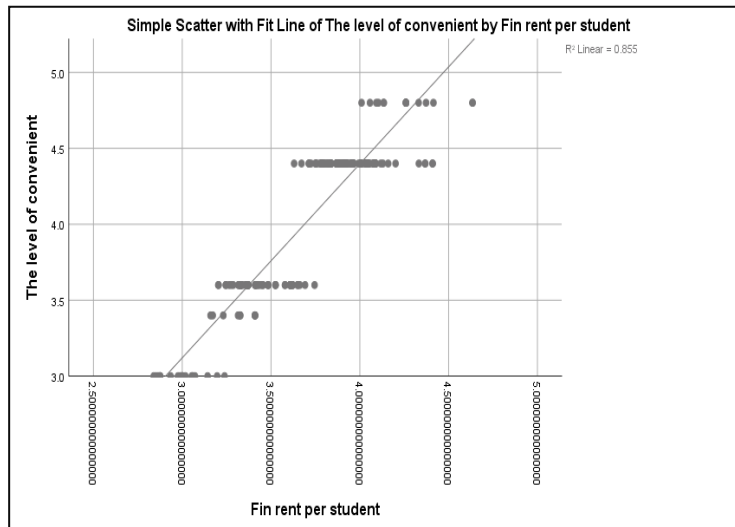
To find a relationship between two pairs of numerical data, a scatter diagram graphs them with one variable on each axis. If the variables are correlated, a line or curve will be formed by the points. The points will hug the line closer the better the association.

The following diagrams show the rental value per hour as the dependent variable on the X axis and the level of utility, convenience, services, and security in the accommodation as the independent factors on the Y axis.

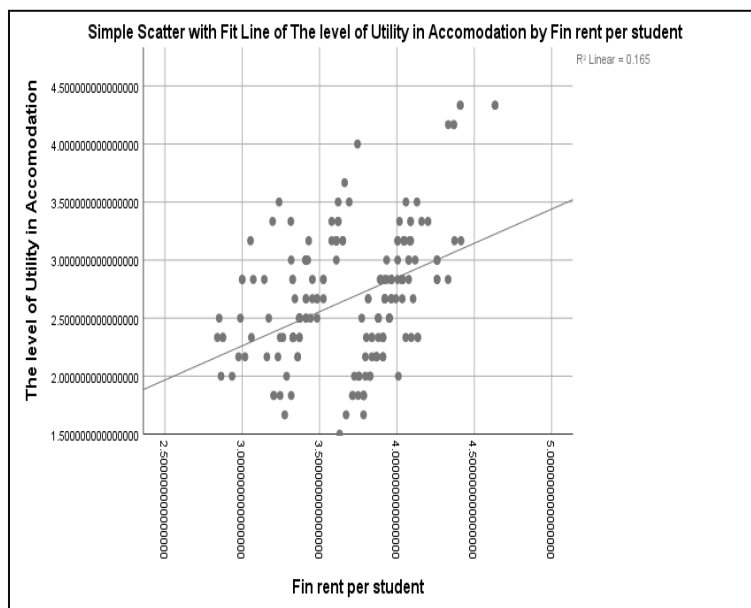
Through examination of where points lie on a line or curve, it is possible to find a positive association between the level of conviction and rental value in the scatter plot diagram. Additionally, the R<sup>2</sup> value is 0.855, indicating a strong positive link between the amount of conviction and rental value.

Utilizing the scatter plot illustration Through examination of points that fall along a line or curve, it is possible to find a Moderately Positive link between the amount of utility in accommodations and rental value. Additionally, the R<sup>2</sup> score is 0.165, indicating a moderately positive link between the level of conviction and rental value.

**Figure 11 : Scatter Plot Diagram of the Level of Convenience & Rental Value Per Student**

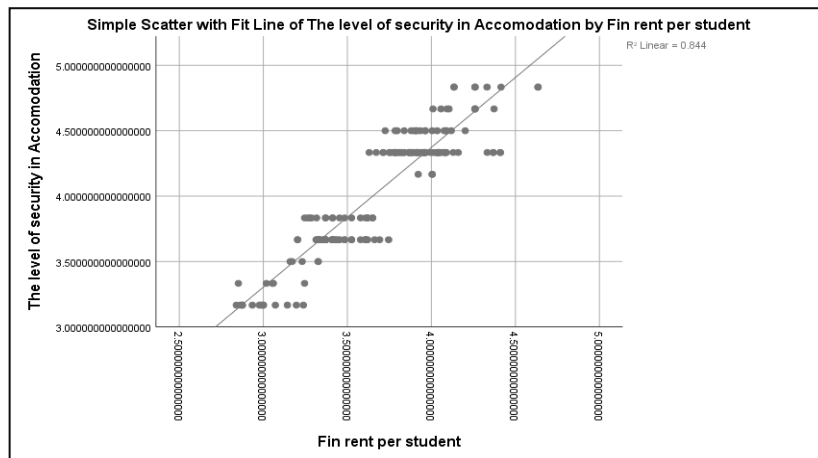


**Figure 5: Scatter plot Diagram of The Level of Utility in Accommodation & Rental Value Per Student**



Relating to the scatter plot the analysis of points that fall along a line or curve can reveal a Strong Positive link between the level of security in accommodations and rental value. Additionally, the R2 score is 0.844, indicating a Strong Positive association between the level of conviction and rental value.

**Figure 6: Scatter plot Diagram of The Level of Security in Accommodation & Rental Value Per Student**



## RESULTS AND DISCUSSION

The research itself demonstrated that statistical analysis of rental values in private student accommodation in public universities and the use of independent variables are correlated with the depended variable. As a result, it is necessary to research what factors influence rental value changes and which indications require additional consideration for the development of private student accommodation in public universities. According to the research findings, the level of convenience in accommodation is the key element in the inability to adjust or variate the rental values in private student accommodation at public universities. As summation There are two key influencing factors for private student accommodations: level of convenience in Accommodation (0.929\*\* Correlation/ R2 0.855) and level of convenience in Accommodation (0.919\*\* Correlation/ R2 0.844). Furthermore, a strong Relationship was indicated by the level of Services (0.870\*\* Correlation/ R2 0.805), meanwhile a moderate Relationship was indicated by the level of Utility in Accommodation.

**Table 15: Summary Table of Results and Discussions**

<b>independent variable</b>	<b>Relationship Dependent variable</b>	<b>Histogram and Scatterplot</b>	<b>Regression interpretation</b>	<b>correlation</b>	<b>Significant &amp; R2 value</b>
<b>The level of convenience,</b>	Pearson Correlation 0.924**	Left-Skewed histograms since their peak were in the right of the center, more gradually tapering to the left side	Strong Positive relationship	Strong Positive correlation	the R2 value is 0.855 and 0.00** Significant
<b>The level of Utility in Accommodation,</b>	Pearson Correlation 0.406**	the histogram is a symmetric bell curve	Moderate Positive relationship	Moderate Positive correlation	R2 value is 0.165 and 0.00** Significant
<b>The level of Services,</b>	Pearson Correlation 0.870**	Left-Skewed histograms since their peak were in the right of the center, more gradually tapering to the left side	Strong Positive relationship	Strong Positive correlation	the R2 value is 0.805 and 0.00** Significant
<b>The level of security in Accommodation</b>	Pearson Correlation 0.919**	bimodal histogram since it has two peaks or two highest main points	Strong Positive relationship	Strong Positive correlation	R2 value is 0.844 and 0.00** Significant

It's significantly correlated with 0.929\*\*, with an R2 value of 0.855 and a significant value of 0.00\*\*. Furthermore, the Left-Skewed histograms, whose peaks were at the right of the center, gradually tapered to the left side, confirming the Strong Relationship between level of convenience and Rental value verification.

The level of security in accommodation is the second most important factor in changing or varying the rental values in private student accommodation in public universities. Similar to the level of convenience in Accommodation, it also represents a Strong Positive Correlation with 0.919\*\* and R2 value is 0.844 and 0.00\*\* Significant value with Strong Relationship with Rental Value Verification. Third, the level of services is the most highly correlated variable with rental value variation, with Pearson Correlation 0.870\*\* and R2 values of 0.805 and 0.00\*\* Significant level. The amount of utility in accommodation is notable, with Pearson Correlation 0.406\*\* and a low level of R2 value (0.165). The table below summarizes the overall findings of the R.

## CONCLUSION

In order to examine private student accommodations, the study develops a novel statistical framework. This method was removing the constraints and limitations prevalent in current statistical applications. Because of present statistical applications, planning is inefficient, especially in terms of time and money. Additionally, it is considered to be a labor-intensive, inefficient, and highly limited use. As a result, it recommended a creative framework for assigning accommodations that is efficient, straightforward, and effective.

The study's findings reduce the knowledge gap for decision-makers and students regarding the availability of private housing at the institution. Common variables that can be applied to the setting of any other institution in Sri Lanka with just slight adjustments are those that are anticipated to be identified in the research of the neighborhood conducted at the University of Sri Jayewardenepura. Last but not least, this study aims to improve the procedures and datasets that can be successfully used in Sri Lankan universities going forward. Additionally, this study aims to produce recommendations that can be used in decision-making in the future.

According to data analysis results, it is clear that the level of comfort and security in an accommodation are the key determinants of the rental value of private student housing. The variation of the real value is mostly influenced by these two parameters, which is a significant fraud discovered in the study. It was described using a histogram and a scatterplot, and the interpretation of

the regression showed that it is significant and has a higher R<sup>2</sup> value than other variables. Consequently, the degree of utility in the accommodation and the amount of services have an impact on the rental price of the accommodation, respectively. However, they are not as high as the degree of comfort and security in the accommodations. Instead, they are greater than the histogram and scatterplot, regression interpretation, significant & R<sup>2</sup> value. Therefore, the primary identified factors are those that will have the most impact on changes in rental prices.

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# **The Impact of Entropy Index as a Measure of Diversification Strategy on Firm Performance during Covid-19 Pandemic: Evidence from DIMO PLC**

T.G.M.P.M. Dharmasena<sup>1\*</sup>, N.S. Nanayakkara<sup>2</sup>

<sup>1\*</sup>*Department of Finance, Faculty of Management Studies and Commerce,  
University of Sri Jayewardenepura, Sri Lanka*

*manula.dharmasena@gmail.com*

<sup>2</sup>*Department of Finance, Faculty of Management Studies and Commerce,  
University of Sri Jayewardenepura, Sri Lanka*

*neelangie@sjp.ac.lk*

## **ABSTRACT**

*Businesses in Sri Lanka experienced decreased performance as a direct result of the COVID-19 pandemic. This study is conducted to determine the effect that diversification strategies have on the overall performance of DIMO PLC, the largest automotive company in Sri Lanka pre and during the pandemic. It was found that the entropy index of related and unrelated diversification strategies had a perfect relationship with the company's accounting-based performance (ROA and ROE) and market-based performance (Tobin's Q) during the period 2012 to 2021, inclusive of the COVID-19 period starting in 2019. This was discovered after DIMO PLC had been expanding its operations into other alternative business sectors for several years. The unrelated diversification strategies implemented by DIMO PLC have positively exaggerated the company's performance while simultaneously maintaining the unexpected results that the COVID-19 pandemic has produced. According to DIMO PLC findings, there is a positive association between unrelated diversification and financial performance. Possible explanations include the ability to back up and justify the capital expenditure required for diversity, political connections in an emerging economy, and investor expectations, who view corporate diversification as a productive management activity. Furthermore, a negative link between firm size and performance was discovered. According to the findings of the VECM analysis, DIMO PLC results revealed that unrelated diversity is positively related to company long-run performance, whereas related diversification is negatively related to firm long-run performance. DIMO PLC is generally acknowledged as an automobile industry specialist and implements relevant diversification techniques. Despite the effects of the Covid-19 pandemic and import limitations, the company has been able to sustain stable overall performance. According to the study's findings, DIMO PLC may be able to achieve its objectives by overcoming unexpected challenges with efficient strategies such as testing their*

*operations into seemingly unrelated diversification strategies such as the agricultural, biomedical, construction, and material handling industries. Finally, it is suggested that diversification would have both positive and negative effects on firm performance and that businesses should prioritize developing appropriate approaches in order to effectively face challenges.*

**Keywords: Covid-19, diversification, entropy index, firm performance, Tobin's Q, firm size**

## INTRODUCTION

When the first COVID-19 case was detected in Sri Lanka in the middle of March 2020, the full scope of the epidemic became obvious, and schools were promptly closed. Lockdowns and curfews were then imposed in other locations to prevent the sickness from spreading. New quarantine facilities are being built, as is a self-quarantine system. Almost every aspect of the economy suffered as a result of the crisis. The COVID-19 health emergency has illustrated the susceptibility of enterprises to such exogenous disruptions. As a result, organizational resiliency is gaining significance as a competency that every business should seek to develop (Amaratunga et al., 2020). Diversification is one approach organizations use to remain competitive and manage market volatility when conditions are unclear (COVID-19: Adapting and Diversifying Your Business, 2021).

DIMO is a publicly traded business with major assets in multiple industries, and it is traded on the Colombo Stock Exchange. The DIMO PLC Group has seen revenue drop by 11%, from Rs. 34,385 million in 2019-2020 to Rs. 30,819 million in 2020-2021, as a result of the weak global economy. As a result of government import restrictions that are projected to remain for some time, the PLC's auto sales company, which was among the hardest hit, experienced a 48 percent decline in earnings, mirroring the 45 percent decline in new vehicle registrations throughout the industry (DIMO PLC, 2021). The Group enacted significant cost-cutting measures to ensure that costs associated with the automobile sales business would not negatively impact the revenues of other divisions. DIMO PLC has followed a comprehensive diversification plan for a number of years, incorporating specialized companies such as medical engineering, electricity generation and distribution, and agriculture. Consequently, it continued to diversify, including investments in the seed and fertilizer industries, throughout the pandemic.

The introduction of new products through manufacturing diversification

mitigates the risks created by a changing business environment for an organization (Darhovskiy, 2017). According to the resource-based perspective, the diversification of businesses into adjacent industries leads to increased rents (Montgomery, 1994). Gort was one of the first studies to examine the profitability of a variety of company performance metrics (1962). Contrary to earlier findings, there was no important cross-sectional association between diversity and profitability (Gort, 1962; Arnould, 1969). Markham (1973) states that diversification was not typically profitable in the United States between 1961 and 1970.

According to Palepu (1985), one reason there is no link between diversification and performance is that it is impossible to distinguish between connected and disconnected diversification. Plans that are primarily linked or unconnected tend to underperform due to a lack of consistency between the two strategic parts. A company's performance correlates positively with its adoption of either a single/dominant strategy with low related and unrelated diversification or a high diversity strategy with high related and unrelated diversification. The entropy approach is utilized in diversification to assess how an activity is disseminated over numerous company sectors and to measure activity dispersion. The method calculates a company's diversity based on its entropy.

### **Problem Statement**

Because of Covid-19 long-term company, strategies like as diversification may now be analysed in these perilous times to determine whether or not they will be able to endure. To deal with the economic uncertainties, it adopts a number of strategies, some of which are linked while others are not. As a result, the goal of this research is to look into and reflect on DIMO PLC's ability to develop organizational sustainability and resilience through diversity in the face of the COVID-19 pandemic, utilizing the entropy approach as a measure of diversification. The examination will centre on the firm's ability to do so. Thus, the research question of the study is,

What is the impact of the entropy index as a measure of diversification strategy on firm performance of DIMO Plc pre and during the Covid-19 Pandemic period?

## LITERATURE REVIEW

The introduction of new products through manufacturing diversification aids a business in meeting the difficulties of a dynamic business environment (Darhovskiy, 2017). Diversification is a more dramatic and risky strategy because it involves leaving existing items and marketplaces simultaneously. Diversification is the expansion and development of an organization into new industries and businesses (Michael, 2004). When appropriate at the corporate level, a company's corporate strategy may call for diversification into sectors outside the existing business unit's purview (Khanna, 2000).

On the one hand, resource-based theory says that related diversification would lead to higher performance since it is innately positioned to find, develop, and harness resources. Unrelated diversifications in emerging economies, on the other hand, are predicted to assist companies internalize market institutes and manage institutional interactions, according to considerations the institutional environment (Li, 2003). As a result, contrary to popular belief in developed economies that single/concentration strategies and related diversification strategies are more effective than unrelated diversification and high diversification strategies, (Li, 2003) discovered that firm performance is influenced by the combined effect of both related and unrelated diversification strategies.

Frequently, economic theory assumes that enterprises are organized around a single product and operate in a homogeneous market with homogenous factors. According to the market power perspective on diversity, a business may benefit from diversity at the expense of its competitors and clientele. Agency theorists take a more critical stance, emphasizing the advantages of diversification for firm management, frequently at the expense of shareholders. Firm-specific assets and abilities must be valuable, rare, and largely immobile in order to create a competitive advantage and generate rent. How successfully existing resources are used and exploited determines the efficacy of a company's plans. Businesses have unused assets that can be leveraged in firm-specific ways (Montgomery, 1994).

Businesses that use both single/dominant strategies (low in both related and unrelated diversification) and high diversity strategies (high in both related and unrelated diversification) outperform those that use only related and unrelated strategies, as studies on diversification show, because the latter lack "consistency" between the two strategic dimensions. According to Manikutty (2000), internal capital markets are significantly superior at regulating resource allocation when compared to their external counterparts. This thesis

contends that organizations who can build substantial internal capital markets gain a distinct competitive advantage.

It is critical to establish the type of diversity that will be applied. The total number of sections and their proportion distribution have been computed, an option is selected. However, the current entropy measure makes both dimensions equal (Raghunathan, 1985). The "entropy methodology," a method for assessing the distribution of a single activity across several segments, such as business or nation segments, can be used to examine activity dispersion. The phrase "entropy measure" refers to the method's basic entropy reflection while analyzing a company's diversity. Theil articulates this strategy and its driving premise in considerable detail (1967). This method has been widely used to evaluate various levels and types of variety.

Recently, it was found that the entropy measurement had greater validity than various other metrics (Blocher, 2017). The phrase has been variously defined as "a weighted average of segment shares" (Palepu, 1985), "a weighted average of sector diversification" (Berry, 1979), and "a weighted average of segment shares." The importance of each division is measured by its logarithmic share of the firm (Blocher, 2017). The current form of a company's total diversification appears to be as follows:

$$\text{Total Diversification (TD)} = \sum_{i=1}^n [P_i * \ln\left(\frac{1}{P_i}\right)] \text{ such that } P_i \neq 0$$

$P_i$  is the proportion of all actions contained by  $I$  if  $I$  is a segment. Because the sum of the weights is more than one, the equation represents a weighted score for each segment share. The entropy principle states that a measurement is a weighted average if the proportions themselves act as weights. When logarithms are employed as weights, the measure must be stated as a weighted score. Theil computes entropy using a weighted average with proportional rather than logarithmic weights (1967). The entropy measure, as stated in the explanation, provides information on "two aspects of diversification: (i) the number of segments in which a corporation works, and (ii) the proportional worth of each segment to overall revenue" (Palepu, 1985). The distribution illustrates how diverse the components of the total are. The overall diversity statistic is divided into two parts: the number of segments and their distribution.

## METHODOLOGY

### **Diversification And Accounting-Based Measures of Performance:**

Financial indicators indicate that diversification benefits businesses. However, data suggests that diversification may eventually result in a decrease in output. According to the study Those studies that excluded high-diversification firms discovered a positive association between diversification and performance, whereas those that excluded low-diversification firms discovered a negative correlation. Using the study's findings, two models for diversity and accounting-based performance indicators can be built.

$$\text{Model 01 - } ROA_{i,t} = \beta_0 + \beta_1 RE_{i,t} + \beta_2 UE_{i,t} + \beta_3 SIZE_{i,t} + \varepsilon_{i,t}$$

$$\text{Model 02 - } ROE_{i,t} = \beta_0 + \beta_1 RE_{i,t} + \beta_2 UE_{i,t} + \beta_3 SIZE_{i,t} + \varepsilon_{i,t}$$

### **Diversification And Market-Based Measures Of Performance:**

Diversification has evident advantages for businesses, as proven by market performance statistics. It appears to have an effect on performance when it reaches a particular threshold. Due to data constraints, it is not possible to conduct a more comprehensive analysis that takes into account the diverse definitions of diversification and performance. Check diversification and performance using market-based criteria after model building.

$$\text{Model 03 - } TQ_{i,t} = \beta_0 + \beta_1 RE_{i,t} + \beta_2 UE_{i,t} + \beta_3 SIZE_{i,t} + \varepsilon_{i,t}$$

### **Hypotheses**

Four research hypotheses (H) were defined based on the theoretical review done in this section and will be tested in the empirical part of this study:

H1<sub>0</sub>: Related diversification does not have a significant relationship with the firm's performance

H1<sub>1</sub>: Related diversification has a significant relationship with the firm's performance

H2<sub>0</sub>: Unrelated diversification does not have a significant relationship with the firm's performance

H2<sub>1</sub>: Unrelated diversification has a significant relationship with the firm's performance.

### **Sample And Data Collection**

This study was conducted based on secondary data and the main figures

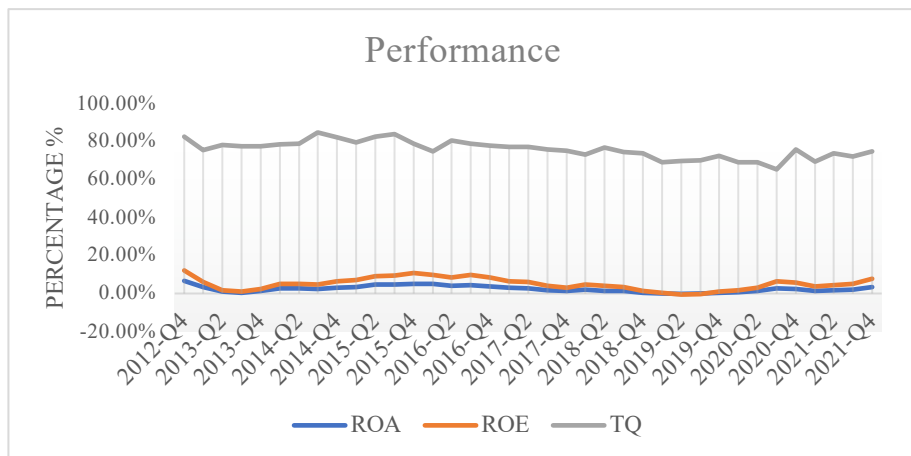
extracted from the quarterly reports were net income, total assets, total revenue, total market value, shareholders' equity, and segment revenues. All the data was collected using the CSE database and Bloomberg database. The study's primary objective is to determine the effect of the entropy index as a measure of diversification strategy on the firm performance of DIMO PLC. The modeling method will be used with an empirical data gap to analyze the relationship between the variables and evaluate the validity of the hypothesis prior to and during the Covid-19 Pandemic. The investigation was carried out between the years of 2012 and 2021. The nine-year period was selected because it allows for sufficient time to examine patterns and track the outcomes of the time series analysis. Furthermore, because the study was conducted over a period of more than a year, without restricting to the Covid-19 pandemic period. Due to time and resource constraints, a nine-year time span was selected despite the fact that a longer time period is normally advised for study. Every quarter for the following nine years, an analysis will be conducted. Due to the quarterly collection and analysis of data for all variables, a total of 40 quarters spanning the nine-year period were included, from the first quarter (January to March) of 2012 to the fourth quarter (October to December) of 2021.

## **DATA ANALYSIS AND DISCUSSION**

This study includes information from the initial quarter of 2012 through the fourth quarter of 2021. It is essential to establish the pattern of accounting and market-based performance during the observation period in order to detect any important market changes. As depicted in the illustration, this is

Even though the trend line cannot address the primary research question of the study, it is essential to comprehend and concentrate on the big picture in order to avoid significant deviations. Neither the ROA nor the ROE have changed or increased significantly throughout this time period. Tobin's Q, on the other hand, dropped dramatically from the second to the fourth quarter of 2020, probably due to the Covid-19 pandemic, which shut down the whole stock market and caused the economy to collapse in this quarter. Other than this, the data indicates that there were no significant differences between the forty quarters included in the study.

**Figure 7: Accounting & market-based Performances of DIMO (2012-2021)**



*Source:* Compiled by the Author

### Stationary Testing

In the time series, the variables are not stationary. If you attempt direct regression on this time series, you will run into the issue of false regression (Pseudo regression). This study utilized the Augmented Dickey-Fuller (ADF) unit root test to examine whether variables were stationary at the level and to prevent spurious regression. Using differencing, if it is not already stationary, the study makes it so. As a result, economists are increasingly employing differenced stationary time series to circumvent the problem of inaccurate results. Nonetheless, when comparing time series, this method often overlooks crucial long-term information. That would be an entirely distinct issue. Consequently, a cointegration test is necessary. Cointegration seeks to establish the stationarity of a non-stationary linear combination of variables. If there is cointegration between two or more variables with the same non-stationary characteristics, it is possible to do regression without obtaining erroneous results. Cointegration suggests that variables may fluctuate temporarily before returning to equilibrium. In this study, a cointegration test will be utilized to identify the variables' long-term associations. The presence of cointegration between two or more variables with the same non-stationary characteristics implies the consistency of the long-run coefficient estimate. To reconcile unpredictable long-run behavior with short-run responses, it is necessary to construct and estimate an error correction model (VECM).

According to the results of the ADF unit roots test, the six variables (ROA, ROE, Tobin's Q, Related Entropy Index, Unrelated Entropy Index, and Size factor) at the level are both stationary and non-stationary. All non-stationary

variables become stationary after a single differentiation, as shown in Table 5-2, because the critical values are all less than the ADF test statistics at the 5% significance level.

**Table 12: ADF Test at Level**

Variables	Level	Trend & Intercept	None	Result
	Intercept			
ROA	-7.521739 (0.0000)	-5.780515 (0.0000)	-7.001092 (0.0000)	Stationary
ROE	-7.495495 (0.0000)	-5.894746 (0.0001)	-6.908268 (0.0000)	Stationary
TQ	-2.827597 (0.0639)	-7.072063 (0.0000)	-1.240925 (0.1934)	Non-stationary
RE	-2.739267 (0.0772)	-2.435262 (0.3561)	0.287815 (0.7639)	Non-stationary
UE	-0.349455 (0.9075)	-4.925045 (0.0015)	2.118198 (0.9905)	Non-stationary
SIZE	-3.853954 (0.0053)	-4.196081 (0.0194)	-0.035591 (0.6646)	Non-stationary

*Source:* Compiled by the Author

Tobin's Q, the Related Entropy Index, the Unrelated Entropy Index, and Size are all stationary at the first order difference I(1), although Return on Assets and Return on Equity are stationary at the level I(0), indicating that they have unit roots at both I(0) and I(1) (Non-stationary). Because cointegration is required for the VECM model to work, at least two time series with unit roots are required. A time series is assumed to be stationary at some point in a cointegrating or equilibrium connection. There are no such things as independent or dependent variables in VAR/VECM; rather, all variables are presumed to be internally driven. As a result, if one of the variables is non-stationary at the level, the initial difference between all variables can be used, and the VECM can be used if there is at least one co-integration (Gujarati, 2004). According to ENDERS, models 01 and 02 have two stationary time series, ROA and ROE, while models 03 and 04 have three unit-root time series, related entropy index, unrelated entropy index, and size (2015). Thus, at the initial difference I (1), the variables in this study can execute a cointegration test with all stationary variables and incorporate stationary variables into the VECM at the level I. (0) (Liyanaarachchi, 2015).

**Table 13: ADF Test - First order difference**

Variables	First-order Difference			Result
	Intercept	Trend & Intercept	None	
TQ	-4.204495 (0.0022)	-4.215635 (0.0105)	-12.80821 (0.0000)	Stationary
RE	-7.112396 (0.0000)	-7.113117 (0.0000)	-7.131161 (0.0000)	Stationary
UE	-9.625806 (0.0000)	-5.063987 (0.0012)	-8.790666 (0.0000)	Stationary
SIZE	-10.33585 (0.0000)	-10.19790 (0.0000)	-10.47822 (0.0000)	Stationary

*Source:* Compiled by the Author

### **Cointegration Testing**

Four variables are first-order differential stationary sequences, indicating a co-integration relationship, as determined by the unit root test. In this study, the Johansen cointegration test and a Vector Autoregressive (VAR) analysis were employed to determine whether or not time series data were cointegrated. Choosing the appropriate cointegration test type and lag sequence is critical for obtaining a trustworthy result. The work of Johnsen (1988) and Juselius (1988) is commonly used to investigate the cointegration connection between variables in a VAR model (1990). The trace or maximal eigenvalue tests are often used in Johansen cointegration tests. At the 5% level of significance, both the maximum eigenvalue technique and the trace statistic require a P value less than 0.05 to reject the null hypothesis of no co-integration.

**Model 01 – Results of the Johansen cointegration test:** In Model 1, both the trace statistic and the Maximum Eigenvalue reject the null hypothesis that variables are not co-integrated. According to the linear deterministic trend, the Trace Statistic and Maximum Eigenvalue values are significant (0.0448 and 0.0259) and greater than the Critical Value at 5%, indicating a cointegration relationship between Return on Assets (ROA), Related Entropy Index (REI), Unrelated Entropy Index (UEI), and Size.

**Table 3: Johansen Cointegration Test - MODEL 01**

Sample (adjusted): 2012Q4 2021Q4				
Included observations: 37 after adjustments				
Trend assumption: Linear deterministic trend				
Series: ROA RE UE SIZE				
Lags interval (in first differences): 1 to 2				
Unrestricted Cointegration Rank Test (Trace)				
Hypothesized		Trace	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.552574	48.36283	47.85613	0.0448
At most 1	0.289659	18.60582	29.79707	0.5215
At most 2	0.142875	5.951431	15.49471	0.7013
At most 3	0.006656	0.247096	3.841466	0.6191
<b>Trace test indicates 1 cointegrating eqn(s) at the 0.05 level</b>				
* denotes rejection of the hypothesis at the 0.05 level				
**MacKinnon-Haug-Michelis (1999) p-values				
Unrestricted Cointegration Rank Test (Maximum Eigenvalue)				
Hypothesized		Max-Eigen	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.552574	29.75701	27.58434	0.0259
At most 1	0.289659	12.65439	21.13162	0.4845
At most 2	0.142875	5.704335	14.26460	0.6514
At most 3	0.006656	0.247096	3.841466	0.6191
<b>Max-eigenvalue test indicates 1 cointegrating eqn(s) at the 0.05 level</b>				
* denotes rejection of the hypothesis at the 0.05 level				
**MacKinnon-Haug-Michelis (1999) p-values				

Source: E-views estimation of co-integration vectors

**Model 02 – Results of the Johansen cointegration test:** In Model 2, both the trace statistic and the greatest eigenvalue refute the null hypothesis that the variables are not co-integrated. There is a cointegration association between the ROE, related entropy index, unrelated entropy index, and size because the trace statistic and maximum eigenvalue values are more than the 5% critical value and significant (0.0003 and 0.0003, respectively).

**Table 4: Johansen Cointegration Test - MODEL 02**

Included observations: 38 after adjustments				
Trend assumption: No deterministic trend (restricted constant)				
Series: ROE RE UE SIZE				
Lags interval (in first differences): 1 to 1				
Unrestricted Cointegration Rank Test (Trace)				
Hypothesized		Trace	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.684182	74.87144	54.07904	0.0003
At most 1	0.438653	31.07309	35.19275	0.1301
At most 2	0.144811	9.131272	20.26184	0.7240
At most 3	0.080444	3.186836	9.164546	0.5464
<b>Trace test indicates 1 cointegrating eqn(s) at the 0.05 level</b>				
* denotes rejection of the hypothesis at the 0.05 level				
**MacKinnon-Haug-Michelis (1999) p-values				
Hypothesized		Max-Eigen	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.684182	43.79835	28.58808	0.0003
At most 1	0.438653	21.94182	22.29962	0.0560
At most 2	0.144811	5.944436	15.89210	0.7941
At most 3	0.080444	3.186836	9.164546	0.5464
<b>Max-eigenvalue test indicates 1 cointegrating eqn(s) at the 0.05 level</b>				
* denotes rejection of the hypothesis at the 0.05 level				
**MacKinnon-Haug-Michelis (1999) p-values				

*Source:* E-views estimation of co-integration vectors

**Model 03 – Results of the Johansen cointegration test:** In Model 3, both trace statistics and Maximum Eigenvalue reveal that the null hypothesis that the variables are not co-integrated is untrue. Because the trace statistic and maximum eigenvalue values are statistically significant and more than the crucial value of 5%, the analysis concludes that Tobin's Q, related entropy index, unrelated entropy index, and size are cointegrated (0.0087 and

0.0086).

We find that the maximum and trace eigenvalue tests for each model reject the null hypothesis at the 5% level after employing the Johansen cointegration test (no cointegration). This indicates that the correlations between the variables are strong and persistent. If it is assumed that all models have cointegration relationships, VECM modelling can continue.

### VECM For a Long-Run Relationship

**Table 5: Johansen Cointegration Test - MODEL 03**

Sample (adjusted): 2012Q3 2021Q4				
Included observations: 38 after adjustments				
Trend assumption: Linear deterministic trend				
Series: TQ RE UE SIZE				
Lags interval (in first differences): 1 to 1				
Unrestricted Cointegration Rank Test (Trace)				
Hypothesized	Trace		0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.582339	55.24652	47.85613	0.0087
At most 1	0.281567	22.06923	29.79707	0.2947
At most 2	0.147550	9.503286	15.49471	0.3209
At most 3	0.086476	3.436947	3.841466	0.0637
<b>Trace test indicates 1 cointegrating eqn(s) at the 0.05 level</b>				
* denotes rejection of the hypothesis at the 0.05 level				
**MacKinnon-Haug-Michelis (1999) p-values				
Unrestricted Cointegration Rank Test (Maximum Eigenvalue)				
Hypothesized	Max-Eigen		0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.582339	33.17728	27.58434	0.0086
At most 1	0.281567	12.56595	21.13162	0.4929
At most 2	0.147550	6.066339	14.26460	0.6047
At most 3	0.086476	3.436947	3.841466	0.0637
<b>Max-eigenvalue test indicates 1 cointegrating eqn(s) at the 0.05 level</b>				
* denotes rejection of the hypothesis at the 0.05 level				
**MacKinnon-Haug-Michelis (1999) p-values				

Source: E-views estimation of co-integration vectors

Using the VECM estimation output study can derive the cointegration equations (Long-run model) as follows.

**Table 6: Cointegration Equation (Long-run Model) - MODEL 01**

ROA	C	RE	UE	SIZE
1.000000	-0.479054	0.310165	-0.048113	0.036069
		(0.05714)	(0.02083)	(0.00971)
		[5.42807]	[-2.31030]	[3.71566]

(Standard errors in parentheses) [t statistics in brackets]

*Source:* Compiled by the Author

It can be said that a stable equilibrium relationship exists since the study has recognized the existence of one cointegrating equation. The results are normalized on ROA. The signs are inverted as a result of the normalization process, allowing for accurate interpretation as follows (Daniel Della Maggiora, 2009).

$$\text{ROA}_{t-1} = 0.479054 - 0.310165\text{RE}_{t-1} + 0.048113\text{UE}_{t-1} - 0.036069\text{SIZE}_{t-1}$$

RE and UE have the expected signs and are statistically significant according to the t values at 5% of the significance level shown. This study interprets the coefficients as follows:

Related entropy index increased by 1 lead to 0.310165 decreases in ROA in the long run.

Unrelated entropy index increased by 1 leading to 0.048113 increase in ROA in the long run.

A 1% increase in size leads to a 0.036069 decrease in ROA in the long run.

**Table 7: Cointegration Equation (Long-run Model) - MODEL 02**

ROE	C	RE	UE	SIZE
1.000000	-0.495704	0.427157	-0.072516	0.030153
		(0.08963)	(0.03565)	(0.01904)
		[4.76559]	[-2.03439]	[1.58346]

(Standard errors in parentheses) [t statistics in brackets]

*Source:* Compiled by the Author

It can be said that a stable equilibrium relationship exists in model 02 since the study have recognized the existence of one cointegrating equation. The results are normalized on ROE. The signs are inverted as a result of the normalization process, allowing for accurate interpretation as follows.

$$ROE_{t-1} = 0.495704 - 0.427157RE_{t-1} + 0.072516UE_{t-1} - 0.030153SIZE_{t-1}$$

RE and UE have the expected signs and are statistically significant according to the t values at 5% of the significance level shown. This study interprets the coefficients as follows:

Related entropy index increased by 1 lead to 0.427157 decreases in ROE in the long run.

Unrelated entropy index increased by 1 leading to 0.072516 increase in ROE in the long run.

Size has a negative relationship with the ROE but is statistically not significant according to the t value at 5% of significance level ( $1.96 > 1.58$ )

**Table 8: Cointegration Equation (Long-run Model) - MODEL 03**

TQ	C	RE	UE	SIZE
1.000000	-1.820384	0.730200	-0.014486	0.075397
		(0.11371)	(0.04593)	(0.02440)
		[6.42156]	[-0.31541]	[3.09024]

(Standard errors in parentheses) [t statistics in brackets]

*Source:* Compiled by the Author

In the last model, it is apparent that a stable equilibrium relationship exists since the study has recognized the existence of one cointegrating equation. The results are normalized on TQ. The signs are inverted as a result of the

normalization process, allowing for accurate interpretation as follows.

$$TQ_{t-1} = 1.820384 - 0.730200RE_{t-1} + 0.014486UE_{t-1} - 0.075397SIZE_{t-1}$$

RE and UE have the expected signs but statistically one of both not significant according to the t values at 5% of significance level shown. Therefore, it is possible to interpret the coefficients as follows:

Related entropy index increased by 1 lead to 0.730200 decreases in TQ in the long run.

Unrelated entropy index has a positive relationship with Tobin's Q but is statistically not significant according to the t value at 5% of significance level ( $1.96 > 0.31$ ).

A 1% increase in size leads to a 0.075397 decrease in Tobin's Q in the long run.

Because the coefficient (C1) is significant and negative according to the VECM test, it is possible that the variables have a long-term relationship. A p-value of less than 5% should indicate that the long-run link coefficient is negative (Al-Masbhi, 2021). In this study, the system equations of each model are utilized to calculate the cointegration coefficient C (1), which can then be used to evaluate the model's diagnostic and gain insight into both long-term and short-term causalities. Each model's VECM findings relating to the coefficient of cointegration equations are detailed in Table 5-10.

**Table 9: Summary of Long-run Causality**

Model	C(1) Coefficient	Std. Error	t- Statistic	Probability	Long- run Causality
<b>Model 01</b>	-0.287156	0.072484	- 3.961648	0.0005	Yes
<b>Model 02</b>	-0.382180	0.055808	- 6.848151	0.0000	Yes
<b>Model 03</b>	-0.300357	0.120471	- 2.493168	0.0180	Yes

*Source:* Compiled by the Author

Every model has negative or between 0 and -1 cointegration equation coefficients (also known as error correction term, or ETC). However, their p values are below 5%, indicating a substantial association. To correct the deviation of the quarter from long-run equilibrium, the rates of adjustment for models 01, 02, and 03 are, respectively, 28.71%, 38.22%, and 30%. This suggests that there are numerous long-term causal connections between size,

related entropy index, and unrelated entropy index that impact ROA, ROE, and Tobin's Q models.

### VECM Short-Run Causality (Wald Test)

To investigate the short-run relationship between the variables, the Wald test was used. Each model's short-run causalities are summarized in the table below.

**Table 10: Summary of Short-run Wald Test**

Mode l	Variable (Coefficient)	Test statisti c	Value	Probabilit y	Short- run causalit y
<b>Mode l 01</b>	RE $H_0; C(4)=C(5)=0$	Chi- square	10.5659 4	0.0051	Yes Reject $H_0$
	UE $H_0; C(6)=C(7)=0$	Chi- square	1.04314 8	0.5936	No Fail to reject $H_0$
	SIZE $H_0; C(8)=C(9)=0$	Chi- square	1.83443 7	0.3996	No Fail to reject $H_0$
<b>Mode l 02</b>	RE $H_0; C(3)=0$	Chi- square	4.09237 2	0.0431	Yes Reject $H_0$
	UE $H_0; C(4)=0$	Chi- square	1.61995 3	0.2031	No Fail to reject $H_0$
	SIZE $H_0; C(5)=0$	Chi- square	0.64270 8	0.4227	No Fail to reject $H_0$
<b>Mode l 03</b>	RE $H_0; C(3)=0$	Chi- square	4.39917 5	0.0360	Yes Reject $H_0$
	UE $H_0; C(4)=0$	Chi- square	0.33846 6	0.5607	No Fail to reject $H_0$
	SIZE $H_0; C(5)=0$	Chi- square	6.20516 4	0.0127	Yes Reject $H_0$

*Source:* Compiled by the Author

According to Model 01, there is a causal relationship between the connected entropy index and ROA in the short run. Due to the fact that the p-values of the other two variables above the 5% significance level, it can be concluded that there is no short-run correlation between "ROA" and "unrelated entropy index and size." In Model 02, the connected entropy index and ROE exhibit a short-run causal relationship. In addition, there is no association between ROE and the unrelated entropy index or size over the near term. According to Model 3, there is no association between unrelated entropy index and Tobin's Q in the short run, but there is a relationship between related entropy index and size and Tobin's Q.

### **Testing Hypotheses**

This study was established based on 2 main null hypotheses and the results can be concluded as follows relating to VECM using the long-run causality and the short-run causality based on the above analysis.

H1<sub>0</sub>: Related diversification does not have a significant relationship with the firm's performance.

H1<sub>1</sub>: Related diversification has a significant relationship with the firm's performance.

H2<sub>0</sub>: Unrelated diversification does not have a significant relationship with the firm's performance.

H2<sub>1</sub>: Unrelated diversification has a significant relationship with the firm's performance.

Model 01 identifies a significant relationship between "ROA" and "related and unrelated diversifications" in the phenomenon of long-term causality. However, there is only a short-term correlation between related diversification and ROA that is meaningful. In model 02, only the short-term association between "related diversification" and ROE is statistically significant, although the long-term relationship between "ROE" and "related and unrelated diversifications" is significant. According to Model 03, Tobin's Q and the accompanying diversification have a substantial long- and short-term relationship.

**Table 11: Summary of Long-run and Short-run Causality**

Model	Hypothesis	Significant Relationship	
		Long-run Causality C(1)	Short-run Causality (Wald Test)
<b>Model 01</b>	H1 <sub>0</sub>	Yes (Reject H1 <sub>0</sub> )	Yes (Reject H1 <sub>0</sub> )
	H2 <sub>0</sub>	Yes (Reject H2 <sub>0</sub> )	No (Do not Reject H2 <sub>0</sub> )
<b>Model 02</b>	H1 <sub>0</sub>	Yes (Reject H1 <sub>0</sub> )	Yes (Reject H1 <sub>0</sub> )
	H2 <sub>0</sub>	Yes (Reject H2 <sub>0</sub> )	No (Do not Reject H2 <sub>0</sub> )
<b>Model 03</b>	H1 <sub>0</sub>	Yes (Reject H1 <sub>0</sub> )	Yes (Reject H1 <sub>0</sub> )
	H2 <sub>0</sub>	No (Do not Reject H2 <sub>0</sub> )	No (Do not Reject H2 <sub>0</sub> )

*Source:* Compiled by the Author

If one or more cointegrating vectors are identified for a group of variables, a VECM (Vector Error Correction Model) that accounts for both short-run changes in variables and departures from equilibrium is an effective estimation technique (Andreia, 2015). This study's data analysis allowed for the determination that models have cointegrating vectors and that VECM was required to continue the work. VECM is suitable for determining both the long-term and short-term relationships between diversity and business success. Manchun, Sanghyo, & Jaeun conducted a 2019 VECM study on company diversification and the success of construction firms. According to the findings, businesses with higher diversity indices benefited the most from the strategy. To preserve the benefits of diversification, it is essential to anticipate market shifts in advance, which is short-run causality, and to continuously adapt business portfolios, which is long-run causality. In addition, construction businesses have identified several strategies for applying the business diversification plan to improve business performance. In other words, businesses with lower levels of diversification tended to concentrate on their specialized industries in order to improve business performance, whereas businesses with higher levels of diversification actively employed the diversification strategy by leveraging a variety of business networks (Han, 2019).

Prior to explaining the results, it is essential to compare the results to those of earlier studies. Frequently, a substantial amount of capital is required for a company to diversify into new products, industries, or market segments. In other words, the asset profile of a diversified firm is significantly more asset-heavy than that of an undiversified organization. A diversified firm has a lower return on assets than an undiversified firm, even though its absolute return is bigger. This is because the company's returns do not always follow the preceding undiversified profile. In this study, connected diversification has a considerable impact on corporate success, according to hypothesis 1. According to common wisdom, related diversification enables a company with expertise in one area of an input to apply those skills in several industries where the same factor influences performance, hence increasing the company's financial success. This study found that linked diversification has a negative connection with accounting-based and market-based performance for a variety of reasons. For instance, a company's performance could be negatively impacted by "new section" (yet related) expenses such as rent, labor, laws, and economic consequences. According to Berger and Ofek, excessive investment and cross-subsidization may limit the value of diversity (Berger, 1995). The tax advantages of diversification may mitigate a portion of this value loss. There could be a variety of causes underlying the occurrence, making it a potentially intriguing topic for further study.

## CONCLUSION

This study tested diversification and how it affects firm performance and their businesses during the Covid-19 pandemic. The study goal is to determine impact of the entropy index as a measure of diversification strategy on firm performance of DIMO PLC pre and during the Covid-19 Pandemic period. In this study, a preliminary investigation of the theoretical foundations of diversification was conducted. This study also explored the numerous forms, approaches, justifications, enterprises, programs, and efficiency examples of diversification. This study reviewed the literature on the relationships between diversification and performance, which assisted us in formulating our early assumptions and drawing preliminary results. The second component of the study was an empirical examination of the effect of variety on performance. Overinvestment and cross-subsidization are likely to blame for the unfavorable association between linked diversification and business success, as determined by the study. This loss of value can be avoided due to the tax advantages of diversification. There are several possible explanations for the phenomenon, making it an attractive topic for

further research.

However, DIMO PLC statistics indicate that unrelated diversification and financial performance are positively correlated. Several potential causes include political ties in a developing nation, the capacity to sustain and justify the capital expenditures necessary for diversification, and investor expectations that view business diversification as a positive management activity. Moreover, a negative correlation was shown between company performance and size. The evidence from DIMO PLC demonstrates that, in the long run, unrelated diversification is positively related to a company's success, but related diversification is negatively related to a company's performance. However, only the relevant diversification influences DIMO PLC's performance immediately. In light of this, DIMO PLC's diversification strategies have proven more successful over time. DIMO PLC is an expert in the automotive industry and employs relevant diversification strategies. Despite the effects of the Covid-19 outbreak and import limitations, the company's overall performance has remained consistent. According to the findings of this study, DIMO PLC could achieve its goals by increasing its activities in the agricultural, biomedical, construction, and material handling sectors, which are all considered unrelated diversification techniques, in order to face unforeseen problems.

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# **Relationship Between Functional Space Characteristics of Land and the Nature of Engagement in Fish Drying Cottage Industry; With Special Reference to Kudawella of Tangalle Pradeshiya Sabha**

G.O. Abeysooriya, K.G.P.K. Weerakoon\*

*Undergraduate, University of Sri Jayewardenepura, Sri Lanka,  
githmiabeysooriya1997@gmail.com*

*Professor, University of Sri Jayewardenepura, Sri Lanka, kgpk@sjp.ac.lk\**

## **ABSTRACT**

*Fish drying cottage industry is an informal cottage industry which exists in the coastal areas of Sri Lanka. Northwestern and Southern coasts are famous for dried and Maldivian fish manufacturing in the island. This industry is not practiced frequently as a result of reasons such as, labor involvement, technology involvement, market conditions, unavailability of raw materials, land use factors, based on manufacturer's personal decisions etc. This decision ultimately affects finding a wholesale buyer, getting government and financial support and adopting technology and technical knowledge and provision of infrastructure. Therefore, frequent manufacturing solves many issues of the manufacturers and there is a need to facilitate manufacturers to engage in the industry frequently. As the industry is home based, and as land and land use become a major factor which determines the nature of engagement or the decision of frequent or infrequent manufacturing land related factors affecting the frequent or infrequent manufacturing are needed to be analyzed. Hence, a binary logistic regression analysis is performed using R Studio by taking nature of engagement as the dependent variable and interest over the land, extent of the property, major use for which the land is put, availability of a smoking stall and availability of a separate resting place for laborers as independent variables. These independent variables are included in functional space characteristics of land such as parcel, space use and structure. Relevant data were collected by using an interviewer guided questionnaire survey from 381 manufacturers in 5 Grama Niladhari Divisions of Kudawella, Tangalle Pradeshiya Sabha from August 2021 to November 2021, which was the total population in the concerned period. It was revealed that extent of the property and availability of a smoking stall affects more significantly on the nature of engagement, while the extent of the property is the most significant factor in the model. The model is fitted with MCFadden  $R^2$  value of 54.6%. Depending on the results of the study, it is expected that substantial and effective strategies will be applied by the manufacturers and relevant authorities to utilize existing space effectively and increase the extents according to the requirement.*

**Keywords:** *Cottage industry, Fish Drying Industry, Informal Economy, Binary Logistic Regression Analysis, Land Use*

## **INTRODUCTION**

### **Background of the Study**

Economy of a country is built upon the factors of production. So, factors of production are simply the “building blocks of the economy” (Federal Reserve Bank of St. Louis, n.d.) of a country. Four basic factors of production have been identified by the scholars and the economists. They are land, labour, capital and entrepreneurship. Land, as a factor of production, plays a significant role in the production process. In economy terms, land includes all the natural resources (Mukherjee, et al., 2003). However, different definitions are provided for land in different disciplines. Land is real estate in legal terms. So, it includes “all the space underneath the land, land itself and the airspace over the land” (Wex Definitons Team, 2020). Real Estate professionals recognize the things which are permanently attached naturally to the surface of the earth, under the earth and above earth (Ariyawansa, 2016). Generally, in day today life, the term “land” is used to refer to the lots of land and property built on them. However, whatever the definition is, it is undoubtful that the land is a vital factor for the existence of economic activities and the society (Edirisinghe, 2015).

Managing land is also important, just as the other factors of production. United Nations Convention to Combat Desertification, (n.d.) emphasis the need of management of land as it is the core of economy and health of the public and the ecosystems. Land management can be done at a national level by classifying land as urban and rural. Urban lands or urban areas are defined by various countries in various ways. But urban lands are inevitably, geographical areas with high population and building densities, low agricultural land uses and agricultural, and surrounding areas of cities. Urban land as a functional space provides space for various functions or uses to take place. “residential, transport facility, public service, industrial, commercial, logistics and warehouse, municipal utility, green space” are identified as the major urban functional uses of land (Zhou, et al., 2020). Authorities and institutions are established at the national level to manage such urban land by identifying the necessity of the prevailence of a such body to the country. India has region wise state authorities to monitor urban development. USA have identified housing as a major development area in urban development and have a separate department for housing and urban development. Urban Development Authority of Sri Lanka is such body which works towards the “integrated planning and implementation for the economic, social, environment and physical development of declared urban areas” (Urban

Development Authority, Sri Lanka, 2022). As mentioned in that phrase, the authoritative body declares some urban areas as Urban Development Areas on the opinion of the relevant minister, by considering the suitability of development of the area. Such declaration ensures the optimum economic utilization and the physical utilization of the area (Urban Development Authority, Sri Lanka, n.d.). In Sri Lankan context, coastal areas are attractive urban destinations and the Urban Development Authority of Sri Lanka has identified and declared “the areas lying within one kilometer inwards the mean high water line of the area” (Urban Development Area, Sri Lanka, 2020) as urban areas. As per the statistics of Census and Statistics Department, Sri Lanka, (2012) 70% from the total urban population and 80% of infrastructure facilities are segregated in coastal areas. Moreover, building densities in coastal urban areas are very high.

When considering economic activities of urban areas of developing countries, majority of activities are done informally (Chen, 2016). Informal economy should not be underestimated in urban development as those promote urban poverty eradication and also contribute to urban income generation and provision of flexible goods and services to residents of urban areas (Brown, 2018). However, as per the views of Gabriel, et al., (2019) activities in the informal economy devalues land as such activities introduce commercial and industrial activities into residential areas and break the harmonious spatial distribution of compatible land uses. In other way around, land use limitations limit the optimum operation of informal economic activities.

Urban lands being a specific concern in land management, should be utilized with proper care to get the maximum utilization. So, even the informal economic activities cannot be left aside concerning that those are not formally recorded or solidatarily operating. Specially, as coastal areas of Sri Lanka are rich in resources such as sandy coasts, aquatic resources, labour etc. which are vital for economic development, land should be utilised in a way that derives the maximum use of such resources.

Fish drying cottage industries; Maldivian fish manufacturing and dried fish manufacturing utilize the excess yield at fisheries harbours. Usually, the manufacturers purchase raw fish only if the prices are low. Infrequent or the uncontinuous engagement can be commonly seen in such informal cottage industries. Undoubtedly this closes paths for many due advantages. Land use limitations affects in that concern. Therefore, there is a apparent relationship between the land use and nature of operation frequency of a coastal informal cottage industry; fish drying industry. Kudawella is selected as the

geographical study area as it is the largest fisheries community of the largest fish supplier of Sri Lanka, Tangalle (National Aquatic Resources Research and Development Agency, 2018). As it is observed, in this community, fish drying industry has widespread in the recent years and has risen as the second major economic activity. Fish drying cottage industry of Kudawella has prevailed in the village for a long time. But, since about 2015, the industry has grown and spreaded widely throughout the region. The industry is a solution to utilize the extra yeild of multiday crafts. Wholesale prices of yeild of multiday crafts are determined at auctions hold at fisheries harbours. When it seems that low prices are going to be determined, fish remain unsold in crafts and eventually become unconsumable. Specially in stormy seasons, multiday crafts stay months in the sea and when they arrive at the harbour wholesalers refuse buying or determine a low price. As a solution for such issues, fishermen are used to buy their yeild themselves. Thenafter, they process fish as Maldive fish or dried fish with the help of family members or a small number of external labourers.

As it seems, the industry has created economic and social adavantages. Specially, in addition to direct income generation, indirect income generating sources like, transportation services, farm food manufacturing from residues of the cottage industry, food catering services for labourers etc. has arisen. However, environmental pollution, non-appealing nature of the environment, unbalance of ecosystems due to increased population of crows and flies, encroachment of environmentally sensitive areas, security concerns in the villagers as more outsiders are coming, lack of attention towards the education of children have arisen as negative impacts of the industry. Undoubtfully, factors such as waste generation and waste disposal impact quality of land. However, it could be observed that land and functional space characteristics of land affacts the effectiveness and engagement of the industry. For an example, if the property used for the industry is a rented one, the manufacturer tries to engage in the industry more frequently. So, the ownership matters for the engagement. So, there is a need to identify the relationship between the functional characteristics of land and the nature of enagement in the fish drying cottage industry in order to utlize the land optimally in the industry to get a optimum production. Specially the nature of engagement (frequent or irregular) affects finding a wholesale buyer, acquiring government support, financial support and technical support. So, in order to acquire those and to make the industry sustainable and effective, it is needed to check whether the contribution of land can be taken. Ultimately, arranging means for effective land management in industry locations and

policy making will be done by the relevant institutions and individuals.

### **Objective of the Study**

The general objective of the research is to identify whether there is a relationship between the functional space characteristics of land and the nature of engagement of manufacturers in the industry. The general objective is supported by two specific objectives.

- To identify functional space characteristics of land affecting the nature of engagement of manufacturers of fish drying cottage industry
- To identify whether there is a significant relationship between functional space characteristics of land and nature of engagement (frequent/infrequent) of manufacturers in fish drying cottage industry

### **LITERATURE REVIEW**

The literature review includes: land, functional space characteristics of land, informal economy, land use in informal economy and fish drying cottage industry.

#### **Land**

Generally in day today life, land is termed as whole area of the earth's surface except the areas covered by water. In other words, land is the portion of the earth which exists in the solid state (Edirisinghe, 2015). So, land is soil or surface of the earth to many people. But, land is a factor of production in economics and the natural resources which contribute for production fall into the category (Anon., 2022). So, land is recognized as the "resource base" for production processes (Edirisinghe, 2015). In sociological terms, land is the carrier of human activities and the fundamental resource which is vital for the survival of rural and urban economic activities and residents (Long, et al., 2021). So, land provides space for human activities to take place. Real estate professionals who are engaged in real estate management identify land as a resource wider than the surface of the earth. So, according to them, surface of the earth, its subsurface and the airspace including the naturally originated things attached permanently (Ariyawansa, 2016) are included in the term "land". According to the definition given by Thomsett, (1988), land includes rights over the land. So, land is not only tangible, but also intangible in the point of view of the real estate professionals. The definitions of environmentalists differentiate human interventions and natural occurrences. The definition provided by King, (1995) specifically mentions that the "disposal sites" and areas covered by "occupiable buildings" should be

exempted from the definition of land. So, according to the definition, land includes only the naturally originated things. So, all the mentioned definitions suggests that the land is a wider than the surface of the earth and includes intangible things such as rights. Moreover, the fact; natural origin is paramount in definitions given for “Land”.

Land can be viewed under different perspectives. According to Edirisinghe, (2015), land is space as it provides support for life and activities to happen, nature as it is closely connected with natural factors, a factor of production as it enforces the production processes, a consumption good as there is a value in consumption, situation as it involves location, property as it involves real estate and rights, capital as it is considered for investments. Weerakoon, (2016) have specified the perspectives such as being a “functional space, setting for activity system, a commodity and an aesthetic resource. As per the study done in Canada about indigenous and non- indigenous perspectives, land represent identities of people, act as the base for the survival of people, as a commodity and a mean of generating profit. Hence, social, economic and physical characteristics of land are identified by using different perspectives of land.

### **Functional Space Characteristics of Urban Land**

Urban land as a functional space, accommodates various uses to take place on it. This suggests that various socio- economic land functions such as institutional uses, commercial uses, residential uses, roadway, parking, and light industries (Rodrigue, 2015) are functioned on land to facilitate “living working and recreation” (Onwuanyi, et al., 2021). Qualitative characteristics or the attributes of the functional land generates characteristics for functional land use. In other words characteristics of functional space is identified from the structures which are on the relevant space (Kaiser, et al., 1995). Berke, Godschalk, Rodriguez, & Kaiser, (2006) has identified 24 such characteristics. Table 1 shows the 24 functional space characteristics of land.

Achieving functionality of all land is one of the major objectives of planning the land use (Onwuanyi, et al., 2021). So, addressing and exploring the characteristics of functional use is essential for effective land use planning.

**Table 1: Functional Space Characteristics of Land**

<b>Category</b>	<b>Characteristic</b>
<b>Parcel</b>	<b>Location</b> <b>Area</b> <b>Ownership</b> <b>Assessed value of land</b> <b>Zoning</b>
<b>Environment</b>	<b>Slope</b> <b>Soil type</b> <b>Land cover</b> <b>Wetland</b> <b>Flood plain</b> <b>Hazards</b>
<b>Structure</b>	<b>Building type</b> <b>Floor area</b> <b>Ground coverage</b> <b>Height</b> <b>Number of stories</b> <b>Condition</b> <b>Assessed value of improvements</b>
<b>Space use</b>	<b>Existing use: primary and secondary</b> <b>Intensity</b> <b>Number of units</b> <b>Number of residents</b> <b>Number of employees</b> <b>Planned future use</b>

*Source:* (Kaiser, et al., 1995)

## **Informal Economy and Cottage Industries**

Informal economy is recognized as the lifeblood (Chen, 2016) of many urban areas around the world. Informal economy promotes inclusiveness and spatial justice and ultimately contributes for poverty eradication. Ruzek, (2015) identifies informality as a catalyst for sustainability which comprises of “economy, society, environment, and equity”. Informal economy is characterised by small, irregular, undefined spaces of work, need of low level of expertism, low and irregular incomes, low or restricted access to markets, information, training, technology and finance services and lack of recognition and regulation by law and other formal settings (ILO, n.d.).

Most of the cottage industries fall into the category of informal economy. According to Pandey, (2013), both developing and developed countries need cottage industries for their development. Cottage industries do not have a locally recognized definition. Different definitions of other researches and institutions suggest that cottage industries have characteristics such as owner being the investor and the laborer, work being home- based and getting contribution of family members, full time or part time engagement, use of

small number of workers, usage of indigenous methods, no or low usage of technology, usage of local raw materials, trading inside the country, capability of establishing without legal permission (Hasan, Rehman, Nabi, Hamid, & Naeem, 2017; Rahman & Kumar, 2018).

As identified by International Institute for Environment and Development, (2016), “lost revenue, unfair competition, low productivity, human rights abuses and environmental degradation” are the negative results of informality which can be seen in cottage industries too. Although the informal economy has some negative impacts, proper monitoring, facilitation will make them “innovative, resilient, resource-efficient” (International Institute for Environment and Development, 2016) and ultimately more profitable than the formal economy.

### **Land Use in Informal Cottage Industries**

As the name suggests, most of the cottage industries are operated in residential premises. So, operational and functional capacity get limited when the nature of the cottage industry requires relatively large spaces. According to Anandi, (2010), Mahatma Gandhi of India has had a great philosophy about the usage of land. Mahatma Gandhi had believed that the land should not be owned by individuals and it should be substantially adequate for a person to manage, to subsist his livelihood and earnings, to retain environmental aspects and bio diversity. He has specifically referred to agricultural cottage industries in his statements. Yet, this could be applied for other cottage industries too. Accordingly, Land should be enough for the purpose when engaged in industries, or else, hurdles are created. Land related challenges in cottage industry are various. Land related regulations such as zoning and unavailability of adequate space for parking and distribution (Kokemuller, n.d.) generates challenges for cottage industries. Specially, inadequate space for parking and distribution of products create neighbour unrest. Cottage industry is a term which has been used since the dawn of time to refer to small scale household industries in rural areas. But currently, cottage industries have widespread in urban areas than in rural areas, creating environmental challenges too (Amaratunge, n.d.). Recognizing as industrial estates is a step taken to mitigate challenges in cottage industries (Joy & Kani, 2013). Through that, land use gets an adequate recognition. There are countries and regions which have imposed land use restrictions on cottage industries. According to the Development Code, (2022) of Yucaipa, California, cottage industries should not alter the nature of residential areas. Further, they limit the informality of cottage industries by necessitating the

mandatory “Home Occupation Permit”. Further, minimum land extent requirement is imposed. Correspondingly, capacity of functions of cottage industries are limited. Quantity of production and frequency of engagement in the industry get affected in that way. Although Sri Lanka, has no such restrictions, pressures created by macro and micro environment has affected production capacity and production frequencies.

### **Fish Drying Cottage Industry**

Fish drying is a way of adding value to fish. Value addition helps the better use of excess yield of fish (Datta, 2013) and the increase of profit generation capability (Binsi, et al., n.d.). Moreover, it helps to differentiate products to suit various markets and their needs and to trade underutilized or low demands with high profits (Venugopal, et al., 1995). Most of the studies done regarding the fish drying cottage industries have focused the entrepreneurial aspects of the industry. Basnayake, et al. (2018) and Rupasinghe, et al. (2011) are some such researches which have focused on the women in the industry. Elapatha & Silva, (2018) has concerned on the environmental aspects of the study. So, no study has been done to identify the role of land in the industry and its relationship with the engagement of the industry.

## **METHODOLOGY**

### **Population Size and the Sample**

The population of the study is the total number of manufacturers engage in the fish drying industry in 5 Grama Niladhari Divisions of Kudawella in the considered period. Number of manufacturers in the concerned period was found to be 381. The industry is dynamic, and the perfectly competitive nature of the industry allows free exit and entrance. Therefore, number of manufacturers engage in the industry are not static and may change over the time. So, to avoid the impacts of this dynamic nature, the whole population in the concerned period was used for the analysis. Also, the industry differs from place to place. Therefore, generalization of the results is recommended to be used only for the study area.

### **Variables of the Study**

The dependent variable of the study is nature of engagement of the manufacturer. Nature of engagement is of two types as frequent or infrequent. When a manufacturer engage in the industry frequently, he engages throughout the year despite external influences. Even if the industry is not

the main source of income of the family, the motivation of the manufacturer is to practice the manufacturing as a stable source of generating income. Therefore usually, these people get easy access to finding manufacturers and recognized by the government and other supportive institutions. Moreover, manufacturers who engage in the industry frequently, have more capital invested such as vehicals for transporting raw fish to the site, permanent structures built as smoking stalls, investments in land etc. But infrequent nature of the business limit manufacturers from investing and working capital is higher as expenses such as transportation fares, have to be born in each turn. Infrequent engagement limits manufacturers from getting fixed wholesale buyers. This is considered as the major disadvantage caused by being irregular. However, scarcity of labour, exhaustion caused due to the artisanal method of manufacturing, price fluctuations in markets, unavailability of raw materials, land use factors, and manufacturer's personal decisions are the major factors which make manufacturers to engage in the industry infrequently.

There are 24 functional space characteristics defined and identified by Kaiser, et al., (1995) which are under 4 main categories. The researchers identified some functional space characteristics which affect the functionality and operations of fish drying cottage industry. Interest over land or the ownership is mainly of two types in the village. They are freehold and leasehold. Manufaturers engage in the industry more often, when they have leasehold interests. Specially, if the main use of the land is the industry, the frequency and the scale increase. It could be observed that having larger extents of land allowing manufacturers to engage in the industry more often. Specially strcutures like smoking stalls or any other mean to smoke fish is needed in the rainy season. Not having such structures limts the frequency of engagement. Industry is more often practiced in premises where the major land use is the industry itself. But, if the prime purpose of the land is residential or commercial, those activities are put first. It could be observed that most of the cottages avoid engage in the industry on full moon poya days. According to observations, having formal means for onsite liquid waste disposal create less environmental issues. Neighbour unrest and legal interventions occur when improper disposal practices are followed. Manufacturers are urged to produce small quantities and the number of turns reduced when such unrest occurs. As mentioned, having a smoking stall has become a crucial factor in manufacturing. Those affect not only in rainy periods, but also when the bulks are large to be dried out in the sun. Having a separate resting affects overall worker satisfaction. Even the family

members who assist for the industry prefer to have a separate resting area as per the views of manufacturers. The major reason for that is the odour which remains in their hands and the body after the manufacturing process. Table 2 shows variables chosen for the study mainly based on observations, government reports and the views of the researchers.

**Table 2: Variables of the research study**

<b>Variable</b>	<b>Functional space characteristic category</b>
<b>Dependent Variable</b>	
<b>Nature of Engagement (Frequent, Infrequent)</b>	
<b>Independent Variables</b>	
<b>Interest over the land</b>	Parcel- Ownership
<b>Extent of property</b>	Parcel- area
<b>Prime use of land</b>	Space use- Existing use
<b>Onsite liquid waste disposal</b>	Space use
<b>Availability of a smoking stall</b>	Structure
<b>Availability of a separate resting place for workers</b>	Structure

So, the dependent variable (Nature of engagement- frequent/ infrequent) is affected by the functional space characteristics of land, nature of engagement (E), interest over land (I), extent of the land (P), major use of land (U), the mean of onsite liquid disposal (L), availability of a smoking stall (S), separate resting place for labourers (R). It is assumed that the dependent variables change due to changes in the independent variables while all other factors affecting the nature of engagement remains constant. This relationship between the dependent and independent variables can be shown as in the equation,

$$NE = X(E+I+P+U+L+S+R) \quad (1)$$

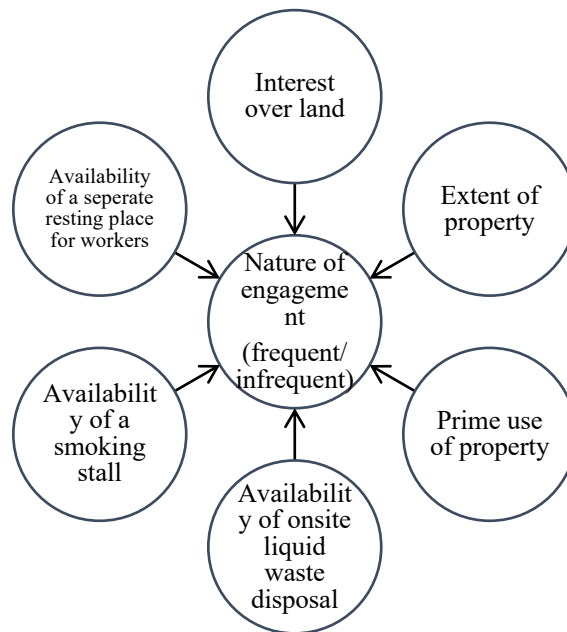
Hypothesis mentioned in table 3 are established to support the general objective of the research.

**Table 3: Hypothesis of the research study**

<i>Variable</i>	<i>Hypothesis</i>
<i>Interest over the land</i>	<p><i>H<sub>0</sub>: There is no significant relationship between type of interest over the land and nature of engagement in the industry</i></p> <p><i>H<sub>1</sub>: There is a significant relationship between type of interest over the land and nature of engagement in the industry</i></p>
<i>Extent of property</i>	<p><i>H<sub>0</sub>: There is no significant relationship between the extent of land and nature of engagement in the industry</i></p> <p><i>H<sub>2</sub>: There is a significant relationship between extent of land and nature of engagement in the industry</i></p>
<i>Prime use of land</i>	<p><i>H<sub>0</sub>: There is no significant relationship between prime use of land and nature of engagement in the industry</i></p> <p><i>H<sub>3</sub>: There is a significant relationship between prime use of land and nature of engagement in the industry</i></p>
<i>Onsite liquid waste disposal</i>	<p><i>H<sub>0</sub>: There is no significant relationship onsite liquid waste disposal and nature of engagement in the industry</i></p> <p><i>H<sub>4</sub>: There is a significant relationship between onsite liquid waste disposal and nature of engagement in the industry</i></p>
<i>Availability of a smoking stall</i>	<p><i>H<sub>0</sub>: There is no significant relationship between availability of a smoking stall and nature of engagement in the industry</i></p> <p><i>H<sub>5</sub>: There is a significant relationship between availability of a smoking stall and nature of engagement in the industry</i></p>
<i>Availability of a separate resting place for workers</i>	<p><i>H<sub>0</sub>: There is no significant relationship between availability of a separate resting place for workers and nature of engagement in the industry</i></p> <p><i>H<sub>6</sub>: There is a significant relationship between availability of a separate resting place for workers and nature of engagement in the industry</i></p>

Figure 1 shows the conceptual framework of the research. There, 6 functional space characteristics of land act as the independent variables while the nature of engagement; whether frequent or irregular, act as the dependent variable.

**Figure 1: Conceptual Model**



### **Data Collection**

Data was collected from interviewer guided structured questionnaire survey from the whole population of manufacturers existed in the period between August 2021 to November 2021.

### **Data Analysis**

Both quantitative method was used to analyze collected data. Secondary data collected in the literature survey helped to identify the functional space characteristics and the observations helped to eloborate how those characteristics impact the considered industry. Quantitative data collected through the questionnaire survey were descriptively analysed to have an understanding about the existing state of the industry. Logistic regression analysis in R Studio was used to identify the relationships between the dependant and independent variables.

## **RESULTS AND DISCUSSION**

### **Descriptive Data Analysis**

Data collected through the interviewer guided questionnaire survey was descriptively analysed to get an overview of the existing status of the industry and the manufacturers. 381 manufacturers took part in the survey. Those were the Maldive Fish and dried fish manufacturers of five Grama Niladhari

Divisions of Kudawella in the period between August 2021 to November 2021.

**Social Background:** Table 4 shows, the number of manufacturers by Grama Niladhari Division and their percentage distribution.

**Table 4: Number of manufacturers in Kudawella by GN Division (August 2021- November 2021)**

<i>Grama Niladhari Division</i>	<i>Number of manufacturers</i>	<i>Percentage</i>
<i>Kudawella-North</i>	75	19.78%
<i>Kudawella-Central</i>	68	17.84%
<i>Kudawella-East</i>	37	9.71%
<i>Kudawella-South</i>	109	28.60%
<i>Kudawella-West</i>	92	24.14%
<i>Total</i>	381	100%

*Source:* Primary Survey (2021)

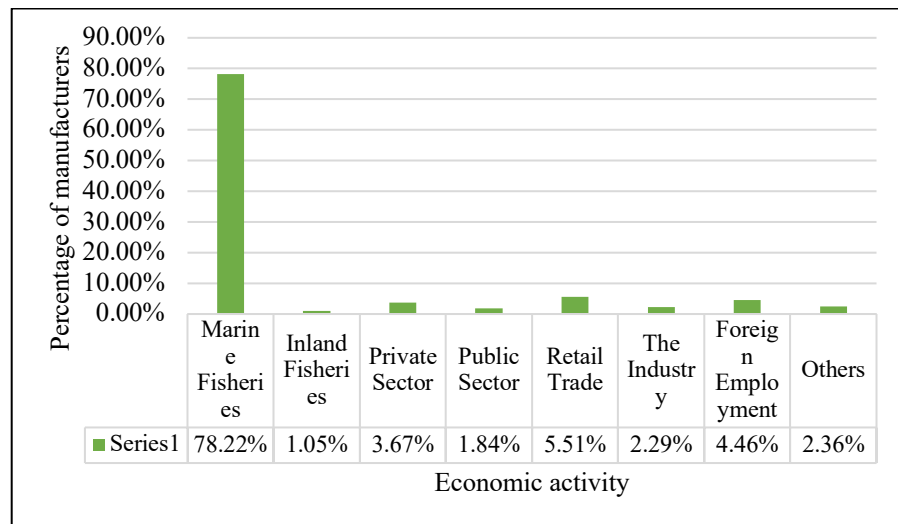
According to table 01, Kudawella harbour, which is the major location of purchase of raw materials has played a significant role in determining the industry locations. Accordingly, highest percentage manufacturing locations are in Kudawella South and Kudawella West. Only 9.71% of the total number of manufacturers are from Kudawella-East. According to the observations, Kudawella-East has the highest elevation of the village and, inaccessible roads than the other parts of the village. So, transportation has become difficult although the GND is located physically closer to the harbor.

It is observed that when the number of members is higher in a family, they tend to try additional income generation methods. Yet, having more family members also disturbs the functioning of cottage industries. According to the data collected, more than half of the manufactures have only 4 to 6 members in their families. So, family and family members are major concerns in cottage industries. Also, the majority of the cottages engaged in the industry are neutral families. It is 73.75% of the total population. According to observations families with old parents avoid engaging in the industry or use a relatively high number of outside laborers.

**Economic Background:** The major income source of the families engaged in the industry is marine fisheries. As shown in figure 2, it is 78.22% of the total number of cottages engaged in the industry. Families who are engaged in marine fisheries can purchase raw fish easily at a low cost. Most of the times, the stock received as the fisherman's share of the catch is utilized for

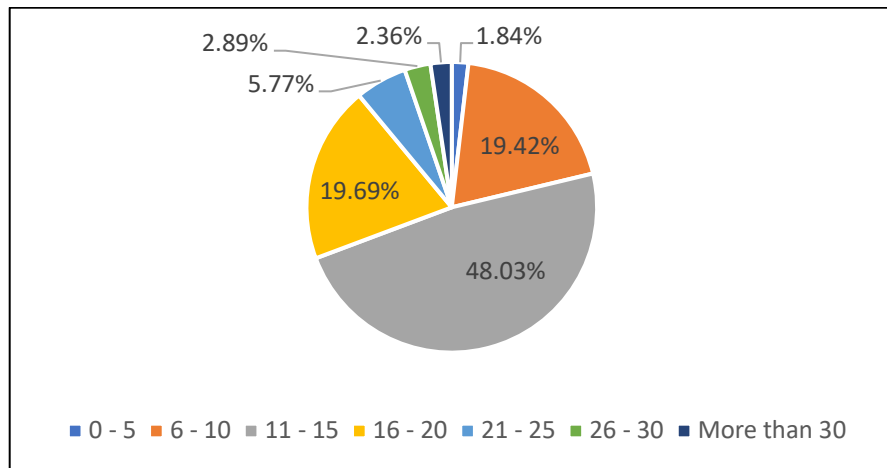
the industry. As well, most of the multiday-craft owners use the catch for the industry, if it seems that they cannot get a good wholesale price at the auction. “Others” in the categorization include animal husbandry, hospitality-related activities, and secondary agriculture. Also, it is noticeable that the major income source of 2.29% of families is the industry. It is 11 families in number.

**Figure 2: Major income source of the cottages, engaged in the industry**



**Industry Background:** Figure 3 demonstrates the extent of the lands used for the industry. According to figure 3, nearly half of the land (48.03%) which is used for the industry is in the range between 11p to 15p. Although the land required to engage in this industry is higher than the land requirement for residential use, people are used to utilize roofs of their houses, the beach, adjacent roads and unoccupied lands of others to engage in the industry.

**Figure 3: Extent of properties that are used for the industry**



There are two types of interests as freehold and leasehold as per the results of the questionnaire survey. Only 1% of property under leasehold ownership is used for the industry, which is 4 in number. According to observations, most of the lessors are reluctant to lease out their land for the industry as excavations and refilling is needed at the end of the period. Also, manufacturers who do not engage in the industry frequently, do not consider leases as the revenue generation in the industry is uncertain most of the time.

Table 5 is about the major purpose of the property used for the industry.

**Table 5: The major purpose of the property used for the industry**

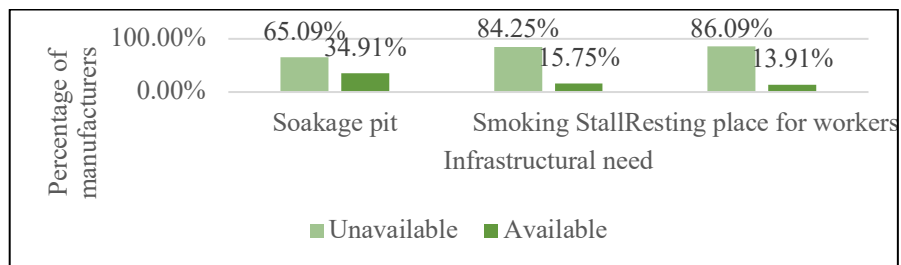
<i>Purpose</i>	<i>Number of Properties</i>	<i>Percentage</i>
<i>Residential</i>	368	96.59%
<i>Retail Trade</i>	4	10.05%
<i>The industry</i>	7	1.84%
<i>Others</i>	2	0.52%
<i>Total</i>	381	100%

As per the data given in table 6, the majority of property used for the industry (96.59%) are used primarily for residential purposes. These statistics can be justified by considering the industry's prevalence as a cottage industry. However, seven properties are used majorly for the industry. The "others" category consists of the manufacturing of nets and secondary agricultural activities.

Frequency of engaging in the industry varies depending on factors such as the quantity and quality of raw fish purchased, weather conditions, characteristics of land and land use, labor involvement, technology involvement, market conditions, and personal matters of the manufacturers. However, multiple turns in small quantities avoid the manufacturers from making internal economies of scale. Only 10.5% of the manufacturers are engaged in the industry frequently, despite factors such as price deviations, weather conditions, etc. The remaining 89.5% has irregular nature of engaging in the industry.

Figure 4 shows the availability of infrastructure facilities in the industry. Infrastructure facilities include the availability of a soakage pit, smoking stall, and resting place for workers.

**Figure 4: Availability of infrastructural facilities**



According to figure 4, more than half of the manufacturers (65.09%) do not have an onsite soakage pit to dispose of liquid waste. So, they either dump them on-site, dump them at the harbor jetty, or dump them at any other place like the lagoon or a swamp area. So, unavailability causes environmental issues.

Smoking stalls are essential in the rainy season. Yet only 15.75% of the manufacturers have smoking stalls. Cost of construction, unavailability of enough space, high cost of firewood and coconut husks are the factors that demotivate manufacturers from constructing smoking stalls.

When separate resting places for laborers are considered, the majority of cottages do not have such places. It is 86.09% of the total population. Insufficiency of space at the property is presented as the reason by many manufacturers.

### Binary Logistic Regression Analysis

Binary logistic regression is used here to analysis the probability of the engagement in the industry being frequent or irregular. Here, “frequent” and “infrequent” are the binary outcomes of the dependent variable, “nature of

engagement in the industry”. The logistic curve of probability of changing nature of engagement can be depicted by the logistics function,

$$f(z) = \frac{1}{1 + e^{-z}}$$

The logistic regression is expressed as,

$$P(Y = 1|X_1, X_2, \dots, X_k) = \frac{1}{1 + e^{-(a + \sum_{i=1}^k \beta_i X_i)}}$$

in which,  $P(Y = 1|X_1, X_2, \dots, X_k)$  is the probability of the dependent variable, when  $Y=1$ . Where,  $X_1, X_2, \dots, X_k$  are the independent variables which affect the nature of engagement in the industry.  $\beta_1$  is the coefficient of the variable  $X_1$  and these coefficients can be interpreted by rewriting the model in probability ratios which cause the change in nature of engagement. As the change in the dependent variable is caused by the change in 6 independent variables, summary statistics of the 6 independent variables used are shown in Table 6.

**Table 6: Summary statistics of variables**

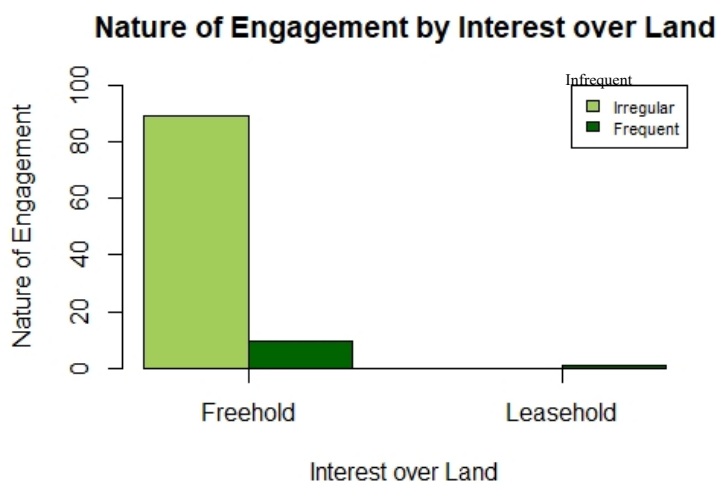
	<i>Nature of Engagement</i>	<i>Interest over the land</i>	<i>Extent of the land</i>	<i>Major use of the land</i>	<i>Onsite liquid waste disposal</i>	<i>Smoking stall</i>	<i>Separate resting place for laborers</i>
<i>Minimum</i>	0.000	0.0000	1.000	1.000	0.0000	0.0000	0.0000
<i>1<sup>st</sup> Quartile</i>	0.000	0.0000	3.000	1.000	0.0000	0.0000	0.0000
<i>Median</i>	0.000	0.0000	3.000	1.000	0.0000	0.0000	0.0000
<i>Mean</i>	0.105	0.0105	3.265	1.063	0.3491	0.1575	0.1391
<i>3<sup>rd</sup> Quartile</i>	0.000	0.0000	4.000	1.000	1.0000	0.0000	0.0000
<i>Maximum</i>	1.000	1.0000	7.000	4.000	1.0000	1.0000	1.0000

“Frequent” category in the variable is given “1” as the outcome of the analysis will be discussing the probability of being frequent in relation to being irregular. So, being irregular is given a value of “0”. Interest over land is of two types as freehold (0) and leasehold (1). Minimum and maximum values depicted in the summary statistics show that both values are included in data. Extent of the land is categorized into 7 categories with five perch intervals. All the categories from 1-7 include data. Residential, retail, industry and other land use categories are given values from 1 to 4 for the statistical analysis purpose. Availability (0) and unavailability (1) are the categories of the variable, availability of a mean of onsite liquid disposal. In the same way, availability of a smoking stall (0), unavailability of a smoking stall (1), availability of a separate resting place for workers (0), and unavailability of a separate smoking stall for labors (1) are the categories of the variables, availability of a smoking stall and a separate resting place for workers.

A surface analysis of regression was done by generating bar plots for each variable.

**Nature of Engagement by Interest Over the Land:** Infrequent nature of the engagement has been more visible in lands which are held under freehold interest. But industry engagement is more frequent in property held under leasehold interest. Accordingly, nature of engagement differs depending on the interest over land. Figure 5 graphically shows how the nature of engagement changes depending on the interest over land.

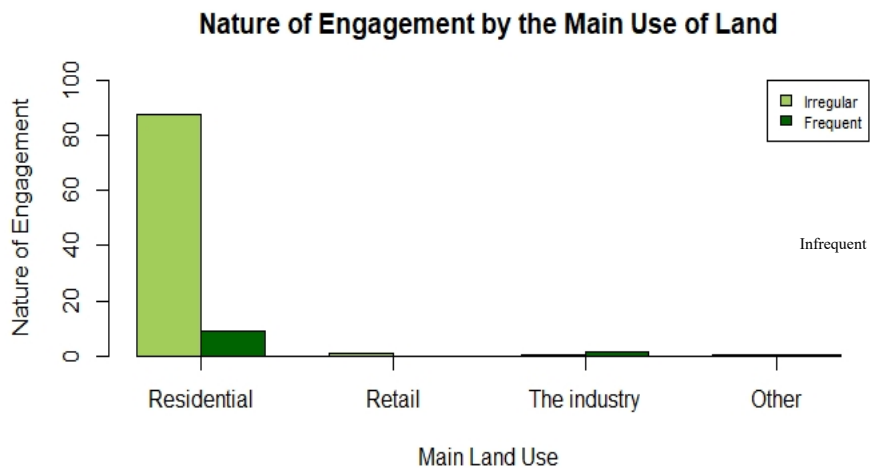
**Figure 5: Nature of engagement by interest over land**



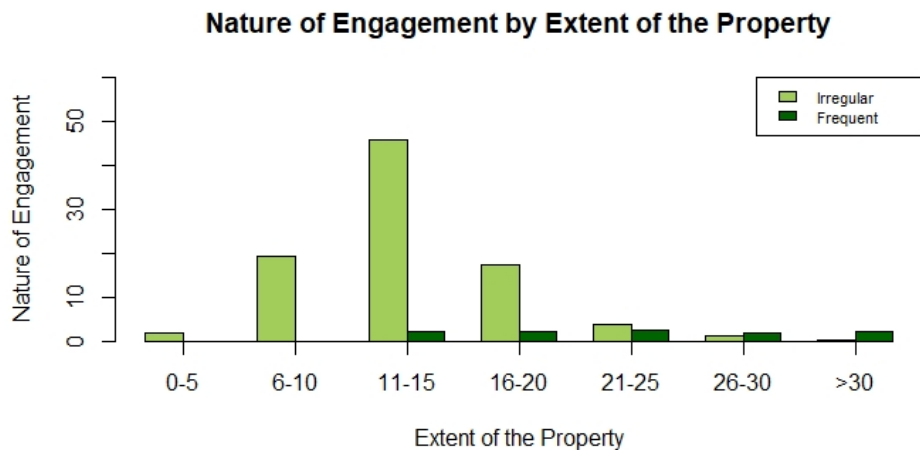
**Nature of Engagement by Extent of the Property:** According to figure 6, the industry shows an irregular nature in sites which has extents less than 25 perches. But, from 26 perches onwards the industry has been more frequent. Just as the observations of the field visit depicted, more space in manufacturing sites allow the manufacturers to engage in the industry more frequently than in manufacturing sites with less space.

**Nature of Engagement by the Major Use for Which the Land is Put:** Four major categories of land use are identified. According to figure 7, residential land use has affected the industry to be more infrequent while the retail or the commercial use has done the same. This clearly shows the contradiction between different land uses. As per the observations, the environmental concerns of the industry limits operations in residential and commercial premises. Industry engagement is more frequent when the major land use of the manufacturing site is engaging in the industry. Accordingly, nature of engagement significantly changes when the main use of land changes.

**Figure 6: Nature of engagement by extent of the property**



**Figure 7: Nature of engagement by the main use of land**



**Nature of Engagement by Availability of Formal Onsite Waste Disposal Methods:** Availability of onsite waste disposal has not significantly affected the determination of nature of engagement in the industry. This indicates that the variable has not been concerned enough by the manufacturers even though the environmental and regulatory concerns are there.

**Nature of Engagement by Availability of a Smoking Stall:** According to the observations, availability of a smoking stall was a critical factor which determines the engagement specially in rainy season. But the compulsory nature of prevalence has made it insignificant to determine the nature of engagement. In other words, availability of a smoking stall is not a factor which determines the frequency or the motive, but the quantity.

**Nature of Engagement by Availability of a Separate Resting Place for Laborers:** Availability of separate resting place for labourers have not shown a significant variation with the availability of a separate resting place for labourers. This shows that the owners' motive of engagement has been prominent rather than the workers' motive.

Accordingly, infrastructure availability has not been a significant factor which affects the determination of nature of engagement.

**Logistic Regression Model:** Although the apparent graphical illustrations are such, the variables can be used again to build the generalized linear model. According to table 7, only extent of the property and availability of a smoking stall have significant impact on the dependent variable. It is identified that variables with the p values less than the 0.05 significance level, have significant relationship with the dependent variable. The rule of thumb

here is that the null hypothesis is rejected if the probability value is less than the significant value (Reject  $H_0$  if  $P \text{ value} < \alpha$ ) and the null hypothesis is failed to be rejected if the probability value is greater than or equal to the significant value (Fail to reject  $H_0$  if  $P \text{ value} \geq \alpha$ ).

**Table 7: Logistic regression analysis of variables**

	<i>Estimate</i>	<i>Standard error</i>	<i>Z value</i>	<i>Pr(&gt; z )</i>
<i>Interest over the land</i>	-21.9795	1191.4074	-0.018	0.985
<i>Extent of the property</i>	-1.3977	0.2432	-5.748	0.00000000902954
<i>Major use for which the land is put</i>	0.4737	0.5881	0.805	0.421
<i>Availability of formal onsite waste disposal methods</i>	-0.7257	0.6143	-1.181	0.237
<i>Availability of a smoking stall</i>	-2.2946	0.5477	-4.189	0.00002796959948
<i>Availability of a separate resting place for labourers</i>	0.4323	0.6316	0.684	0.494

As a result, hypothesis

H<sub>2</sub>: There is a significant relationship between extent of land and nature of engagement in the industry

H<sub>5</sub>: There is a significant relationship between availability of a smoking stall and nature of engagement in the industry can be accepted while the hypothesis

H<sub>1</sub>: There is a significant relationship between type of interest over the land and nature of engagement in the industry

H<sub>3</sub>: There is a significant relationship between prime use of land and nature of engagement in the industry

H<sub>4</sub>: There is a significant relationship between onsite liquid waste disposal and nature of engagement in the industry

H<sub>6</sub>: There is a significant relationship between availability of a separate resting place for workers and nature of engagement in the industry are rejected.

These variables can be analyzed further by considering the categories in each variable as indicated in table 8.

**Table 8: Logistic regression analysis of factors of variables**

	<i>Estimate</i>	<i>Standard Error</i>	<i>Z value</i>	<i>Pr(&gt; z )</i>
<i>factor(Interest)1</i>	-25.0770	5329.6935	-0.005	0.996
<i>factor(Extent)2</i>	0.5396	4139.0022	0.000	1.000
<i>factor(Extent)3</i>	-14.6058	3957.8194	-0.004	0.997
<i>factor(Extent)4</i>	-15.9739	3957.8194	-0.004	0.997
<i>factor(Extent)5</i>	-17.8436	3957.8194	-0.005	0.996
<i>factor(Extent)6</i>	-18.2441	3957.8194	-0.005	0.996
<i>factor(Extent)7</i>	-20.1545	3957.8195	-0.005	0.996
<i>factor(Purpose)2</i>	13.0934	4551.2851	0.003	0.998
<i>factor(Purpose)3</i>	1.0306	1.6849	0.612	0.541
<i>factor(Purpose)4</i>	1.3520	2.3873	0.566	0.571
<i>factor(Liquid)1</i>	-0.7941	0.6296	-1.261	0.207
<i>factor(Smoking)1</i>	-2.2849	0.5558	-4.111	0.0000393
<i>factor(Resting)1</i>	0.4326	0.6364	0.680	0.497

Table consists of categorical variables adjusted for factor analysis. So, one level is omitted from each variable. According to the table, only one factor has a significance relationship with the dependent variable. That is, availability of a smoking stall and the p value for the variable is 0.0000393. The intercept of the alpha level of the variable is -2.2849. The odds ratio which defines the odds of the outcome that will occur at the presence of the exposure compared to the outcome that will occur at the absence of the exposure, is used to find the probability. So, the probability of availability of a smoking stall to affect the frequent nature of the engagement is 178% higher relative to the impact of unavailability of a smoking stall on the frequent nature of engagement.

**Assessing the Model Fitness:** MCFadden R<sup>2</sup> takes a value of 0.5459744,

which is 54.6% as a percentage. This R value indicates the fitness of the model to data. Usually, a higher value is expected as the R value. However, 54.6% of MCFadden  $R^2$  indicates that 54.6% of the variance of the dependent variable, nature of engagement is explained by the independent variables.

**Variable Importance:** According to the variable importance measured using the “caret” package of the R Studio as mentioned in table 9, extent is the variable with the highest importance. Availability of a smoking stall and availability of an onsite liquid waste disposal method are the next important variables. Here, a model-based approach is followed to find the variable importance ensuring the compliance with the model performance. Variable importance recognizes the variables with highest contribution for the model to make accurate predictions. Accordingly, the model uses the variable, extent of the property to make most accurate predictions. Therefore, it can be recognized that the extent of land has been a significant factor for the model in determining the nature of engagement.

**Table 9: Variable importance**

Variable	Overall Importance
Interest over the land	0.01844834
Extent of the property	5.74801836
Major use for which the land is put	0.80545130
Availability of formal onsite waste disposal methods	1.18143345
Availability of a smoking stall	4.18939757
Availability of a separate resting place for labourers	0.68446367

## CONCLUSION

The main focus of the research was to find the relationship between the functional space characteristics of land and the nature of engagement in the industry. In other words, it was intended to identify whether the variations in functional space characteristics of land significantly affect the determination of nature of engagement in the industry. As informal cottage industries are home based, special attention towards land should be paid to manage the industry well and land should be effectively sufficient for engaging in the industry (Akhter, et al., 1997). Six categorical variables were chosen in the study. They are interest over the land, extent of the property, major use for which the land is put, availability of a smoking stall and availability of a

separate resting place for laborers. These variables are related to the major categories of functional space characteristics of land: parcel, space use, structure.

Data were collected from 381 manufacturers in the five Grama Niladhari divisions of Kudawella, by using an interviewer guided structured questionnaire. Descriptive analysis of the collected data showed that majority of manufacturing sites are located in the Kudawella- South Grama Niladhari Division which is the nearest to the harbour. Observations showed that transportation is matter which is paid much attention as the raw materials are of heavy weights and in a nature of getting rotted easily. Majority of manufacturers have 4- 6 families and most of the families are neutral. Observations revealed that space occupation of higher number of family members interrupt manufacturing processes. At the same time, contribution of family members is heavily taken for industry operations. Majority of land used for the industry are between 11p – 15p. Also, the type of interest over the property is freehold in majority of lands. Residential use of land is prominent in these industry locations. Descriptive analysis showed that the industry is irregularly practiced in most of the sites. Unavailability of infrastructure such as soakage pits, smoking stalls and separate resting place for workers could widely be seen.

Graphical evaluation of binary logistic regression analysis showed that there is a significant relationship between the nature of engagement in the industry (frequent/ infrequent) with the interest over the land, extent of the property and major use for which the land is put. However, only extent of the property and availability of a smoking stall were proven to be having a relationship with or an impact on the nature of engagement, according to the binary regression model. According to the importance of the variables, extent of land is proven to be the factor which affects the model more significantly in determining the nature of engagement. The model is fitted with a MCFadden  $R^2$  value of 0.5459744, which is 54.6%. This means that 54.6% of the variance of the dependent variable, nature of engagement is explained by the independent variables.

Accordingly, land and land use aspects become important even for informal cottage industries. Specially, fish drying cottage industry uses much space for cleaning up raw materials, drying up, waste disposal and for the usage of the workers. So, land should be managed well to engage in the industry more frequent. Frequent engagement in the industry generates more opportunities for financial support, technology and technical support acquisition, to find market etc. So, the manufacturers should be informed about the effective

management of land specially focusing on getting the maximum utilization of available land and improving infrastructure such as smoking stall. Authoritative or regulatory institutions should also plan to derive the real economic potential of the industry by using strategies such as allocating more land for industry by considering the sustainability aspects. In addition, land and land use are not the only factors which affect the nature of engagement. Analyzing all these socio, economic and environmental variables by using one model will generate more benefits to the industry and the manufacturers.

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# Causes of Traffic Congestion in a Sub urban Town Centre, Reference to Ragama Town

K.A.N. Dias<sup>1\*</sup>, N.C. Wickramaarachchi<sup>2</sup>

<sup>1\*</sup>University of Sri Jayewardenepura, Sri Lanka, ayeshadidas9727@gmail.com

<sup>2</sup>University of Sri Jayewardenepura, Sri Lanka, nishani@sjp.ac.lk

## **Abstract**

*The heavy concentration of inter-related activities automatically promotes the development of transport networks in an area. However, a common issue noted in every city centre is the undesirable traffic congestion. It has become one of the lasting problems, bothering several countries and affecting the day-to-day life of individuals, society, and the economy. Studies conducted on factors affecting traffic congestion do not cover the suburban centres. Thus, this study entails analyzing the significant level of the causes of traffic congestion in the suburban area of Ragama Town in Sri Lanka. The study selected four major influential aspects: - physical, technical, social, and legal. The population of the study was the experts who were expertise in the case study area. In the data collection process, in-depth interviews were conducted with five selected expert experts who are working in related planning-related organizations and positions. Data analysis has been done using qualitative research methodology using the results gained from in-depth interviews, under a content analysis. Since the analysis of the study has been carried out under qualitative study, the general rule is to get the participation of the respondents as limited number of respondents. Therefore, study has taken five respondents for the interview sessions. The identified factors include population and the pedestrians' behaviour illegal encroachments, the absence of the main bus stand, road network system, traffic control system, pedestrian crossings, railway crossing, lack of proper parking areas, issues with road maintenance, rules, and regulations under the four main aspects. Findings reveal that physical and technical issues are the most significant cause on traffic congestion in this area according to the results gained from qualitative research methodology. Secondly, the social issues have been revealed as significant issues regarding the existing traffic congestion in the case study area. It is suggested to bring more solutions on physical and technical issues to mitigate the traffic congestion in Ragama town. The purpose of the study was to recognize mostly influential factor for the existing traffic congestion in proposing probable solutions to reduce the congestion within Ragama town. This paper contributes to existing knowledge by analyzing the causes of traffic congestion in the suburban area of Ragama town centre.*

**Keywords:** causes, congestion, physical and technical issues, suburban area, Traffic congestion

## INTRODUCTION

Urbanization is the process of increment of the sum of people who live in urban zones. Urban areas are the areas which are surrounded by cities. Therefore, traffic congestion is apparent in most of the urbanized cities in Sri Lanka and the world. Traffic congestion rises with the enhancement of the transportation. Parallely, many numbers of people are gathered in the cities. This potential congestion problem must be identified with the concern of how to take action to minimize the congestion throughout the cities. Thus, congestion is resulted from many reasonable factors due to improper road settings, various roadway features, improper roadway disciplines, inaccurate bus-stop settings, illegal encroachments, various types of traffic, on-street parking circumstances. When it comes to the case study area of this research, causes of traffic congestion were identified from the researcher's observations. Under the Social Aspect - higher population and commuters, a higher number of private vehicles, population concentration, unauthorized parking areas, spaces for pedestrian movements, fruits vegetable vendors beside roads and additional counters outside the shops and vehicles were identified. Meantime, under the Physical and Technical Aspects- the traffic jam around multiple bus stands, availability of several bus stands in the absence of the main bus stand, parking of buses beside road the capacity of the roads, absence of a traffic light system, improper planning of road network system, availability of the pedestrian crossings, the accuracy of the railway crossing, traffic jam around pedestrian crossings, availability of the parking areas, on-street parking and parking of buses beside the flyover and hospital junction were identified. And also, under the Legal Aspect traffic management rules and regulations and the availability of symbolized road signals were identified as causes for the existing traffic congestion.

The congestion can be produced by barriers or unproductive usage of the roadways. Therefore, congestion should be eradicated as soon as practicable. There are several explanations for the continued reluctance of the world at large to accept the economists' solutions to the concept of Traffic Congestion. Nowadays, proposed and practiced solutions for traffic congestion issues can be observed which are used to minimize the impacts of Traffic Congestion. In the global context, several actions have taken place to eradicate the impact of traffic congestion in different forms. Some are governed by government policies and also the people are aware of them. Adding to that the infrastructure facilities are built up efficiently to minimize traffic congestion throughout the cities. When considering the Sri Lankan context, several policies have been introduced to make the transportation system and the

urban planning of the country a successful one. Ragama is one of the urban areas in the Gampaha District of Sri Lanka. This research carries out a study on the existing traffic congestion in the Ragama town area. And Ragama exists as a suburb of Colombo whereas initially, researcher observed that the city limits of Ragama have affected by Traffic Congestion since many commuters pass by the city limits of Ragama town when heading towards Colombo, Kadawatha, Gampaha, Negombo and Kandy – Colombo Road via Ragama town. Ragama town owns a major railway station which connects major railway lines to each other. Many railway passengers are moving within Ragama town towards the Ragama Railway station. A crucial intersection where two lines of railway network converge, Ragama, was chosen to be one of the trial stations to examine how better connectivity affects the use of public transportation. Ragama has two distinct bus terminals close to the train station, one across the tracks and the other directly adjacent to the station. And Ragama town is having two main road entrances such are Negombo-Colombo main road and Kandy-Colombo main road. Those two entrances are opened from Mahabage and Kadawatha towns. So that, the number of people who are moving within Ragama town during the peak hours gets a high value. This fact is observed from the researcher's view and due to the traffic congestion, which exists in Ragama town also affect these people during the peak hours. Therefore, the case study area has been selected as the Ragama town which is highly affected by the congestion specially during the peak hours. However, it is noted that the regional connectivity of Ragama town is much complex, and it exists as a mediating town which provides commuters compatible routes in connecting regions and routes in heading towards several regions. Therefore, it is essential to undertake study on the current causes of traffic congestion in Ragama Town Center in order to determine the key factors contributing to the current traffic congestion in Ragama town. Though there were certain studies done regarding urban areas in Sri Lanka, there is no study which has been done on the Ragama town to identify the main causes of the existing traffic congestion and to analyze those main causes existing around the city. Therefore, a survey has been carried out to find out the main causes for the existing traffic congestion and a comprehensive analysis has been conducted. As a result, certain recommendations were assessed to eradicate the existing traffic congestion in Ragama town. Analysis has been conducted specifically to identify the main cause for the existing traffic congestion throughout the case study area to control it for a well-planned city. The activities in an urban area are disseminated towards various paths. But traffic congestion is a complicated urban issue which has to be very well-identified and eradicated

with practicable solutions.

## **LITERATURE REVIEW**

### **Traffic Congestion**

Traffic Congestion stands as one of the problems which are highly bothering urban groups in developing cities and have several effects on urban developments and economies. Traffic congestion is the extreme demand for transportation over its supply. Traffic management has to be very well analysed and managed current traffic circumstances in allowing all the road users to make their transportations systematically. Therefore, many scholars have studied the theory of traffic congestion and have found that the main cause of the traffic congestion is the Traffic Congestion Nowadays congestion has widely distributed all over the world geographically. And also, this issue has become more complex and difficult to solve because of that the problems are increasing with the sizes of the villages, cities and towns. Traffic congestion is a common spectacle all over the world. Nowadays the situation has become critical stage. In most the countries it has become the most disturbing issue within the country.

### **Suburban Area**

Suburban areas can be defined as lower-density areas that may be easily, speedily, and inexpensively reached from the city's core (Douglass, 1925). Residential and commercial zones are separated by suburban areas, which are lower density regions. They either exist as a distinct residential neighborhood within commutable distance towards a city or as a component of an urban region. And suburban areas are containing the densely populated land area surrounding but close to a major metropolis, that part of an urban region outside the city (Farley, 1964). The socioeconomic composition of urban areas is apparently affected by the current pattern of suburban development. Ragama exists as a suburb of Colombo and it consists of suburban characteristics such as poor street connectivity, absence of activity centres, separated workplaces, homes and shops, lower development density, increase in commuting, high residential atmosphere than commercial atmosphere, and majority of single-family homes.

### **Impact of Traffic Congestion**

Traffic congestion stands as a condition in which roads are with vehicle queuing, and longer trip times, and when there is a higher traffic demand interaction between the automobiles lowers the speediness of the traffic flow.

Traffic congestion is a universal phenomenon in the global context (Shakil et al., 2016). Some have identified traffic congestion as a physical approach and there the congestion was applied to the urban and suburban problems where comparatively some rural problems associated with traffic flowing (Reynolds, 1963). Traffic congestion directly makes social costs and time waste, and other negative externalities including pollution, and accidents as well. In mitigating congestion different approaches have been incorporated by previous scholars on expanding road infrastructure, investing in new lanes, new accesses, and roads. Then improving alternative transportation methods also suggested. (Albalade, 2019) The general view of traffic congestion in those days was simple. Because earlier there were minimum number of vehicles and mostly the vehicles were owned by few. At the same time the lifestyles of human beings were not complicated as today and the concentration of agglomerated activities within urban and suburban areas were low. However, at present, the with the increasing population and concentration of agglomerated activities, traffic congestion within urban and suburban areas and the impact of traffic congestion has become a serious matter which bothers various parties in the society. Because day by day the urban population increases. Urban and suburban areas are mostly congested due to many reasons as there are many theoretical issues distributed all over the world. In Sri Lanka, there are some projects which have been introduced to mitigate traffic congestion. But some of those projects had failed and some projects were successful up to some extent. In the global context, there are modern solutions which have been introduced. With that, the population concentration in the cities increasing speedily. Sri Lanka and other countries have taken certain steps in reducing the effect of traffic congestion from their territorials. Traffic congestion can be defined as the delay imposed on each vehicle by the presence of the other vehicles.

The simple theory of traffic congestion is normally expressed in terms of hourly flows and speeds. By considering the proportion of vehicles it can be concluded whether there is public or a private dominated traffic congestion. Daily, hourly, weekly, yearly or season-wise the traffic congestion differs. Among the fast-developing countries it is a common factor that higher population density and vehicle population can be identified. Morning peak hours and evening peak hours are leading in consuming more time and resulting in more road accidents. (G.B.Ramesh Kumar, 2018) Urbanization possesses role of accelerating the traffic flow in the recent years. With the continuous growth of vehicles, energy consumption has speedily increased and aggravated environmental pollution with traffic accidents have become worldwide problems. Unbalance transportation always paves the way to

traffic congestion and the balance between the transportation supply and the demand in various countries are showed that traffic congestion is not solved permanently. However, the experts are in hoping to find more and more solutions on mitigating the traffic congestion issue. They are in the process of proposing so many demand-managing ways towards traffic congestion charging and implementing effective and efficient measures within countries (Ye, 2012).

### **Identification of the Gap**

There is no research conducted on the existing Traffic Congestion within Ragama town limits. The researcher has observed that the number of people who are moving within Ragama town during the peak hours gets a high value, and this fact is observed in relating to the Traffic Congestion, which exists in Ragama town. And also, this affects these people who are moving through the case study area during the peak hours. It is estimated that in 2035, the peak hour transfer passengers for Ragama station are 1650 per hour (Hirohisa et al., 2015). Traffic congestion has become a factor which is to be overcome so other countries have offered some incentives for their regions to minimize the local pollution and their congestion mitigation strategies have also drawn in a wider range to make the cities away from congestion. At the present, a large number of people gather in the selected area during peak hours. They are gathering from different interchange cities as the Ragama railway station is one of the major connecting railway stations. And also, the people who are moving via the roadways, consisting of the vehicle owners of the vehicles, passengers of buses, rail and way passengers who are moving via Ragama town can receive a benefit of a less congested city after practicing certain strategies to mitigate the existing Traffic Congestion in the Ragama town. The researcher carries out this research study to identify and analyze the main causes of the present Traffic Congestion in the case study area by considering the perspectives of both professionals and commuters as well as the researcher's observations (Lomendra et al., 2018). Management of the travel demand, land usage management, and non-automotive travel modes are various management protocols which can be followed. Recommendation of substitute means for travelling the crowding hours might decrease the volume-to-capacity within congested regions (Yodo et al., 2020).

### **The Causes and Consequences of Traffic Congestion**

The impact of bus stops is having a great effect negatively on the traffic flow. Bus stops are often making more interruptions in the traffic flow and the

parking of buses beside roads directly lead to enhance the traffic jams. The traffic interruptions are always depending on the density of buses and the rate of arrivals of the passengers and other leading factors (Tang et al., 2009). The causes which lead for traffic congestion are more complex in the practical scenario. Poor designing of the road network systems, lack of monitoring the law and regulations, unpredictable and numerous traffic influencing programs, several number of working zones, low coordination and connection between the transportation planning experts and the land users and institutes of the governments, and alternatives which have been introduced to the private cars, random stopping of vehicles, random crossing of pedestrian crossings, random crossings at intersections, road capacity minimization due to on-street parking, double parking, large number of U turns, driving behavior of drivers, poorly designed infrastructure, poor conditions of the pavements, lack of the enforcement of traffic laws, vehicle breakdowns, security checking, accidents have been identified as causes of traffic congestion. Adding to that another set of operational causes for the traffic congestion were mentioned in the study of Cairo Traffic congestion study as lack of modern technological traffic control systems, illegal stops and the transits by other vehicles, inflexible working hours, speed bumps, bad road surface quality, limited parking facilities and capacities, poor monitoring of the law enforcement, physical bottlenecks and lack of lane disciplines (Worldbank, 2013). Rapid urbanization can be identified when there are higher number of vehicles on the roads. This of course lead to have a traffic congestion and this is evident in every city in India. Therefore, the economic development and the urbanization also resulting enhancement of the vehicles on the roadways. This ultimately increases the traffic volume. And also there are some unforeseen factors which are leading as circumstances such as incidents, road works, accidents, rapid the existence of the bottlenecks turn which cause to generate more traffic congestions (Vencataya et al., 2018).

## **Global Context**

In the global context both urban and rural areas are affected by the congestion and in most instances, they apply congestion into an urban problem. The congestion has been also defined as a modeling of road congestion with referencing towards peak-load demanding. There a structural model was accelerated, and they have found that traffic in morning rush is affected by the congestion, and it only occurs at bottleneck at a fixed capacity on arrivals of the entry locations towards central business district. They measured the

congestion by the time intervals and number of drivers who joined for the ques through the bottle necks. (Arnott et al., 1993) The influence of poor road disciplines always leads to make overcrowded areas. Drivers are not following traffic signals at the intersections. Substitute traffic ways joined with destructive economies are observed that various vehicles are throughout main cities. Traffic congestion is always resulting negative impacts for the whole country. Those main cities are always having mass transits, nonpublic vehicles and forcing folks. An improper road management is a dynamic truth when it comes to the traffic management. As most town roads and lanes are undivided, many vehicles tend to overtake at single undivided lanes. When vehicles are stopped in the traffic, an outsized amount of dangerous carbon emissions can be occurred. These harmful emissions may be very dangerous living beings' lungs and also in making localized issues such as magnified metabolism because of the poorness in air quality and smogginess. The world health organization said that pollution may be answerable only for 3.2 million avoidable deaths once a year all over the globe. In 2012, it is expressed by the National Emissions Inventory, that 71% of the population among the country comes by vehicles at the roads. Therefore, within all capital areas 85% are coming to roads by vehicles. So that the impacts which are occurring under economic aspect are the rising of fuel consumption and that ultimately leads to raise the prices of transportation, delays in commissions delivering and wastage of functioning time. Some health issues which can be caused due to the exposure in polluted air are tiredness, headaches, mental stress (Agyapong et al., 2018).

### **Sri Lankan Context**

In Sri Lanka, the Western province exists with an area of 3,694 square kilometres including the Colombo city. The traffic congestion in Sri Lanka is getting critical year by year. The congestion mainly arises because of vehicle transportation. In the same period, there is a large population who are moving within roads. Another study was carried out with conclusions that congestion negatively impacts the community and the country. It is highlighted that on-street parking, roads with low capacities, fewer occupancy vehicles and bus lanes, lack of pedestrian-only streets, and high demand for transportation are increasing the tendency the Traffic Congestion. The charge of the congestion within the Western Province of Sri Lanka was greater than Rs: 20, 000 million per year and that is around 2 percent of reginal GDP. (Kumarage, 2004) In Sri Lanka, the population is predictable to be increased from the present 20.8 million up to 23 - 25 million

by 2030. And from that amount half of people will be existing in towns. (Hirohisa et al., 2015)

The center of the economic activities in Sri Lanka is Colombo. In the present situation, 6.9 million trips are prepared each and every day. It is predicted that by 2035, it will be increased up to 12.2 million trips. As mentioned in the TransPlan Model, within Colombo Metropolitan Region (CMR) the average traffic speeds have been dropped around 20 kms/hr. In the major artery the speed is around ten to fifteen kms/hr. Here a mass transit travel system is needed to fulfill the demand which comes from the transportation needs. There are recommendations from CoMTrans plans to have a monorail system, joined with a multi modal center and park, multi modal transport hub and ride systems. It is decided to have a development on a rail-based travel system that is not leading any disturbance for the normal road traffic. However, the rail-based transport system is needed a large amount of capital for its implementation. As suggestions for Sri Lanka, it can be suggested dual strategies to immediate relief and permanent solutions for the congestion. Some approaches under the short-term strategy in Sri Lanka can be names as, managing transportation supply and managing transportation demand. Under managing transportation supply there are certain attempts such as, adding new travelling infrastructure capacity-new roadways, highways, railways, enhancing current infrastructure for the increasement of capacity-following less expensive approaches such as bottlenecks and increasing the capacities, re designing the current infrastructure for the enhancing of capacity-introducing of bus lanes and bus ways, pedestrian only cities, removal of the on-street parking, and following operational improvements on present infrastructure capacities-introducing intelligent travel systems, one-way systems, reversible lanes in peak hours, right-turn phase and police enforcement (Kumarage, 2004). The main issue with Sri Lanka can be observed as the fast increasing of vehicle population when considering the transport sector. In the time period of 2008-2018, buses have increased by 36%, and other vehicles have been increased by 130% (Werawella, 2020). With effect of the constructed model, after analyzing the controlling systems, three parking areas were identified and suggested to establish three separate parking areas within Kollupitiya-Sri Jayewardenepura route (SLRDC and Rajagiriya), within Kirulapana bridge at Baseline road and Horton Towers, within Fort in Peliyagoda-Puttalam Road and Peliyagoda. (A.A.Tharindi Thathsarani, 2019)

## **RESEARCH METHODOLOGY**

The population of this research is a combination of professionals - who are expertized in knowledge and experience regarding Ragama town area. The purposive sampling method was used to select the professionals and the sample of the professionals was decided in advance by considering their expertized knowledge, education level and the experience. Therefore, five number of professionals were selected from Urban Development Authority, Government Valuation Department, Ragama Pradeshiya Sabha Sub-Office, and Ragama Electricity Board as the experts to collect data for the qualitative research methodology. For the data collection purpose an in-depth interview has been carried out. In the data analysis of the research, a comprehensive qualitative has been conducted. The interview guide was included questions to collect data on the demographic information of the professionals. And also, there were some questions related to the variables under social aspect, physical and technical aspect, and legal aspect while addressing the issues such as population and the pedestrians' behaviour, illegal encroachments, absence of a main bus stand, road network system and the traffic control system, pedestrian crossings and the railway crossing, lack of proper parking areas and issues with road maintenance and the rules and regulations. Therefore, the qualitative research methodology was conducted with referring to the perspectives of the selected professionals and meanwhile researcher's observations have been considered as the researcher's contribution to the research study. After analysing the identified factors from the data collection which were influencing the existing Traffic Congestion in Ragama town, the conclusion of this study was proposed with most applicable practical solutions and recommendations for the existing traffic congestion.

### **Photograph Analysis**

The researcher initially noticed that there was traffic congestion, and in order to determine the actual situation of traffic congestion in Ragama town, a photograph analysis was conducted. In reflecting and indicating the current situation around heavily congested points within Ragama town center during peak hours, a photograph analysis has been performed. While understanding the current traffic congestion in Ragama town, traffic jams surrounding the hospital, flyover, and train station have been detected and photographed, as well as the behavior of pedestrians and the concentration of people during peak hours. Therefore, the researcher has analyzed the photographs to imply and represent the current situation of Ragama town in the context of existing traffic congestion.

**Figure 1: Traffic jam around Ragama railway station during**



**Figure 2: Existing traffic condition around the hospital and flyover**



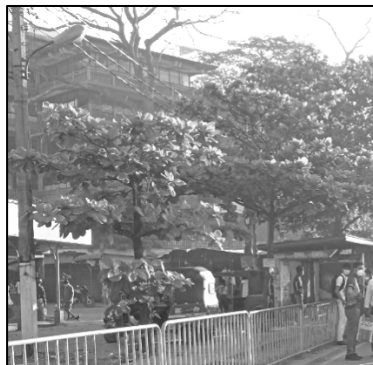
**Figure 3: Pedestrians' behavior and the population concentration**



**Figure 4: Ragama - Hendala bus buses are parked beside the road (infront of Ragama electricity board)**



**Figure 5: Ragama - Kadawatha buses are parked beside Ragama flyover junction**



**Figure 6: Ragama - Colombo Bus stand and Ragama - Ja ela , Ragama Kiribathgoda Bus stands**



*Source:* Author, 2021

As shown in the Figure 1, the surrounding area of Ragama Railway station was captured around 7.30 a.m. and there the front road of the Ragama railway station is highly congested and vehicles are blocked in the left side of the road. According to the researcher's observations, there is a pedestrian crossing at the front of the Ragama Railway station. That ultimately enhances the current traffic congestion on this road.

As per Figure 2, the hospital and the flyover junction of the Ragama town center has been captured during a morning peak hour time and there is a huge traffic jam in this junction and at the same time pedestrians are crossing the road while moving to the hospital side without considering pedestrian crossings. And also, in the right side of this photograph there are some illegal encroachments which are leading further to minimize the road capacity within the case study area. The vehicles which are coming from the bypass roads are also meeting at this point and during the morning and evening peak hours there is a huge traffic jam within this junction.

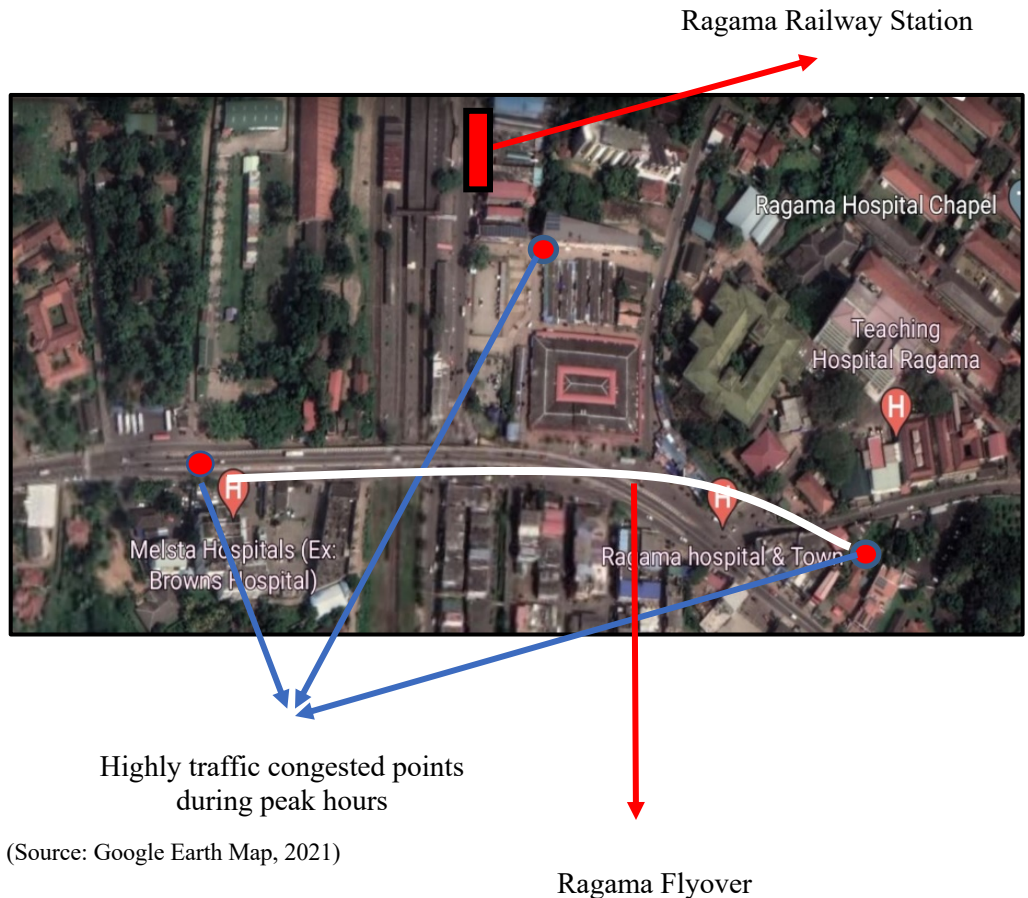
According to Figure 3, it is evident that the commuters and the railway station passengers are moving on the road near the railway crossing, without considering the rules and regulations which have been introduced by the Government. There people are crossing roads without considering pedestrian crossings and the railway crossing. Ragama – Hendala and Ragama – Kadawatha buses are parked beside the main road. According to Figure 4, Ragama – Hendala buses are parked in front of Ragama electricity board causing disturbances for pedestrians and other vehicles by minimizing the road capacity. At the same time, as shown in Figure 5, Ragama – Kadawatha buses are parked beside the flyover entrance by minimizing the road capacity for vehicles and pedestrians. So that pedestrians tend to walk on road instead of the pavement. Several bus stands are placed within the Ragama Town Centre. Figure 6 indicates that the Ragama – Colombo bus stand is situated near the flyover exit and Ragama – Kiribathgoda bus stand, Ragama – Kandana, Ragama – Gampaha bus stands are situated beside the railway station of Ragama. As there is no bus circulation path, these multiple bus stands lead to an increase the traffic congestion in the Ragama Town Center.

## **RESULTS AND DISCUSSION**

### **Google Earth Map of Ragama Town**

The congested points within Ragama Town centre during peak hours are marked and pointed out according to the researcher's observations.

**Map 1: Google Earth Map of Ragama Town**



### **Qualitative Data Analysis**

**Demographic Profile of the Experts:** -The researcher has conducted a qualitative analysis to analyze the main influential causes for the existing traffic congestion within Ragama town centre. Therefore, five experts have been chosen and interviewed after considering their knowledge and experience within this case study area and their demographic profile is indicated in the Table 1. Valuation officer, the Deputy director of the UDA Gampaha branch, the Officer in charge at the Pradeshiya Sabha sub-office in Ragama town, the engineer of the Ragama electricity board, and a Town planner at UDA Battaramulla branch.

**Table 1: Demographic profile of the experts**

Demographic Character	Expert. no 1	Expert. no 2	Expert. no 3	Expert. no 4	Expert. no 5
<b>Gender</b>					
Male	✓		✓	✓	
Female		✓			✓
<b>Educational Level</b>					
<b>Ordinary Level</b>					
<b>Advanced Level</b>					
Diploma		✓	✓	✓	
Graduate	✓	✓			✓
<b>Working Experience</b>					
More than 5yrs experience	✓	✓	✓	✓	✓

Source : Survey Data, 2021

Improper planning of the road network system makes problems in road capacity and the junctions of hospital and flyover, and the absence of bus turning points, main bus stand and parking of buses beside the roads, parking of private vehicles beside roads, absence of a good traffic management procedure/traffic control system and with the lack of proper parking areas and issues with road maintenance we could identify that the private vehicles are parked beside roads. And also, sometimes people tend to cross the roads instead of using pedestrian crossings. There is a traffic jam around the places where the pedestrian crossings and the railway crossing are placed. When considering the legal side, rules and regulations for traffic management which have been introduced by the government are there. In a situation, where some drivers and the pedestrians are not following road signals and traffic signals. Finally, the society also gets damaged by the illegal encroachments and the unauthorized parking of vehicles lead to minimizing

road spaces. This may occur due to the fruits and vegetable vendors, shopkeepers and mobile shops on roadsides and the additional counters outside the shops and vehicles. High commuter population can be seen during peak hours. Because with the population growth, number of private vehicles on roads throughout the peak hours are increasing. Views of the experts are lined up according to above mentioned issues. They are qualitatively described below.

### **Respondent 01**

Views of the respondent no 01 express that there are several bus stands within Ragama town center and people had made strategies to have several bus stands according to their convenience around the railway station and other junctions, without concerning about planning techniques. Those bus stands had developed from a long period of time. His views reveal that there is a new argument on the construction issue with the Ragama flyover. It is stated that the people do not cross the roads through pedestrian crossings and the private vehicle drivers tend to park their vehicles beside roads. There are no proper parking facilities for private vehicles as there is an increasement of the usage of private vehicles. He implied that the traffic congestion occurs due to the improper parking of buses beside the roads and the flyover. Additionally, it is stated that long-term road maintenance works cause traffic congestion within town and when considering on-street parking it is apparent that on street parking causes a traffic jam within the town. Respondent 01 expressed that all the plans should be implemented subject to financial restrictions. As an overall suggestion he has suggested that as a main junction on the main line, Ragama town has to be developed a well-developed town. His observations revealed that there is a high commuter population during the peak hours and there are many activities which are taking place in the town center.

### **Respondent 02**

The views of the respondent no 02 have revealed that the major cause for the traffic congestion on Ragama town center as the absence of a main bus stand. And her views conveyed that the usage of private vehicles also lead to cause traffic congestion. She also has observed that many illegal encroachments are there beside roads. According to the culture within pedestrians, they have trained to buy goods from the shops which are illegally developed beside roads. She expressed that unauthorized shops are leading to cause minimize the road capacity too. And her other view was the bus turnings which are

taken place on the roads. There also her view was absence of a main bus stand and the bus turning lane leads to enhance the traffic congestion. The people tend to crossroads without considering the pedestrian crossings. Her view was the disciplinary weaknesses of the people as a social issue which led to enhance the traffic congestion. Overall suggestion was to build a main bus stand which can be connected to market route and the hospital too. Therefore, she suggests that it can be led to minimize the traffic congestion as the people are directly go to market and the hospital without going to town center. Under legal issues her view was the implementation of rules and regulations has been missed by the authorities. Though there are rules and regulations the drivers and passengers are not correctly monitored. Therefore, her suggestion was to continue the fine charges at the violation of rules and regulations.

### **Respondent 03**

According to the views and the experience of respondent no. 03, he has faced various difficulties at Ragama town in his transportation necessities during peak hours. He agreed with facts that sometimes people tend to cross the roads instead of using pedestrian crossings. Therefore, he conveyed that there should be an alarming programme for pedestrians on pedestrian crossings. He also expressed that there is a lack of proper road system in the Ragama town center. There is a traffic jam around the places where the pedestrian crossings and the railway crossing are placed. And mainly he commented that the absence of bus turning points, main bus stand and parking of buses beside the roads enhance the traffic jam within Ragama town. His views revealed that the fruits and vegetable vendors and the additional counters in front of shops make a congestion beside roads causing disturbances for the pedestrians. He suggested to have well designed modern app to find alternative roads in the peak hours and to improve the public transportation system. He also suggested to enhance fines against violations. His overall suggestion was to develop a main bus stand as a multi modal transport hub within the Ragama town center.

### **Respondent 04**

According to the views of respondent no. 4, the road capacity was not enough and the as buses are parked beside the roads that causes traffic congestion within the town. And also he expressed that if there is any land which can be allocated for a main bus stand with bus circular paths that can be used to minimize the traffic congestion. He also revealed that parking of private vehicles leads to cause much traffic congestion too. Therefore, he conveyed

that if there is a multi-storied car park which has an easy way to access from there to shops that will minimize the traffic congestion too. While considering the Ragama hospital and flyover junction, he expressed that overhead bridge which links the hospital entrance road, and the bus stands will lead to minimize the traffic congestion. Otherwise, another suggestion was to enhance the road capacity as the roads are with lower capacity. He also suggested to relocate the illegal encroachments to a new place as per regulations as the illegal encroachments cause a congestion within the town. He has observed that Ragama town has a large space where it has not well utilized, and those spaces are illegally encroached. His observations conveyed that some of those illegal encroached places has not yet received the electricity supply too. As per his comment they are apart from the law. He expressed that there is a major problem with the planning of the Ragama town. As per his view the issue with the planning system of Ragama town has denied the recreational value of the town. He expressed that instead of paying attention for the recreational value, planning issues have created a congestion throughout the town. Therefore, he suggested that if there can be implement a good coordination between the planning with the resource utilization there would be a major bus stand with bus circular paths, traffic control system for the hospital junction, and also a multi storied car park which has easy access to the market area at separate places.

### **Respondent 05**

As per the comments of respondent no.5, she has identified that the road width of the roads in Ragama town are not enough for the vehicles as Ragama town is the main town which people use to travel for many towns. Therefore, as she expressed, Ragama town is a town where many vehicles are passing by, and much commuter population can be seen. Therefore, her views stated that the existing road capacity may not be enough for the transportation of vehicles within the town. Her explanations also conveyed that a multi-storied car park also should be there to minimize the parking of private vehicles beside the roads. She also suggested having traffic surveys to identify major issues with the road capacity within the town. She conveyed that according to the Law selling on roads is prohibited. Therefore, according to her views, she expressed that there must be a proper regulatory system which can be monitored the issues with the planning within the town. Furthermore, it is stated that proper traffic management rules and regulations introduced by the government was not available within the town and people are hesitating to follow traffic management rules and regulations. And also, suggested having

more symbolized road signals to be hung beside roads and it is identified that as the Ragama hospital is a major hospital, hospital and flyover junction is affected by congestion as many people and vehicles try to locate the hospital for many times. Therefore, her view was to build an overhead pedestrian bridge to locate the hospital from the town centre. So that, the pedestrians will not pass the town centre to reach the hospital and that will be helpful in reducing the existing traffic congestion within Ragama town centre.

### Analysis of Experts' Perceptions on Causes for Traffic Congestion in Ragama Town

It can be concluded that the most influential causes for the existing traffic congestion in the Ragama town center are the Physical and technical issues. The Physical and technical issues which were named as mostly influencing factors and they were, the absence of a main bus stand, road network system and traffic control system, and the pedestrian crossings and the railway crossing. Secondly the experts have identified the Social issues as influencing factors namely, population and pedestrians' behavior and the illegal encroachments. Then lowest number of responses were given for the Legal Issues. According to the views of the experts, most significant issues were the Physical and Technical Issues. Then the Social Issues and Legal Issues were identified as causes for the existing Traffic congestion.

**Table 1: Responses on the main influential causes for the existing traffic congestion in Ragama town**

Aspect	Factors	Ex. 1	Ex. 2	Ex. 3	Ex. 4	Ex. 5	Total
Legal Issues	Issues with the implied rules and regulations		√	√		√	3
	Behavior of the pedestrians and the population	√	√	√			3
Social Issues	Prohibited encroachments		√	√	√	√	4
	Issues with the road network and traffic control system	√		√	√	√	4
Physical and Technical Issues	Absence of proper parking areas and problems with road maintenance	√		√	√	√	4
	Problems with the pedestrian crossings and railway crossing	√	√	√		√	4
	Lack of a main bus stand within the town centre		√	√	√	√	4

(Source : Survey Data, 2021)

## CONCLUSION

This section includes the explanations of research implications with related to the research findings which were obtained from this research study. The study was carried out with identifying the causes for traffic congestion and the researcher has been considered those causes with the existing traffic congestion situation subject to the case study area. Researcher has analyzed the causes for existing traffic congestion in accordance with fulfilling the general objectives as examining the main causes on existing traffic congestion in the center of Ragama town center. The specific objectives which were followed by the researcher were to analyze the perspectives of the professionals on the causes of existing Traffic Congestion in Ragama town center and finally to identify the most influential cause for the existing Traffic Congestion in the selected case study area. Initially, the researcher has identified some causes for the existing traffic congestion in Ragama town centre. They were related to the population and pedestrians' behavior, illegal encroachments, absence of a main bus stand, road network system and traffic control system, pedestrian crossings and the railway crossing, lack of proper parking areas and issues with road maintenance and finally related to the rules and regulations. These causes were mainly categorized into major three aspects as Social Aspect, Physical and Technical Aspect and Legal Aspect. The analysis of the perceptions of the professionals on the existing traffic congestion in the Ragama town center was carried out with interview sessions to collect data from five experts. According to the findings and data represented in Table 2, the experts conveyed that the leading issues for the existing traffic congestion were Physical and technical issues.

As indicated in Table 2, views of the majority of the experts imply that the most significant issues were the Physical and Technical Issues. There, the absence of a main bus stand, poor road network system and poor traffic control system, issues with the availability of the pedestrian crossings and the accuracy of the railway crossing, lack of proper parking areas and issues with road maintenance were highlighted within Ragama town. There, mainly the absence of a main bus stand was emphasized as the major influential factor. Secondly, the Social aspect was considered as significant issues while indicating that there are issues with the behaviour of both pedestrians and people which enhance the causes of the existing traffic congestion. Furthermore, prohibited encroachments were identified as causes for the traffic congestion and thirdly the Legal aspect was considered as the influential issue for the existing traffic congestion. Adding to that there were some newly identified causes in the findings of this research study.

According to the responses gained from the experts, the improper planning of the Ragama town and the construction fault of the Ragama flyover were highlighted. And also, some experts suggested to implement a modern app for people to identify mostly congested times and routes to omit them in peak hours to minimize the effect of the congestion.

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Centre for Real Estate Studies (CRES), Department of Estate Management and Valuation, University of Sri Jayewardenepura

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# Can Central Bank Intervention Mitigate Exchange Rate Volatility in Sri Lanka?

L.T.H. Guruge<sup>1\*</sup>, R.M.A.K. Rathnayake<sup>2</sup>

*<sup>1\*</sup> Senior Assistant Director, Central Bank of Sri Lanka  
thilangaguruge@gmail.com*

*<sup>2</sup>Senior Lecturer, Department of Business Economics, Faculty of  
Management Studies and Commerce, University of Sri Jayewardenepura  
rathnayake@sjp.ac.lk*

## ABSTRACT

*Central Bank intervention plays an important role in achieving economic and price stability and thereby financial system stability objectives of a country. However, the existing literature is not conclusive on the direction of the relationship among Central Bank intervention and exchange rate volatility. In Sri Lanka, the Central Bank of Sri Lanka intervenes into the domestic foreign exchange market to curtail excess liquidity. This paper examines the Central Bank interventions on the behavior of the exchange rate. Specifically, this study attempted to find out the effects of Central Bank intervention on its level and the volatility of the foreign exchange rate. For that purpose, this study utilized monthly data on exchange rate, market intervention, inflation rate, interest rate differences between US and Sri Lanka, net exports, foreign debt payments, tourist earnings, worker remittances and foreign investment for the period begins from January 2015 to December 2020. Using GARCH (1, 1) model it was examined that Central Bank intervention could not be able to reduce exchange rate volatility as expected. Therefore, this result is more supporting to the previous theoretical findings of positive relationship between Central Bank intervention and exchange rate volatility. Consequently, Central Bank intervention is not capable to mitigate the exchange rate volatility in the domestic foreign exchange market.*

**Keywords: Central Bank Intervention, Central Bank of Sri Lanka, Exchange Rate Volatility**

## INTRODUCTION

Rate of exchange between local currency and a foreign currency is a key determinant of economic condition of a particular country as it has strong influence on the international trade, foreign capital flows, investments, economic growth and development of a country. Because it is claimed that to have a well-functioning global economy it requires stable currency

exchange rates (Almekinders, 1998). Therefore, volatility of exchange rate takes policy priority always as the excess volatility in the domestic foreign exchange market can harm economic performance as well as financial system. To mitigate such unfavorable impacts, policy makers adopt numerous policy decisions to curb this excess volatility in the domestic foreign exchange market. The Central Bank of a country is performing this task mainly through intervention into the foreign exchange market. Therefore, this market intervention is defined as;

“a sale or a purchase of foreign currency by the domestic monetary authorities which is explicitly aimed at changing the exchange rate of the domestic currency vis-a-vis one or more foreign currencies. For expositional purposes it will be assumed that in each country interventions are carried out by one official institution called the central bank” (Almekinders, 1998)

After collapse of the Bretton Woods System, this discussion on the effect of foreign exchange intervention by monetary authorities is a constant topic among academics and policy makers. Even though many countries adopted floating exchange rate systems, Central Banks or monetary authorities of many countries heavily intervene in to their domestic foreign exchange markets to manipulate the nominal exchange rates to have orderly functioning markets.

In 1977 International Monetary Fund (IMF) executive board approved set of principles and procedures for surveillance over exchange rate policies and those are explicitly emphasized that the intervention can be utilized to reduce the volatility of exchange rate in a country (IMF & World Bank, 1977). This action of a Central Bank has been implicitly explained in two key international agreements namely, the Plaza Accord in 1985 which was sought the Central Bank collaboration to sharply depreciate the United State dollar (USD) and the other agreement was the Louver Accord in 1987 which stressed the requirement of stabilizing the exchange rate volatility (Cheng, Das, & Shimatani, 2013). Since then the Central Banks of most of the countries have frequently been attempting to influence the relative value of their currencies through domestic foreign exchange interventions (Almekinders, 1998).

There are varieties of overall economic objectives of Central Bank intervention like controlling inflation, supporting and maintaining competitiveness or ensuring financial system stability. However, the exact

objective of this policy decision and how that is reflected as market intervention is subject to many factors comprising the stage of development of a country, the degree to which its financial markets are developed and there integration and that country's overall vulnerability to shocks. Further, there is a controversy on which operations in the foreign exchange market constitute intervention. According to Moreno (2005) there are three important objectives of intervention, namely; to influence the level of foreign exchange rate, to decrease exchange rate volatility or to supply liquidity to the market and to effect the level of international reserves. However, Fry-McKibbin & Wanaguru (2013), who conducted a research on currency intervention on emerging markets concluded that Central Banks' intervention into the foreign exchange market with the intention to accumulate foreign exchange reserves to improve the fundamentals of the economy. As per the working paper written by the Bank for International Settlements (BIS) in 2013 on "the Central Bankers' views on the foreign exchange intervention" said that, as a result of recent financial crises the objectives of interventions have been paid attention more on curbing capital flows and to curbing undue exchange rate volatility. They perceived intervention as a successful method in achieving desired objectives and they prefer to have less transparent intervention practices. According to that report intervention combining with macro prudential and capital control measures contributed success in recent years (Mohanty & Berger, 2013).

When moved to look at the Sri Lankan economy, the year 1977 pronounced a remarkable shift in the economic policy decisions with the introduction of the liberalized policy regime to opening up of the country for the international trade. That permitted considerable freedom by enabling foreign financial inflows to the country as well as outflows from the Sri Lankan economy. These policies tend to ease restrictions on investments and borrowings from abroad. Consequently, there was a volatility in foreign inflows and outflows which made the domestic currency to appreciate or depreciate against foreign currencies. With the purpose to curb these excess or excessive fluctuations on the value of local currency against foreign currencies and to rectify this misalignment, the Central Bank of Sri Lanka (CBSL) intervened in to the domestic foreign exchange market with purchase or sale of foreign currencies. Afterwards, the CBSL intervenes into the foreign exchange market to maintain an orderly market conditions within the country.

Sri Lanka adopted floating exchange rate regime in 2001 by allowing independent adjustment to exchange rate as per the behaviour of market forces of demand and supply. Nevertheless, market interventions were there

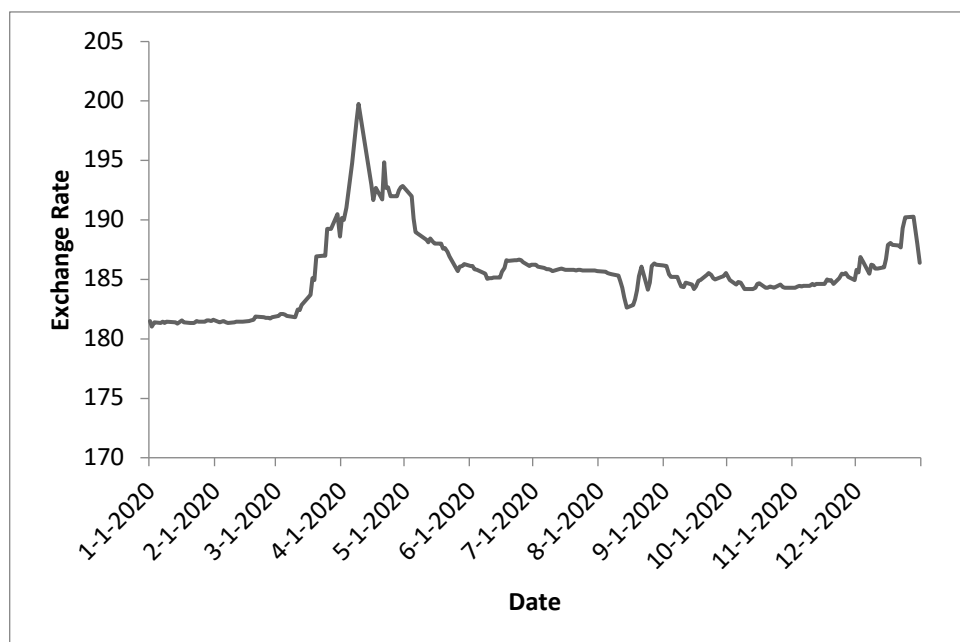
with the intention to curb excess volatility in the exchange rate. The CBSL recommended maximum Net Open Position (NOP) limits for local commercial banks and carefully monitored the behaviour in the foreign exchange market to maintain a properly functioning foreign exchange market in the country. CBSL has carried out extensive interventions in the local foreign exchange market with the aim of preserving value of Sri Lankan Rupee (LKR) specially in economic recessions. During the period of 2010 to 2020, the total amount of intervention conducted by CBSL was about net sales of 5.9 billion USD.

These actions of the Central Bank need to be reviewed carefully as this pose several questions. Those are, had the CBSL effective in its intervention mechanism? Had the CBSL been achieved success in managing the volatility of USD/LKR exchange rate? Emphasizing the importance of comprehension on in what way Central Bank intervention impact the domestic foreign exchange market, it is vital to prudently study the answers to those questions. Therefore, the research question of this study can be stated as follows;

### **Research Problem**

However, revisiting the Central Bank intervention and the exchange rate volatility is warranted for two main reasons. First, the existing literature is not conclusive on the directions of the relationship among Central Bank intervention and exchange rate volatility. Proponents argue that there is an increasing relationship between interventions and exchange rates (Connolly & Taylor, 1994; Dominguez, 1998; Cheung & Chinn, 1999; Ramchander & Raymond, 2002; Beine et al., 2007). In contrast, opponents argue that there is a decreasing relationship between interventions and the exchange rates (Eijffinger & Grujters, 1991; Dominguez, 1992, 1993). Apart from that some researchers found that there is no impact of interventions on exchange rates (Baillie & Humpage, 1992). The second reason is, though there is considerable volatility in the exchange rate with in shorter period of time (Figure 01) even with the market interventions, there is no literature in this specific topic conducted for Sri Lanka. Therefore, it is important to study, as expected, whether Central Bank intervention reduces exchange rate volatility by stabilizing foreign exchange rate in Sri Lanka?

**Figure 01: USD/LKR Exchange Rate Movement in Year 2020**



## **Objectives**

The objectives of this study can be articulated as.

- To identify the factors affecting on foreign exchange rate volatility in Sri Lanka
- To assess the impact of intervention on exchange rate level and volatility in Sri Lanka

## **Significance of the Study**

Compared to the research done on developed countries, there are very few studies examined the effectiveness of Central Bank intervention to control exchange rate volatility in developing and emerging countries. Although, there are some research studies carried out to examine the effectiveness of this Central Bank intervention in their domestic foreign exchange markets, there is no any study conducted specifically for the Sri Lankan context. Hence, this paper attempts to empirically explore the relationship between Central Bank of Sri Lanka's intervention and exchange rate moment in the country. Specifically, this paper attempted to investigate the impact of the CBSL intervention on exchange rate level and volatility. Therefore, it is believed that this study may give new insights to assess the successfulness of the CBSL intervention in the domestic foreign exchange market in Sri Lanka. Hence, this research would contribute to the growing literature on Central

Bank intervention in developing countries. To conduct this research, monthly data for the period of 2015 to 2020 on intervention, interest rate difference (US and Sri Lanka), foreign investments, tourists' earnings, worker remittances, foreign debt payments, net exports and inflation was taken as the independent variables to estimate their impact on the dependent variable of exchange rate volatility. After thorough examination of the prior literature, from the various alternative statistical models, the GARCH (1, 1) model has been selected to do the statistical analysis for this study.

The remaining parts of this research are organized as follows: The next section analyzed the theoretical background as well as empirical findings on the central bank intervention. Section 3 dealt with the methodology and then Section 4 discussed the empirical findings of this research. Finally, section 5 contained the summary and conclusions.

## **LITERATURE REVIEW**

Central Bank intervention can be interpreted as the purchase or sale of foreign currencies by the Central Bank or monetary authorities in the domestic foreign exchange market which causes to an increase or decrease in the monetary base of the country if it is non-sterilized intervention. According to Humpage (1988);

“Exchange-market intervention refers to official purchases or sales of currencies designed to influence exchange rates. These transactions alter the net foreign currency position of the monetary authorities' balance sheet” (Humpage, 1988)

But if the monetary authority simultaneously or within very shorter period of time takes necessary measures to neutralize the impacts of the change in foreign assets on the domestic monetary base which caused due to intervention, then it is named as sterilized intervention. Therefore, non-sterilized intervention not only influences the exchange rate but also monetary base of the country whereas sterilized intervention which affects on exchange rate leaves monetary base to unchanged (Behera, Narasimhan, & Murty, 2008). Accordingly, Central Banks intentionally alter the exchange rate to promote the local economy. Therefore, researchers have examined the impacts of Central Bank intervention on the domestic foreign exchange market by overseeing the impact on its level and volatility of the exchange rate.

Therefore, when briefly looking at the comprehensive view of theories in the

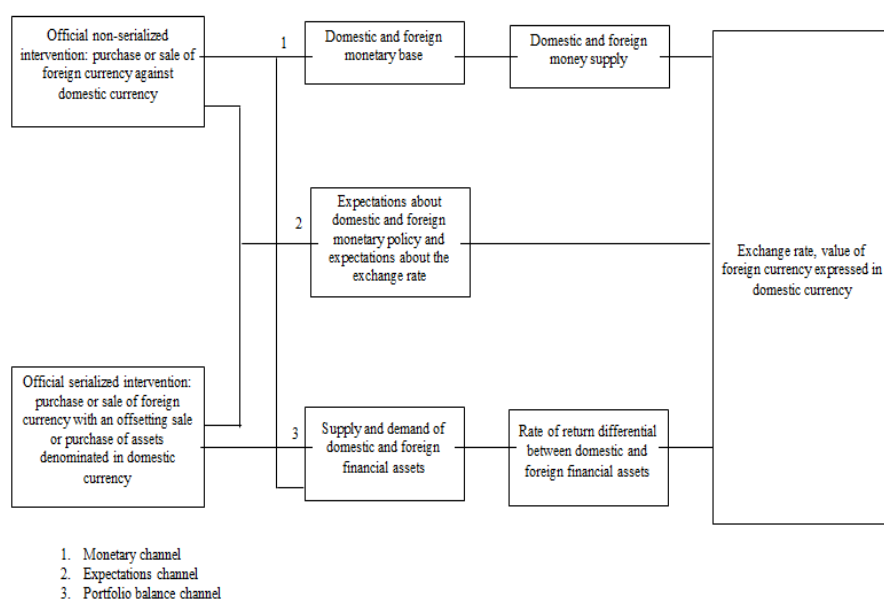
scope of domestic foreign exchange market intervention and how intervention influence on the exchange rates, according to economists, there are two types of interventions namely; Sterilized intervention and Nonsterilised intervention. (Aguilar & Nydahl, 2000; Behera, Narasimhan, & Murty, 2008).

In the Bretton Woods System where countries had fixed exchange rate regimes, there was intervention to keep the exchange rate within pre-determined boundaries. However, Wallace (1990) has written in his article, in 1980s the United States economist believed that the exchange rate determination should be left to the private sector through a market mechanism as the same way where the prices of the other goods and services are determined. Only when there was a disagreement, government intervention is desirable to keep the actual foreign exchange rate closer to the equilibrium rate which was determined based on the market fundamentals. In that period, interventionists claimed that speculation prevents the attaining of equilibrium exchange rate, as it plays an important role there and non-interventionists questioned why the price of currencies, i.e exchange rate, cannot be decided as other objects in the market. But this non-interventionist view was fallacious because economist agreed that fiat currencies are special objects and they are not like other objects since their value is not tied with gold and silver as in previous eras. When there is no fixed exchange rate system, the legal restrictions on asset holding or government intervention played a crucial role when determining the exchange rate and these cannot be compared with the fundamentals which determine the prices of other markets. Therefore, intervention considers as a policy instrument for both developed and developing countries. (Neely & Christopher, 2008). Although there has evidently been a decline trend in the frequency of interventions by major Central Banks, reports of a coordinated G-7 interventions indicated that intervention remains as an active policy instrument in some situations (Neely C. J., 2000).

Intervention impacts on exchange rate via different channels namely; signalling channel, noise-trading channel and portfolio balance channel (Figure 02). If the assets are perfect substitutes, then the portfolio balance model can not be worked. However, there could be sterilized intervention to influence exchange rates via signalling channel because this method assumes asymmetric information among Central Bank and market participants. The private agents adjust their exchange rate expectations when sterilized intervention operates through signalling channel. As far as market participants believe of the Central Banks' foreign exchange operations are

trustworthy, they will reshape their future prospects on the upcoming monetary policy decisions and they reevaluate the prospect of spot market rates. The Noise trading channel can function even at the time intervention is conducted deliberately because it does not give an indication to market participants or when it is inconsiderable to alter the relative supply of assets denominated in domestic and foreign currencies in a substantial way. Sterilized interventions can be utilized by Central Banks to persuade noise traders to purchase or sale of a currency (Behera, Narasimhan, & Murty, 2008).

**Figure 02: Exchange Rate Impact Through Different Channels**



*Source:* Foreign exchange intervention: Theory and Evidence (1988)

According to a survey conducted by BIS emphasized most of the emerging economies intervene in to the market to make effect either the level or the volatility of the exchange rates. Several Central Bankers in the view that even though the intervention succeeded to have orderly markets and adjusting exchange rate misalignments, still there is a question remain the durability of the influence of this intervention effects. Stabilizing the foreign exchange rate for a shorter time is feasible, but there is a huge cost to be incurred to attain long term exchange rate goals. Moreover, the large scale intervention has posed challenges in sterilizing excess liquidity by Central Banks which elevated long term inflation risk (Mohanty & Berger, 2013).

Some of the previous survey studies conducted with getting involvement of the Central Bank officials regarded their intervention decisions as effective in directing the exchange rate in the desired path (Neely C. J., 2000; Neely & Christopher, 2008; Mihaljek, 2005). However, some studies suggested that intervention has small or no impact on the level of exchange rate (Gersl, 2006; Egert & Komarek, 2006).

Over the time, there have been radical changes in the way of conducting Central Bank interventions. Even though the United States monetary authorities utilized market intervention to deal with disorderly market situations in 1980, this practice has become infrequent by the later part of 1990s. Therefore, these research findings on the intervention have generated mixed result and generally most of them were concentrated on the developed countries (Chang, Suardi, & Chang, 2017). Further, Dominguez (1998) found that interventions by the United States Japan, and Germany have caused to raise exchange rate volatilities from 1977 to 1994 period.

Behera, Narasimhan & Murty (2008) specifically investigated the effects of intervention made by Reserve Bank of India (RBI) on exchange rate level and its volatility for the period from June 1995 to December 2005 utilizing GARCH (1,1) model and they examined that the RBI intervention is successful in mitigating volatility in the exchange rate. According to the empirical findings they found that the results are not in line with the theoretical positive relationship between exchange rate and market intervention. Hence, the RBI intervention has been reduced the degree of variations of the exchange rate instead of changing the direction of it.

Aguilar & Nydahl (2000) examined the Riksbank's currency market intervention on its level and the volatility of the Swedish krona vs. the USD and the Swedish krona vs. the German Mark exchange rates between 1993 and 1996. The findings revealed that intervention influence the exchange rate level in some sub periods but the results as a whole were weak. Also there was little empirical support found to say that Central Bank intervention systematically decreases exchange rate volatility. In contrary, analysis of sub periods indicated a significant negative impact and also positive effect of intervention on Swedish krona vs. the USD implied volatility but Swedish krona vs. German Mark had significant increase in volatility due to intervention.

Shah, Hyder, & Pervaiz (2009) studied about the effectiveness of the daily intervention of the State Bank of Pakistan using GARCH-X model and found that the intervention operations are very effective as it not only affect the

level of the exchange rate but also volatility of it.

According to the Edison (1993), there are three main reasons in the literature to having lack of studies on intervention. Those are fragmented literature, difficulties in model exchange rate behaviours and lack of data on actual amount of interventions.

When briefly look at the Sri Lankan context, until 1977 the country's monetary policy was mainly focused on managing fixed exchange rate system to fix Sri Lankan Rupee (LKR) against the USD and sterling pound. Under this system the domestic inflation rate was connected to foreign inflation rate and there was no requirement of explicit monetary anchor to control inflation. Year 1977 was marked a paradigm shift in which the country liberalizes trade and payments with the rest of the world. To consistent with this major change, CBSL introduced market-based exchange rate management system. At that period, the degree of intervention was varied with the balance of payment conditions and the Central Bank's views on the direction of exchange rate. However, by the year 2000, due to considerable increase in imports, Sri Lanka faced a significant decrease in international reserves, and which stimulated CBSL to re-examine its exchange rate policies. As a consequence, on 23<sup>rd</sup> of January 2001, CBSL decided to allow commercial banks to decide the exchange rate based on the demand and supply forces of the foreign exchange market. This mechanism was refrained CBSL to announce daily bid and ask rates to commercial banks and allowed them to freely determine the exchange rate. However, when there was an excess domestic demand on foreign currencies, CBSL was intervening to the market to protect the exchange rate from its depreciation. This is purely doing in good intension to manage macroeconomic stability in challenging times. However, past experience showed that extensive management of exchange rate caused to reduce the level of international reserves. The most recent events were identified in 2011-2012, 2015, 2018 and 2020. During the period of 2011/2012, CBSL supplied around USD 4.2 billion on net basis to the market and in 2015 supplied USD 3.2 billion to the market on net basis. In spite of considerable intervention from foreign reserves, the LKR was depreciated against USD by 13.5 per cent by the end of period 2011/2012, 0.9 per cent in 2015. In September 2015 CBSL decided to curtail amount of intervention into the market and permitted the exchange rate to be largely decided by the demand and supply forces in the market and decided not to utilize foreign reserve to defend the overvalued exchange rate. Instead, CBSL decided to intervene into the market with the aim to buildup foreign reserves. Accordingly, in 2017, CBSL purchased over USD 1.6

billion from the market on a net basis for this purpose and this has made to increase the market confidence as proven by the small depreciation of the LKR in that year. However, in year 2018 due to increase in US interest rates there was 16.4 per cent depreciation in the local currency even though around USD 1.1 billion interventions were taken place (Weerasinghe, 2018). The similar situation could be expected in year 2020/2021 due to the covid-19 pandemic situation experienced by the country. This explains, even though the Central Bank does expect to intervene into the foreign exchange market under flexible exchange rate regime, in Sri Lanka, Central Bank intervention is a key aspect of exchange rate determination and its volatility.

According to the above literature review manifest, the findings of research give the inconclusion impression on whether Central Bankers can actually stabilize the exchange rate or it is not possible through the intervention mechanism. Because some researchers trust that Central Bank intervention can mitigate exchange rate volatility by reducing the speculative attack against a currency and on the other hand some researchers argue that intervention cause to rise volatility if it contributes to make unpredictability or inspires for speculative attacks against the currency. Although' as per the theory intervention results can pass through different channels, Central Banks partially sterilizes its intervention in the domestic foreign exchange market, however, still it is not clear whether it would be effective or not. Since the theory is ambiguous, an empirical analysis is required to decide the outcome of central bank intervention on exchange rate volatility. Hence, this research attempts to do such analysis using recent market intervention data putting into a GARCH method. The findings of this research would contribute to answer this question.

## **METHODOLOGY**

According to Gersl (2006) the econometric analysis of intervention typically focus on two issues, one is to find out the factors that causes the Central Banks to intervene in to there domestic foreign exchange market and second one is to test the effectiveness of the intervention on the exchange rate stability. Further he stated that, the effect of Central Bank intervention on exchange rate volailtiy has also attracted a lot of attention in the previous studies done on the intervention. Thus, most of the research analysed the effectiveness of intervention within GARCH framework by estimating both the effect of intervention on exchange rate level in the mean equation and on the conditional volatility in the variance equation.

The empirical analysis was done by collecting the data from January 2015 to December 2020 and this data frequency is decided based on the data availability on CBSL intervention. This data are in monthly series and they have been collected from the data bases and monthly bulletins of CBSL.

Since the volatility of exchange rate is the most likely to be influenced by central bank interventions (INV), that is not the only variable affects to it. There are other macroeconomic variables where this research has been identified and included to the model. They are interest rate differential between Sri Lanka and United States (INTD), foreign investment in Colombo Stock Exchange (FI), worker remittances (WR), earnings from tourism (ET), foreign debt payments (FD), net exports (NEXP) and Inflation (INF) as other independent variables.

Accordingly, below model has been developed to measure the central bank intervention on exchange rate volatility.

$$EXR_t = \beta_0 + \beta_1 INV_t + \beta_2 INTD_t + \beta_3 FI_{t-1} + \beta_4 WR_t + \beta_5 ET_t + \beta_6 FD_t + \beta_7 NEXP_t + \beta_8 INF_t + \varepsilon_t$$

$$\varepsilon_t | \Omega_{t-1} \sim N(0, h_t)$$

$$h_t = \alpha_0 + \alpha_1 INV_t + \alpha_2 INTD_t + \alpha_3 FI_{t-1} + \alpha_4 WR_t + \alpha_5 ET_t + \alpha_6 FD_t + \alpha_7 NEXP_t + \alpha_8 INF_t + \mu \varepsilon_{t-1}^2 + \Phi h_{t-1}$$

(2)

Where  $\alpha, \mu, \Phi > 0$  and  $\mu + \Phi < 1$

Exchange Rate Volatility (EXR), the dependent variable, is the monthly change in USD/LKR nominal exchange rate return (Behera, Narasimhan, & Murty, 2008; Aguilar & Nydahl, 2000). According to the most of empirical finance literature this has been computed as,

$$\text{Return} = 100 * (\ln S_t - \ln S_{t-1}) \text{ using bilateral USD/LKR exchange rate.}$$

This measures the fluctuation of exchange rate and it also can be considered as the measure of risk. Further, this could be measured on different basis in time and for this research study it has been taken monthly rates considering data availability. Assuming those fluctuations in the exchange rate that follows a normal distribution, this volatility gives an understanding of how much the foreign exchange rate can fluctuate within a particular period. Similar to other financial assets, the volatility of exchange rate is calculated from the standard deviation of movements of exchange rates. The literature

is not uniform as to decide which measure is more suitable. However, in the latest literature it appears to be increase in embracing the Generalized Autoregressive Conditional Heteroscedasticity (GARCH) models (Abdalla, 2012). Therefore, the same model has been selected to conduct this research.

By means of the main objective of this research, the exchange rate of the country is possibly to be influenced by the intervention (INV) variable, which indicates the net sales of USD made by the Central Bank of the country for the selected period. Net sales have been calculated as below;

$$\text{Net Sales} = \text{Sales of USD in a month} - \text{Purchase of USD in a month}$$

Some researchers found the unanticipated sign due to monthly frequency of the intervention data used to the model. But in reality, CBSL intervenes daily or more than one time in a day and there were days where there were no intervention taken place. However, the Central Bank publishes domestic market intervention data only in monthly frequencies. Therefore, this frequency may also have an impact on the findings of the research study.

The interest rate differential (INTD) defines as the difference between Sri Lankan ninety (91) days Treasury bill rate and US three (3) month Treasury bill rate in monthly frequencies for both the series. According to the Fanelli and Straub (2020) this rate differential forms the purpose when deciding interventions it is equal to managing interest rate spreads between domestic and foreign bonds. Partial segmentation indicates that in intervening in to the bond markets, the Central Banks can influence the exchange rate and the spread between domestic and foreign bond yields.

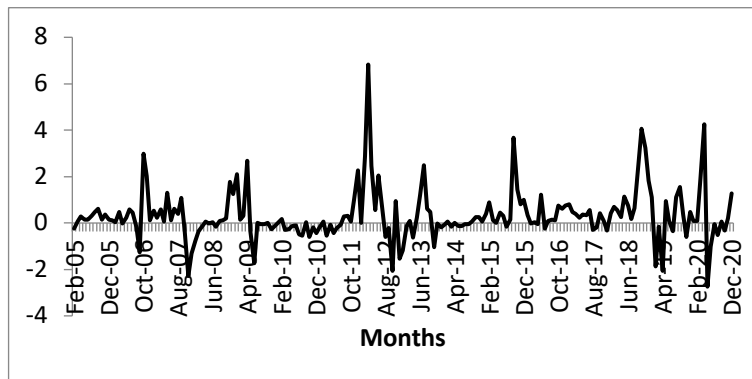
Foreign investments in the Colombo Stock Exchange (CSE) are playing a key role when determining the exchange rate volatility in Sri Lanka as they were more volatile in recent period of time. Therefore, this study has decided to use FI as a one of the determinant of exchange rate volatility. FI consists of monthly primary market investment and net of secondary market investments at CSE in USD terms. WR is the monthly income sent by the Sri Lankan employees in abroad. ET is the tourism earnings that received in USD terms. Due to prevailing Covid-19 pandemic situation since March 2020 to end of the reference period of this research, there was no tourist earnings for Sri Lanka. FD is another critical variable which changes the demand for foreign exchange and finally the exchange rate of the country. Here the government's long term loan disbursements in USD terms have been taken as the proxy for foreign debts. Rising foreign debt obligations could exert pressure on international reserves, the exchange rate and fiscal operations (CBSL, 2019).

## EMPIRICAL ANALYSIS

In all the time series analysis the basic requirement is to confirm the stationarity of variables in the developed model. In this study also the unit roots of all selected variables in the mean equation have been tested using Augmented Dickey–Fuller (ADF) and Phillips–Perron (PP) test. The test results indicated that all the variables are significance at there level or in the first difference (Table 1 in the annex).

Similarly, to use ARCH/GARCH model it is required to examine the distribution of the exchange rate return series. The visualization of nominal bilateral exchange rate return (EXR) is been depicted in the Figure 03 for the period from 2005 January to 2020 December. It evidenced that the volatility clustering of the exchange rate return series where periods of large changes have been followed by large changes and the periods of small changes have been followed by small changes. Mean reversion can be seen accordingly and therefore, can conclude that it is stationary series which exhibit the volatility clustering.

**Figure 03: Nominal Bilateral Exchange Rate Return (%) from 2005 to 2020**



Further, to check this distribution, the descriptive statistics of exchange rate returns were measured. According to those results of these measures were indicated that the series was positively skewed and leptokurtic and further, it shows the existence of volatility in the exchange rate return series. Moreover, the Jarque-Bera statistic with the higher level of confidence recommended to reject the null hypothesis of normal distribution of the variable and it is proven graphically with the flatter tails (Figure 2 in the annex). All together these tests specified that the exchange rate return series was not normally distributed.

Prior to estimate ARCH/GARCH model, it is required to test the existence of the time varying heteroscedasticity in the selected data series. In order to test

this property, the Ordinary Least Square (OLS) technique has been used to estimate for the mean equation (1) to obtain the estimated residuals of the model. Accordingly, the Ljung-Box Q-statistic and squared residuals showed the insignificant autocorrelation coefficient up to lag length eight (Table 02 in the annex). However, according to the ARCH-LM, the null hypothesis of zero correlation was not rejected with the presence of ARCH effects (Table 03 in the annex). Therefore, as per the residual tests, the monthly exchange rates return series is heteroskedastic with following a not normal distribution.

After receiving the verification of the ARCH effects, the GARCH model was estimated with one lag length using the Maximum Likelihood method in which it assumes normality of the errors. This GARCH (1,1) model has been estimated by utilizing the sample data from January 2015 to December 2020 to test the statistical properties of the study. The estimated result of the GARCH (1,1) model is presented in Table 04 in the annex.

After identifying the ARCH effect, the GARCH model has been estimated with the assumption to have normality of errors. The estimated result of this model is given in the Table 5 in the annex. The absence of the ARCH effects was tested on the selected model, and this has been proven by the ARCH-LM done on up to lag lengths eight. This concludes there is no conditional heteroscedasticity of the error terms.

Wald test has been used to test the degree of volatility. According to this test, the error variance is non-stationary further the null hypothesis for that is  $\mu + \Phi = 1$  and the alternative hypothesis was  $\mu + \Phi < 1$  or the error variance is stationary. According to the results of this model, it was rejected the null hypothesis with the high confidence level as the summation of both ARCH and GARCH coefficients was considerably lower than the unity,  $\mu + \Phi = 0.61$  (Table 4 in the annex). Lagged value of the conditional variance and the lagged value of the squared value sum them together they are less than one. That means sum of the coefficients less than one. This satisfies the stability conditions. Therefore, this verifies the stationarity of the variance. That implies within the shorter period of time this volatility reverts back to the mean value. Furthermore, the ARCH effect is low (0.0418) while the GARCH effect (0.572) is high. This large GARCH coefficient stipulates that shocks to conditional variance take a long time disappear and therefore, volatility is persistent (Shah, Hyder, & Pervaiz, 2009).

The above results affirm the suitability of GARCH model to conduct this study. The results evidently indicated the existence of time-varying conditional volatility of return of the exchange rate. Further the results denote

the persistence of the volatility of the exchange rate as given by the summation of the ARCH and GARCH effect is large. It also shows the consequence of today's exchange rate volatility persists in the forecast of variance for many periods in the future.

According to the output of the GARCH model, in the mean equation, the coefficient of the intervention variable was significant, and it took a negative value. This implies that for each 1 LKR worth net sales of USD by the CBSL, the exchange rate will increase by 0.002 within the reference period. This was different from the expected outcome where there is a strong impact of intervention on exchange rate volatility. Accordingly, an increase in net sales of foreign currency by CBSL may not cause to appreciate LKR in Sri Lanka against foreign currencies during the period that considered in this study. Therefore, this result was not generated the expected outcome of the Central Bank interventions where the expectation of intervention in turn to reduce the exchange rate volatility.

Net export has a negative significant outcome with the exchange rate volatility implying when there is a reduction in volatility with the increase of net exports. That is an increase (decrease) in the Net exports cause to appreciation (depreciation) of the foreign exchange rate. The coefficient of the variable interest rate difference is positive but not significant to the model. Increase in interest rate differential is associated with the depreciation of the exchange rate. Further, the coefficient of the foreign debt payment is 0.001234 and it is substantially lower impact due to smaller coefficient value. Also there is a negative relationship between exchange rate return and the foreign investment inflows with the one period lag. However, the relationship is not significant. Moreover, there is a negative relationship between exchange rate volatility and the earnings from tourism but it was insignificant variable to the model. The similar effect can be expected by the coefficient of the worker remittances. Inflation rate has positive relationship with the exchange rate implying the increase in inflation rate causes to increase the exchange rate volatility.

In the variance equation, the coefficient of intervention variable is positive, and this is the key parameter of interest of this study. This positive sign of the variable indicates that the Central Bank intervention (net sales) in the domestic foreign exchange market would cause to increase the exchange rate volatility in the economy. Therefore, this can be concluded that the ineffectiveness of the Central Bank intervention to the market. This positive relationship between intervention and exchange rate volatility is coincided with the findings of Connolly & Taylor (1994), Dominguez (1998), Cheung

& Chinn (1999), Ramchander & Raymond (2002), Beine et al., (2007).

Similarly, interest rate difference, net exports and lagged foreign income have positive association with exchange rate return and this indicated the increase in those variables caused to increase in the volatility of the exchange rate. Further, inflation rate, foreign debt and tourist earnings would reduce the exchange rate volatility of the country.

In the variance equation, coefficient of squared lagged residuals and lagged conditional variance have positive signs as anticipated and the coefficients of lagged conditional variance is significant at less than 10% level. Thus, lagged volatility has a significant effect on the current volatility. Further, the volatility appears to be significant with inflation rate of the country. These responses of volatility are having important policy implications of the country in controlling the volatility of exchange rate.

## CONCLUSION

This research analysed the effectiveness of the market interventions done by the Central Bank of Sri Lanka on the exchange rate returns and volatility in the USD/LKR rate in domestic foreign exchange market.

The GARCH (1, 1) model has been used to examine the effectiveness of CBSL's monthly foreign exchange intervention on the exchange rate level and volatility from January 2015 to December 2020. Apart from intervention, other macroeconomic variables also have an impact on the level and the volatility of the exchange rate and those variables also added to the developed model to enrich the appropriateness of the model to address the research problem.

The resulted GARCH (1, 1) model fitted with the data extensively. Accordingly, the key outcomes were the CBSL intervention influences the exchange rate level. Importantly, the impact of intervention (net sales of USD), i.e. the coefficient of intervention was 0.0021, even though the coefficient is very low, it denoted that impact of CBSL's intervention is not effective in altering the level of exchange rate. Since, CBSL's intervention actions were not in line with "leaning against the wind" behavior, in that case sales of USD resulted with a depreciation of USD/LKR exchange rate. Further, the results indicated that inflation rate, interest rate differences between US and Sri Lanka and foreign debt has positive impact on exchange rate return and net exports, lagged foreign income, worker remittance and tourist earnings have a negative relationship with the exchange rate returns.

The variance equation ensures the stability condition as the summation of the ARCH and GARCH term is less than one denoting the volatility shocks up to some extent moderately persistence. The estimated coefficient of the variable intervention is positive in the variance equation, and it tells us that the CBSL intervention (net sales of USD in the inter-bank domestic foreign exchange market) caused to increase the volatility of the exchange rate.

Therefore, this study found that the intervention by the Sri Lankan monetary authorities were not generated expected results in influencing the exchange rate level. Further, the intervention mechanism was not supported in stabilizing the daily realized volatilities in the foreign exchange market. Finally, it can be concluded that when there were large fluctuations in exchange rate, the official intervention to the market had a very significant destabilizing effect on the exchange rate.

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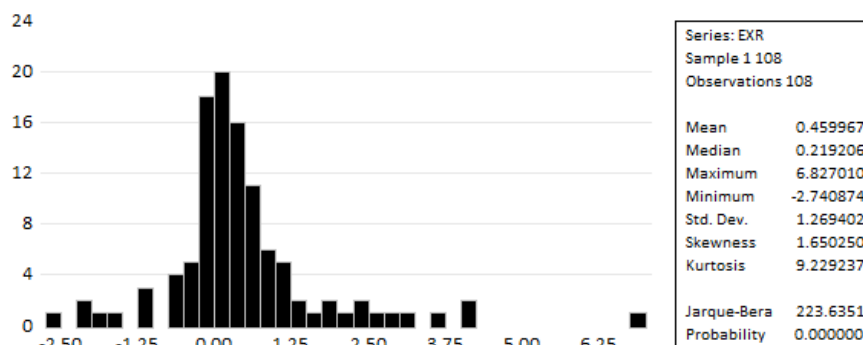
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## ANNEXURE

**Table 01: Normality Test of Variables**

Variable	Indicator	Augmented Dickey-Fuller (ADF)		Philips-Perron (PP)	
		Level	1 <sup>st</sup> Difference	Level	1 <sup>st</sup> Difference
EXR	Statistic	-6.891094	-12.30555	-6.920853	-24.71326
	P-Value	0.0000	0.0000	0.0000	0.0000
INV	Statistic	-5.337418	-10.20416	-5.418371	-15.03838
	P-Value	0.0000	0.0000	0.0000	0.0000
DINTD	Statistic	-8.587281	-9.338037	-8.531808	-32.14334
	P-Value	0.0000	0.0000	0.0000	0.0001
FI	Statistic	-5.084427	-8.702195	-8.093120	-51.96850
	P-Value	0.0000	0.0000	0.0000	0.0001
WR	Statistic	-5.997310	-2.735088	-5.912161	-25.30881
	P-Value	0.0000	0.0719	0.0000	0.0001
DET	Statistic	-0.113125	-7.973203	-9.278241	-36.36837
	P-Value	0.9441	0.0000	0.0000	0.0001
FD	Statistic	-11.04210	-10.11822	-11.04615	-55.73949
	P-Value	0.0000	0.0000	0.0000	0.0001
NEXP	Statistic	-6.322542	-10.90311	-6.470537	-35.30930
	P-Value	0.0000	0.0000	0.0000	0.0001
DINF	Statistic	-9.129342	-3.663211	-9.071784	-36.07067
	P-Value	0.0000	0.0062	0.0000	0.0001

**Figure 02: JB Test of EXR Variable**



**Table 02: Estimated Test Statistics from OLS Residuals**

Variable	Q(8)	Q <sup>2</sup> (8)	LM(8)
$\varepsilon_t$	7.9884 (0435)	6.7042 (0.349)	9.157465 (0.3292)

**Table 03: Estimated Test Statistics of ARCH Effect**

Heteroskedasticity Test: ARCH

F-statistic	3.868957	Prob. F(1,66)	0.0534
Obs*R-squared	3.765465	Prob. Chi-Square(1)	0.0523

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.670868	0.222089	3.020712	0.0036
RESID^2(-1)	0.236056	0.120010	1.966967	0.0534
R-squared	0.055374	Mean dependent var		0.870971
Adjusted R-squared	0.041062	S.D. dependent var		1.662450
S.E. of regression	1.627960	Akaike info criterion		3.841503
Sum squared resid	174.9168	Schwarz criterion		3.906783
Log likelihood	-128.6111	Hannan-Quinn criter.		3.867369
F-statistic	3.868957	Durbin-Watson stat		1.980067
Prob(F-statistic)	0.053393			

**Table 04: Parameter Estimates of the GARCH (1,1) Model**

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	-0.588570	1.116057	-0.527366	0.5979
INV	0.002090	0.001014	2.061034	0.0393
DET	-0.000709	0.002084	-0.340334	0.7336
DINF	0.092141	0.179726	0.512676	0.6082
DINTD	0.334653	0.473502	0.706762	0.4797
FD	0.001234	0.000810	1.523265	0.1277
FI(-1)	-0.002023	0.006973	-0.290117	0.7717
NEXP	-0.001685	0.000958	-1.758079	0.0787
WR	-0.000879	0.001882	-0.467125	0.6404
Variance Equation				
C	0.714085	0.855037	0.835151	0.4036
RESID(-1)^2	0.041818	0.140617	0.297389	0.7662
GARCH(-1)	0.572005	0.320606	1.784140	0.0744
INV	5.13E-05	0.000937	0.054765	0.9563
DET	-0.001920	0.001298	-1.479113	0.1391
DINF	-0.360548	0.184236	-1.956988	0.0503
DINTD	0.168494	0.510041	0.330355	0.7411
FD	-0.000816	0.001073	-0.760889	0.4467
FI(-1)	0.000519	0.004358	0.119046	0.9052
NEXP	0.000173	0.000878	0.197316	0.8436
WR	-0.000233	0.001495	-0.156158	0.8759
R-squared	0.314990	Mean dependent var		0.496367
Adjusted R-squared	0.223655	S.D. dependent var		1.164668
S.E. of regression	1.026194	Akaike info criterion		2.887070
Sum squared resid	63.18447	Schwarz criterion		3.567015
Log likelihood	-78.60391	Hannan-Quinn criter.		3.156827
Durbin-Watson stat	1.934620			

**Table 05: Heteroskedasticity Test**

Heteroskedasticity Test: ARCH

F-statistic	0.336265	Prob. F(8,52)	0.9479
Obs*R-squared	3.000494	Prob. Chi-Square(8)	0.9343

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.242426	0.476836	2.605562	0.0119
WGT_RESID^2(-1)	0.070238	0.138719	0.506331	0.6148
WGT_RESID^2(-2)	0.064978	0.138823	0.468066	0.6417
WGT_RESID^2(-3)	-0.104250	0.133766	-0.779342	0.4393
WGT_RESID^2(-4)	-0.064423	0.134707	-0.478243	0.6345
WGT_RESID^2(-5)	0.025539	0.134766	0.189509	0.8504
WGT_RESID^2(-6)	-0.155617	0.134199	-1.159595	0.2515
WGT_RESID^2(-7)	0.003980	0.135969	0.029272	0.9768
WGT_RESID^2(-8)	-0.012397	0.135918	-0.091210	0.9277

R-squared	0.049188	Mean dependent var	1.044038
Adjusted R-squared	-0.097090	S.D. dependent var	1.673621
S.E. of regression	1.752986	Akaike info criterion	4.095970
Sum squared resid	159.7939	Schwarz criterion	4.407410
Log likelihood	-115.9271	Hannan-Quinn criter.	4.218026
F-statistic	0.336265	Durbin-Watson stat	1.978053
Prob(F-statistic)	0.947883		

# **Deconstructing Job Performance: The Traditional Rationale and a Future Raison d'être of Job Performance: A Concept Paper**

D. C. P. Jayasuriya<sup>1\*</sup>, G.D.N. Perera<sup>2</sup>, A. Padukage<sup>3</sup>

<sup>1\*</sup> *PhD Scholar in Management, Faculty of Management Studies,  
University of Sri Jayewardenepura, Sri Lanka*

*chulaj3@gmail.com*

<sup>2</sup> *Department of Human Resource Management, Faculty of Management  
Studies, University of Sri Jayewardenepura, Sri Lanka*

*dinokagnp@sjp.ac.lk*

<sup>3</sup> *Department of Information Technology, Faculty of Management Studies  
and Commerce, University of Sri Jayewardenepura, Sri Lanka*

*amitha@sjp.ac.lk*

## **ABSTRACT**

*A promiscuous construct, job performance is identified as multidimensional, conjugated with task and contextual performance. It continues to perplex the scholarly community at present as it did in the past in their attempts to define it. Continuous changes have been taking place in the definition of the construct with the emergence of new jobs, which were hallucinatory in the past, due to the advent of information communication technology in work settings. The purpose of this article is to review the current understanding of the concept of job performance in terms of its definition and dimensions and propose new hypotheses as to how individual dispositions could influence task and contextual performance independently while identifying gaps related to knowledge and theory. A systematic literature review was adopted based on Callahan's (2014) "Five C" characteristics to improve its rigour and also addressed Callahan's (2010) Six W' components to capture, collect and organize data. This systematic review has enclosed selected published articles, books and papers presented between 1954 and 2018 on job performance, with specific reference to its definitions and dimensions. Then 38 articles were scrutinized to conceptualize job performance. This review explored practical knowledge and theoretical gaps (Miles, 2017) and proposed a model that could be explored in the future to determine the impact of individual dispositions on task and contextual performance independently. This scope of the review is limited to a selected sample of journal articles, books and papers presented between 1954 and 2018. However, there is extensive scope for empirically testing the theoretical model presented herein in a multitude of global contexts in future studies.*

**Keywords:** Contextual Performance, Job Performance, Task Performance

## **INTRODUCTION**

Job performance has been a construct that has undergone scrutiny for many years and yet it does not seem to have lost its vigour in perplexing organizational strategists and scholars alike. Why is this construct stubbornly refusing to heed scholastic battering over the years? It is a puzzle that has become elusive. According to Murphy & Kroeker (1988) job performance is said to be one of the central concepts in personnel administration that are poorly defined and scantily understood. Many have been attempting to assimilate the same with task performance; productivity etc. yet found that such attempts are fruitless as the circumstances of its application change. Murphy & Kroeker (1988) further suggested the option of leaving the construct undefined providing the opportunity for those who are using it under different situations to define the same depending on the circumstances. Such an approach would have made it more ambiguous for scholars who are striving to concoct theories related to the construct. Fleishman and Quaintance (1984, as cited in Murphy & Kroeker, 1988) assimilated job performance to task performance assuming that a person can carry out a task within a given period to a set of standards. Some scholars have left job performance to be a broad set of activities mainly delimited by cooperating with others and carrying out some group tasks (O'Boyle, et al., 2011). Further, Bin & Shmailan (2016) assimilated it into employee engagement. It is well known that employee selection is grounded on the idea of selecting individuals from a group of applicants who are inclined to perform well on the job. Many training programs are designed to improve the job performance of employees and performance appraisals are carried out to determine the level of the job performance of individual employees. Further, merit pay is also based on employee performance (Viswesvaran & Ones, 2000). Yet job performance remains ill-defined.

The preceding assertions of job performance stimulate only an abstract description of the same, hence the question of what constitutes job performance, would need a more vigorous approach to decoct the same in terms of scalable actions and behaviours unique within this construct.

## **LITERATURE REVIEW**

Human work performance has been a topic of discussion for some time as it plays an important part in employment, productivity and competitive advantage. Studies that have concentrated on personal practices and human

work performance have used a variety of criteria to measure absenteeism, productivity, turnover, salary and promotion (Motowidlo & Kell, 2012). Although the measures were expected to reflect what performance is, there had been scanty discussions related to the conceptual status of the construct *job performance* itself. Subscribing to the above notion, Viswesvaran & Ones (2000) postulated that the selection of personnel, designing and executing of training and development programs, measuring individuals of their strengths and weaknesses to design training programs, performance appraisal and feedback and even merit pay is based on information related to job performance, and yet an elucidating definition of the concept of job performance seems to be a far cry. However, Viswesvaran & Ones (2000) described job performance as measurable actions, behaviours and outcomes employees perform or bring about and contribute to the achievement of organizational objectives. Further, Murphy & Kroecker (1988) in their attempt to define job performance noted that it is very much related to productivity and accepted the complexities involved in defining this construct. Further, they noted due to the complexities of defining the construct its dimensions are vital for better determination of the nature of the construct and to comprehend the same adequately. Flanagan (1954) claimed that job performance can be inferred from a set of critical incidents that had been performed, which have a special significance and meet specifically defined criteria. In this, he asserts that an *incident* is an observable human activity that is sufficiently complete in itself to permit inferences and predictions to be made about the person performing an act. The word *critical*, however, is denoted as an incident that must occur in a situation where the purpose and the intent of the act are clear to the observer and its consequences are sufficient to leave little doubt concerning its effect. Hence, a critical incident is the performance of a job meeting a specified criterion. Writing on the subject of employee attitude and performance Brayfield & Crockett (1955) alluded to the fact that job performance is related partially to productivity because it has a direct value to the industry and society at large. The researchers also noted that the industrial setting and the individual reaction thereto are also important for productivity. This notion seems to be partially in agreement with Murphy & Kroecker's (1988) assimilation of job performance to productivity and its variations based on the context within which it is carried out. Further, the conclusions of Brayfield & Crockett (1955) were again agreed upon by Iaffaldano & Muchinsky (1985) in their meta-analysis of studies related to the link between job satisfaction and performance, inferring that job performance of satisfied employees is far higher than others, meaning, that the environment within which employees'

function is relevant with productivity or performance. Campbell et al., (1990) exploring job performance noted that there is no one outcome, one factor or anything that can be pointed to and labelled as job performance. Campbell et al., (1990) suggested that successful performance can be assimilated into effectiveness. Campbell et al., (1990) drew an analogy between their claims with that a manager with stellar performance behaviours results in increased profits and increased effectiveness in job performance. Thus, arguing that successful job performance should be accompanied by effectiveness. This leads to the question of whether one can identify ineffective performance as job performance. Hence, it appears that appropriate outcomes of certain behaviours that are contiguous parts of a particular job are concomitant factors of job performance. However, arguing on a different note Weislogel & Schwarz (1955) postulated that the assumption of successful performance of a given set of tasks does not satisfy all the fundamentals of job performance. These conclusions were drawn on the basis that selecting personnel based on their overt behaviours exhibited while performing a selected group of tasks does not typically infer appropriate job performance as certain situations may warrant different kinds of behaviour that are far from the anticipated behaviour yet with the expected outcome. Alluding to the example of military personnel Weislogel & Schwarz (1955) noted that a battlefield situation cannot be staged in a test situation and concluded that there are behaviours which are contingent on the situation leading to job performance. This particular conclusion is analogous to Koopman's (2014) assertion that behaviours exhibited as reactive are considered adaptive behaviours displayed based on the situation leading to job performance. Hence, job performance is not simply performing a task, but it needs to be accompanied by appropriate adaptivity to a situation. This indicates the typical nature of job performance which is multidimensional and promiscuous and not static.

## The Concept of Job Performance

**Table 1: Definitions of Job Performance**

Year	Author/s	Definition	Comments
1954	Flanagan	job performance can be inferred from a set of critical incidents that had been performed, have a special significance and meet specifically defined criteria	It is assimilated to incidences that are performed to a set of standards.
1955	Brayfield & Crockett	It is partially productivity, and it has a direct value to the organization and society.	A partial description of job performance and it partly considered productivity.
1955	Weislogel & Schwarz	Successful performance of a given set of tasks does not fulfil the fundamentals of job performance as some situations may warrant behaviour that is far from anticipated behaviour with expected outcomes.	Overt behaviour does not infer successful job performance as in some situations it may require unanticipated behaviour with the same outcome. Reactive situational behaviour is important.
1984	Fleishman & Qaintance	Job performance is task performance that is carried out within a given period to a set of standards.	Completion of assigned tasks is assimilated to job performance
1985	Iaffaldano & Muchinsky	Job performance is related to productivity and high performance is achieved in an appropriate work environment and high productivity.	A claim that indicates the inclusion of work environment and productivity.
1988	Murphy & Kroeker	It is very much related to productivity and accepted the complexities involved in defining this construct.	Partially connected to productivity but is complex to describe.
1990	Campbell et al.	There is no one outcome, one factor or anything that can be pointed to job performance, and it is	No clear-cut definition but acknowledge that it has several dimensions.

		multidimensional.	
1993	Borman & Motowidlo	A combination of task and contextual performances affects the core of the organization in terms of its activities and attachment respectively.	Two dimensions noted are distinct and a combination of both is job performance.
1994	Nayyar	A set of outcomes produced at a certain period.	Outcomes result in efforts that are specifically framed within a specific time frame.
1994	Motowidlo & Van Scotter	Performance behaviour that contributes to the organization's success in terms of task proficiency and performance behaviours that contribute to the organization in other ways.	Assimilated to a set of behaviours carried out for the benefit of the organization exhibiting proficiency at tasks and other performance behaviours not related to tasks.
2000	Viswesvaran & Ones	Measurable actions, behaviours and outcomes that employees engage in or bring about that are linked with and contribute to organizational success.	Measurable physical movements carried out with related results have a beneficial effect on organizations' success.
2002	Rotundo & Sakette	Actions and behaviours that are within the control of the individual and contribute to the achievement of the objectives of the organization	Actions and behaviours leading to organizational goal achievement.
2011	O'Boyle, Humphrey, Pollack, Hawver & Story	A broad set of activities mainly delimited by cooperating with others and carrying out some group tasks.	Performance of group-related tasks and cooperating with others in the organization.
2012	Bevan	A factor impacting the profitability of an organization	A feature that is beneficial for the organization in terms of return on investment.

2015	Jayaweera	It is something difficult to explain and it contains complexities related to the organization, the individual and the team.	A component that is inexplicable and complex and related to the organization, individual and the group
2016	Bin & Shmailan	Employee engagement.	An employee performing with cognitive absorption.
2018	Harari & Viswesvaran	Evaluable behaviours engaged in by employees that contribute towards achieving organizational goals.	Assessable behavioural commitments of an employee resulting in reaching organizational goals.

*Source:* Developed by researchers based on literature

## METHODOLOGY OF THE STUDY

The methodology adopted for this study is a systematic review of literature related to the construct of *Job Performance*. According to Goyal & Kumar, (2021) systematic reviews can be of numerous types, namely – structured reviews based on methods theories and constructs (Rosado-Serrano et. al., 2018), a framework-based (Paul & Benito, 2018), Hybrid-narrative (Dabic et. al., 2020), theory-based review (Gilal et. al., 2019), meta-analysis (Knoll & Mathes, 2017), bibliometric (Randhawa et. al., 2016), and review aiming for model/framework development (Paul and Mas, 2019). Goyal & Kumar (2021) postulated that the systematic review method is well-suited for a critical survey of extant research on a selected subject. Callahan (2014) noted that the synthesis of existing literature in the form of a review of a given phenomenon is vital to improving evidence-based decision-making. Further, Booth et al., (2012, as cited in Callahan, 2014) claimed that literature reviews are important as they help identify gaps in knowledge about a particular phenomenon. As such, the systematic review was considered an appropriate methodology to dissect the construct *job performance* and review the current knowledge of the same to gain a better understanding to enhance decision-making in managing human resources. This review was driven by selecting *Job performance*, *work performance*, *employee performance*, *task performance* and *contextual performance* as key words. Hence, this review is expected to shed light on to possible modern postulations for the construct in an era in which the configurations of jobs have changed due to the

integration of Information communication technology (ICT). To enhance the potency of the literature, review the Six Ws proposed by Callahan (2014) were considered together with “Five C” characteristics to improve the rigour of the review.

**Table 2: Components of Literature Review Method**

Who	The author of the article was central to the review
When	The literature was collected within four months
Where	The relevant materials were collected using scholarly articles and books related to psychology and work performance.
How	Data were collected partially using a snowball selection and browsing through relevant materials
What	A mixture of articles was found with a multitude of inferences to job performance, however, literature related to the definition of the construct and concomitant factors of the same was considered useful, therefore retained.
why	The specific articles were selected as they were considered the most relevant articles on the subject.

*Source:* Developed by researchers

Callahan (2014) further, identified the “Cs” as *concise*, *clear*, *critical*, *convincing* and *contributive*. *Conciseness* was referred to as a synthesis derived from a broad array of articles to address a particular dilemma or question i.e., a gap that warrants a specific answer. Firstly, in terms of conciseness, the review presented herein is to decipher gaps in the understanding of what constitutes job performance in an era of high pervasiveness of ICT in organizations. According to Miles (2017) practical-knowledge, gap exists when a conflict arises when actual behaviour is different from advocated behaviour. With the use of ICT in organizations to perform jobs the likelihood of misinterpreting job performance has increased, thus creating a gap between the existing behaviour displayed and the expected behaviour. Further, the gap in theory (Miles, 2017) is also expected to be filled with the proposition of the new theory that the review presents. Secondly, *clearness* is referred to as *clarity* of the process of collecting “data” from a large array of literature available. Torraco (2005) commenting on *Organizing an integrative literature review* claimed that having a structured system for each artifact will improve the quality, clarity and rigour of the literature review. Addressing this need table 2 is presented to provide a

candid articulation of the basis of the review. Thirdly, *Critical* is the *criticality* of the review which integrates the positionality of the author presenting the assumptions, values and beliefs of the author, exposing the hidden knowledge. Towards this end, the review argues based on the current logical assumptions of the author (Denyer and Pilbeam, 2013) and present a possible hypothesis that might appear attractive in the future for scholastic exploration. Fourthly, the review should be *convincing* in nature, presenting novel arguments with a convincing rationale for an existing issue with appropriate justifications (Callahan, 2014; Denyer & Pilbeam, 2013). The review presented herein attempts to decipher the similarities and differences of arguments presented in defining the construct of *job performance* in the literature appraised and endeavour to depict the complexities of the same due to its promiscuous nature. Fifthly and finally Callahan (2014) noted the last “C” for *contributive*, with which he suggested that the literature review must be able to contribute to the body of knowledge and rigorous reviews extend or create a new theory. Hence, the review herein presents a possible theory on how the most common facets of *job performance*, i.e., task performance and contextual performance, are impacted separately by individual dispositions, which can be described as personal characteristics based on the actual behaviour of a person (Ruitenbergh, 2011). This review opted for online search using databases such as Google Scholar, Research gate, Sage journals, Springer, Science Direct, Taylor and Francis and Emerald. Overall, 39 scholarly articles were selected for this review as depicted in table 3 given below.

**Table 3: Articles included in the sample selected for the review on Job Performance**

Journal/Books/Forum papers	Articles	References
<i>American Journal of Applied Sciences</i>	1	Ahmad, & Ngah, 2011.
<i>Academy of Management Journal</i>	2	Bateman, & Organ, 1983; Welbourne, et al., 1998.
<i>Canadian Journal of nursing research archive.</i>	1	Becker, 1983.
<i>Human Performance</i>	4	Bergman, et al., 2008; Borman, & Motowidlo, 1997; Hattrup, & O’Connell, 1998; Motowidlo, et.al., 1997.

<i>The European HRD Forum</i>	1	Bevan, 2012.
<i>Advances in Experimental Social Psychology</i>	1	Berkowitz, 1974.
<i>Issues in Business Management and Economics</i>	1	Bin & Shmailan, 2016.
<i>Psychological Bulletin</i>	3	Brayfield, & Crockett, 1995; Flanagan, 1954; Iaffaldano, & Muchinsky, 1985.
<i>Personnel Psychology</i>	1	Campbell, et al., 1990.
<i>Organizational behaviour and Human decision process.</i>	1	Chen, & Mathieu, 2008.
<i>Altruistic, Emotion, Cognition and Behaviour</i>	1	Eisenberg, 2015.
<i>International Journal of Contemporary Hospitality Management</i>	1	Hogan, 1991.
<i>Sage Handbook of Industrial, Work and Organization Psychology</i>	1	Harari, & Viswesvaran, 2018.
<i>International Journal of Business Management</i>	1	Jayaweera, 2015.
<i>The social psychology of organizations</i>	1	Katz, & Kahn, 1966.
<i>Journal of Vocational Behaviour</i>	1	Keller, & Semmer, 2013.
<i>International Journal of Innovative Information Systems &amp; Technology Research</i>	1	Koko, & Ngulube, 2021.
<i>CPI Koninklijke Wöhrmann</i>	1	Koopmans, 2014.
<i>Journal of applied psychology</i>	3	Lang, et al., 2012; Rotundo. & Sackett, 2002 ; Motowidlo, & Van Scotter, 1994.
<i>Behaviour and response</i>	1	Levey, & Martin, 1974.
<i>Handbook of Psychology</i>	1	Motowidlo, & Kell, 2012.
<i>Journal of humanities and social science</i>	1	Muchchal, 2014.

<i>Dimensions of job performance</i>	1	Murphy,& Kroeker, 1988.
<i>Journal of Organizational Behaviour,</i>	1	O'Boyle et al., 2011.
<i>The Information Technologist</i>	1	Oguche, 2017.
<i>Sri Lankan Journal of Human Resources Management.</i>	1	Opatha & Rathnayake, 2018.
<i>Neuroimaging of Human Brain Function.</i>	1	Peterson, et al., 1998.
<i>International Business Research.</i>	1	Ramawickrama, et al., 2018.
<i>International journal of selection and assessment.</i>	1	Viswesvaran, & Ones, 2000.
<i>Educational and Psychological measurement</i>	1	Weislogel, & Schwarz, 1955.

Source: Developed by researchers based on literature

## **The Necessity of Conceptualizing Job Performance**

According to Becker (1983) to understand something, for example, a concept, it is necessary to break it down to analyse it better. Although many are aware of its philosophical and scientific meaning, still the term concept is comprehended loosely and as such developing a theory has become ineffective (Torres 1980, as cited in Becker, 1983). It follows then that for concepts to make the maximum contribution to the theory they must be initially clarified and examined. Hence, the precise meaning of a concept is thus dependent upon the context within which it is employed. As such *conceptualization* of job performance will become important to determine its dimensions and to ascertain how these would play out in organizational scenarios which are modern and dynamic.

## **Conceptualization of Job Performance**

Job performance was identified as an important factor impacting the profitability of organizations (Bevan, 2012). Further, Viswesvaran and Ones (2000, as cited in Jayaweera, 2015) postulated that job performance has become the core construct of today's organizational work environments. According to Campbell et al. (1990, as cited in Motowidlo and Van Scotter, 1994), the construct of job performance has not been mapped even when there are sophisticated job analysis techniques available to identify tasks and behaviours related to the same. The above notions presented a contrasting view to Murphy and Kroeker's (1988) interpretation of job performance,

claiming it to be similar to task performance.

Most authors agree that when conceptualizing job performance, one has to differentiate the same between action and outcomes. These assertions are emphasized by Motowidlo and Van Scotter (1994) when they suggested that job evaluations are done by dissecting job performance into tasks and behaviours. This suggestion in itself is an indication that job performance cannot be viewed from a single aperture. As such Campbell et al., (1990, as cited in Rotundo & Sackett, 2002) job performance contains actions and behaviours rather than the results of these actions. Murphy & Kroeker (1988) in their description related to job performance postulated that it is one of the central aspects of personal administration in the military to define job performance and to identify dimensions of the same to predict, make improvements and measure job performance of military personnel in the U.S Navy. In their attempt, they assimilated job performance with productivity and task performance and accepted the complexities of defining either one of these three constructs. Hence, they contend that identifying dimensions of job performance is needed for better conceptualization and clarity.

There have been several attempts by many scholars to assimilate it to the meaning of task performance and productivity with little agreement with either of these so-called synonyms. However, Rotundo & Sackett (2002) conceptualized job performance as actions and behaviours that are under the direct control of the individual and contribute to the achievement of the goals of the organization. Scholars such as Welbourne, et. al., (1998) attempted to suggest that programs such as total quality management, employee involvement and job enrichment have generated positive behaviours of employees thus improving the behavioural aspect of performance, still leaving a lacuna in the definition of job performance. According to Romanoff (1989, as cited in Muchhal, 2014) job performance is a set of results produced at a given time and does not refer to traits or personal characteristics of the performer. Nayyar (1994, as cited in Muchhal, 2014) stated that job performance is the level to which an individual completes his or her role according to the standards stipulated by the organization. Interestingly Jayaweera (2015) has claimed that job performance is difficult to explain from a singular platform as it contains complexities related to the organization, the individual and the team. Therefore, Jayaweera attempted to dissect the same into task performance and contextual performance agreeing with Borman & Motowidlo (1997). Borman & Motowidlo (1993 as cited in Borman & Motowidlo, 1997) noted that there is a clear distinction between task and contextual performance that affects the core of the organization in

terms of its activities and attachment respectively. Further, Campbell et al., (1990, as cited in Motowidlo & Van Scotter, 1994) brought out a model with a division between performance activities that contribute to organizational success, in terms of task expertise and performance behaviours that subscribes to organizational success in other ways. The above claims indicate that job performance is a terminology given to a collection of components related to a set of tasks and affective relational oriented behaviours that are specific to occupationally related functions of an organization. Therefore, there appears to be a necessity to dissect *job performance* into tasks and non-task-related or contextual performance for a better conceptualization of the same.

### **Task Performance**

Defining task performance Borman & Motowidlo (1997) proposed that it is to do with performing activities that are related to the technical core of the organization either directly by implementing part of its technological process or by indirectly providing needed materials and services. In their example of the task performance of a fire-fighter the authors named performing rescue operations, conducting salvage operations and applying ventilation procedures as relevant tasks. This particular decoding of *Task performance* would help one to infer that task performance is analogous to performing activities that are relevant to a specific job. This assertion also enables researchers to view task performance in terms of different occupations as they vary significantly. Motowidlo & Van Scotter (1994) noted that task performance includes two categories of activities, namely, one conforming to actions that are directly related to transforming raw materials into goods and services and maintenance of the technical core by replenishing its supplies of raw materials and distribution of finished goods. The problem with this conceptualization is that it is mainly related to the manufacturing organizations leaving other organizations in a vacuum. Analysing task performance from a neurological perspective Peterson, et al., (1998) noted that task performance includes recognition of a patterned behavioural demand then executing the task as demanded behaviour, having corrected the errors and fine honing the needed behaviour. This broad neurological analysis of task performance is similar to that of the dimensions identified by Jayaweera (2015). Borman & Motowidlo (1993, as cited in Motowidlo & Van Scotter, 1994) suggested that the major distinction in task performance is the expertise with which the tasks are carried out. Further, they claim that differences in skill, knowledge and abilities covary more with task performance. Similarly, experience and training are also strongly correlated

with task performance. These assertions indicate that task performance is very much connected to occupations. Detailing task performance in the context of quality of performance, He et al. (2019) noted that task completion is based on high quality, high accuracy and low errors in the main job responsibilities. This particular description of task performance lacks substantial details even though the study refers to jobs related to the hospitality industry. In their study on task performance, Makki & Abid (2017) defined task performance as what a worker carries out or does not carry out on the job. Describing further Makki & Abid claimed that the task performance of employees includes relevance, quantity, quality of output and cooperativeness. It is also stated that task performance relates to transforming raw materials into goods and services, which are considered core to the job, and to core technical skills. It is also noted that the task performance that is preferred relates to what is recommended by the company or its associates that lies under the control of the employee. The above conceptualization of task performance indicates that it essentially rallies around the behaviours that are oriented towards the physical and mental aspects of a particular occupation connected to the organization's core technical function or anything related to it. Table 4 given below delineate the definition of task performance.

**Table 4: Descriptions of Task Performance**

<b>Task Performance</b>		
<b>Year</b>	<b>Source</b>	<b>Description</b>
1988	Peterson, Mier, Fiez, & Raichle	task performance includes recognition of a patterned behavioural demand then executing the task as demanded behaviour, having corrected the errors and fine honing the needed behaviour
1993	Borman & Motowidlo	Behaviour that is directed to carry out a task proficiently.
1994	Motowidlo & Van Scotter	comprises two classes of behaviour, i.e., one conforming to actions that are directly connected to transforming raw materials to goods and services the organization produces and the others related to service and maintenance of the technical core by restocking its supplies of raw materials and distribution of finished goods

1997	Borman & Motowidlo	Performing activities that are related to the technical core of the organization either directly by implementing a part of its technological procedure or by indirectly providing needed supplies and services.
2017	Makki & Abid	What a worker performs or does not perform in the job in terms of quantity, quality of output and cooperativeness.

*Source:* Developed by researchers

## Contextual Performance

Katz & Kahn (1966, as cited in Bateman and Organ, 1983) noted that the effective functioning of an organization depends on supra-role behaviour – behaviour that cannot be prescribed or required in advance for a job. This supra role according to Bateman & Organ (1983) is required to lubricate the social mechanisms in the organization that is not a part of task performance and claimed that it is termed as Citizenship behaviour, a concept initially developed by Bateman & Organ (1983) and Borman & Motowidlo (1997). They further noted that contextual performance significantly differs from task performance for the following reasons.

- a. Persisting with enthusiasm and extra effort to complete own task activities
- b. Volunteering to carry out task activities that are formally not part of one's job.
- c. Helping and cooperating with others.
- d. Following organizational rules and procedures
- e. Endorsing supporting and defending organizational objectives.

Borman & Motowidlo further noted that precursors of task performance are more likely to involve cognitive ability whereas contextual performances are more likely to be based on personality variables. This is analogous to the conceptualization of Hattrup et al. (1998) who indicated that there is a significant relationship between personality and contextual performance. Further, they stated that contextual behaviours are very much likely to relate to individual variances in motivation, affect, individual style and interpersonal orientation. Improving on this personality contextual performance relationship behaviour, Lang et. al., (2012) concocted a theory that suggests that there is a positive relationship between a high level of affiliation motive and contextual performance, as a high affiliation motive is

a predisposition to establish close relationships with many people. Hence, those with high affiliation motives are more likely to have closer connections with others and show extraverted behaviour in supporting others, cooperating with others etc. thereby leaning more on a high level of contextual performance. Further, the supra-role behaviour proposed by Katz & Kahn (1966) seems important to supervisors as such behaviour on the part of their subordinates would make their job easier and free their own time and energy, which could be spent on more substantial tasks leading to better outcomes for the organization. The equity theory of motivation proposed by Adams (1966, as cited in Berkowitz, 1974) postulates that it is built around the concepts of proportionate return, suggesting that a person will gauge whether a situation is just or equitable when the outcome of a person's effort is evaluated proportionate to his inputs. Hence, the proposition is that employees become de-motivated, both about their job and their employer, if they feel as though their inputs are greater than the outputs. Ross & Kapitan (2018) in their research on marketing noted that there is fairness in exchange in which those customers who feel that they have gained more from a purchase are more likely to consume pro-socially in the marketplace. Although this particular article is not directly related to job performance, a candid inference can be made to the notion that people are prone to reciprocate only if what they have gained is equal or more. Hence, in the case of contextual performance employees are likely to reciprocate pro-socially only if they have received something of value at an equal level or more. The contextual performance is assimilated to Organizational citizenship behaviour (OCB) by Bateman & Organ (1983) who proposed that employees seek to reciprocate those who benefit them. Such reciprocation is dependent on the level of satisfaction of the employee, which is volitional and non-manipulative. Clark & Isen (1982, as cited in Bateman & Organ, 1983) contend that pro-social gestures are most likely to occur when a person experiences a generalized mood characterized by positive affect. Studying classical conditioning of human evaluative responses Levey & Martin (1974) noted that human behaviour is evaluative; hence human responses would depend on evaluating the environment. This notion also corroborates with the reciprocal behaviour postulated by Bateman & Organ (1983).

It appears that a greater proportion of the aforesaid research relate contextual performance to reciprocation for some positive action of the employer which leads to the arousal of a positive emotion leading to reciprocation. Such association would warrant considering contextual performance from a psychological perspective. Eisenberg (2015) noted that pro-social behaviour

is associated with altruism and is defined as voluntary behaviour that is intended to benefit another which is not motivated by the expectation of an external reward. Eisenberg further states that these altruistic behaviours are self-reinforcing leading to positive affect. These claims seem to resonate well with what was promoted by Bateman & Organ (1983) as OCB, as a result of arousal of a positive effect. Table 5 given below contains definitions of contextual performance.

**Table 5: Description of Contextual Performance**

<b>Contextual performance</b>		
<b>Year</b>	<b>Source</b>	<b>Description</b>
<b>1966</b>	Katz & Kahn	Supra-role behaviour cannot be prescribed or required in advance.
<b>1966</b>	Adams	Behaviour that is built around a proportionate return has gauged the situation to be just and equitable when the outcome of a person's effort is evaluated proportionate to his or her inputs. (Equity theory)
<b>1983</b>	Bateman & Organ	Behaviour needed to lubricate the social machinery in the organization which is not a part of task performance.
<b>1983</b>	Bateman & Organ	Similar to organizational citizenship behaviour by way of reciprocating those who benefit them.
<b>1997</b>	Borman & Motowidlo	Behaviour that exhibits persistent enthusiasm, placing extra effort to complete tasks, volunteering to help others, cooperating with others, helping others, adhering to organizational rules and regulations, and defending the organization.
<b>1997</b>	Borman & Motowidlo	Behaviour that is likely to be based on personality variables
<b>1998</b>	Hatrup, O'Connel & Wingate	A behaviour that is based on personality variables, emotions, personal style and interpersonal orientation.
<b>2012</b>	Lang, Ewen, Zettler & Hulsheger	An individual predisposition which is related to the high affiliation that leads to cooperation with others.

*Source:* Developed by researchers

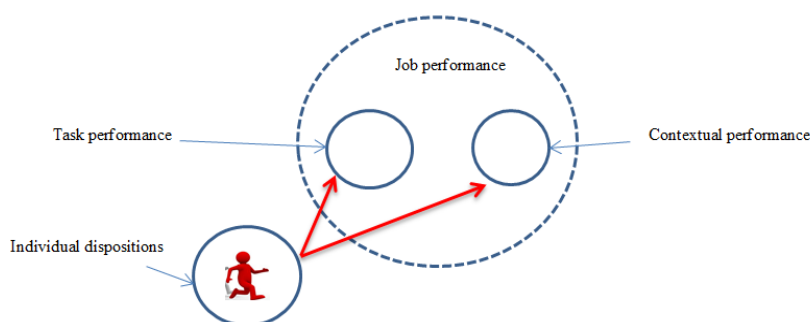
### **Future raison d'être (Hypotheses for the future): The Model**

At present, the construct of job performance has been understood as multidimensional with the convergence of task and contextual performance. Scholars have traditionally endeavoured to amplify the significance of behavioural aspects in terms of carrying out tasks and reciprocal behaviour promoted by the cognitive process related to subjective interpretations of the circumstances and the resultant experience. Within this, it seems that both task-related behaviour and reciprocal behaviour are grounded as concomitant factors of job performance. Nayyar's omission of personal traits or personal characteristics in his discussion on job performance can be considered as an indication of the indifference of some thinker's place on individual characteristics (Nayyar, 1994, as cited in Muchhal in 2014). However, with the attempt to integrate job performance with the *times*, scholars have opted to scrutinize it further and have come out with new components of the task and contextual performance in an attempt to decipher the promiscuity of the concept, challenging the notions they have held for some time. (Campbell, et. al., 1990; Motowidlo & Van Scotter, 1993; Rotundo & Sackett, 2002; Jayaweera, 2015).

Time is opportune at present to scrutinize whether job performance can be further deconstructed into facets that are contiguous and appropriate to current times, as the advent of information and communication technology is impacting human living more than ever. Be it working at the office, taking away food or socializing with friends and loved ones, technology has come to master the living styles of human beings as individuals, families or as societies. With this form of integration of technology, the demand for better refined technologically advanced products and services has increased many folds. Within this backdrop integration of technology within work environments have increased tremendously to improve job performance and scholars have noted that such integrations have impacted job performance positively (Oguche, 2017; Koko & Ngulube, 2021). Yet research on how individual dispositional factors could affect job performance remains scanty. Some scholars have indicated that dispositional factors such as locus of control affect job satisfaction (Ahmad & Ngah, 2011; Keller and Semmer, 2013). Further, Opatha & Rathnayake (2018) in a study attempting to determine the determinants of job performance noted that agreeableness and personal character impact job performance. Although the terms agreeableness and personal character are somewhat broad in their definitions, such a conclusion would enable one to infer that dispositional factors can indeed impact job performance. Further, there is also a postulation that job

satisfaction is an attitude people have about their jobs (Armstrong, 2006 as cited in Ramawickrama, Opatha & Pushpakumari, 2017). This particular claim enables one to deduce that if *attitude* is a contiguous part of job satisfaction and then satisfaction cannot be derived as a consequence of poor performance. Thus, the above contentions can lead to a possible claim that a positive attitude of an employee can lead to positive job performance. As such the following hypothesis can be proposed as a possible trajectory that research on job performance should progress to determine how individual predispositions are linked to job performance and the consequences thereof. The proposed model below can be tested in the future within different contexts to determine the vicissitudes of job performance, consequent to different individual dispositions.

**Figure 1: Future hypotheses of the influences of job performance**



Source: Compilation of the authors (2022)

Figure 1 is an attempt to consider the dimensions of job performance as unique and individual parts of job performance which can be independently affected by personal dispositions. Katz (1993) postulated that dispositions can be used to differentiate behaviours from traits, attitudes and skills, and are unique to individuals. Hence, a disposition is a conscious behavioural tendency that is exhibited frequently and is goal-directed (Siegel, 1999). As such these dispositions are likely to affect task and contextual performance differently as behaviours can be different for each one of them. This hypothesis is proposed based on the following presumptions.

### **Proposition 1**

The individuals who are conversant with tasks may carry out their respective tasks meticulously while they may not fit the bill of contextual performance by exhibiting behaviour that is pro-social due to their dispositions. A study

conducted by Chen Mathieu (2008) indicated that there is a relationship between various individual differences and different performance patterns over time. Further, similar conclusions have been observed from studies in the past subscribing to the same theory (Thoresen et al, 2004, as cited in Chen & Mathieu, 2008). Although these studies essentially focused on the context of the influence of situational factors on job performance it indicates the vulnerability of the trajectories of job performance based on factors that are akin to the individual.

### **Proposition 2**

There can be individuals in organizations that are low-task performance-oriented but may exhibit pro-social behaviour as they relate to the organization well. Although they are part of a group that lubricates the social system of the organization, yet they do not perform on the job well. Motowidlo, Borman & Schmit (1997) theorized that individual differences can affect contextual performance which is not similar to that of task performance. Testing this particular theory Bergman, et al., (2008) noted that personality can indeed affect contextual performance. According to Hogan (1991), individuals can be categorized in terms of their enduring dispositional qualities which can have significant consequences for organizational effectiveness. Hence, it is possible to suggest that there can be dispositional factors that can affect contextual performance uniquely.

## **CONCLUSION**

Job performance has been an elusive construct that goes through a perpetual self-renewal process as it is likely to confront varied work settings and jobs that are previously little known or never existed. As such it is incumbent on scholars to re-dress job performance to suit circumstances and job roles to ensure that there is an array of research that follows to conceptualize job performance to make it a better-understood construct. Although it has been somewhat steadfastly accepted for some time that *job performance* is multidimensional and coexist with task performance and contextual performance, it needs constant attention as there can be many extraneous factors that can affect these dimension as proposed by many scholars. Dispositional factors are also part of these extraneous concomitants that vary copiously dependent on the person. As the lacuna in the knowledge of human behaviour persists, there will be a constant need to determine how dispositional factors can affect job performance. This conceptual paper is an attempt to decipher the concomitant factors of job performance and to

propose a possible new line of research to determine how dispositional factors could affect the same. This is a viable argument, especially in an era in which technology plays a part in the job-related behaviour of individuals in organizational settings. The findings of this review highlight that there are research gaps related to theory and practical knowledge. A theoretical gap is observed due to the ubiquity presented in conceptualizing job performance and practical knowledge gap exists due to the possible differences between actual behaviour from advocated behaviour. Further, this paper endeavours to promote the ideology that staying with the traditional rationale of job performance is a dithyrambic daydream that will affect the growth of the knowledge of the construct of *job performance*. In effect, this new proposition opens up an extensive opportunity for testing this model empirically in diverse contexts locally and internationally.

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# A Case Study on Indoor Environmental Quality and Its Effects on Employee Wellbeing

Nethmi Siriwardana<sup>1\*</sup>, T.M.B. Palawatta<sup>2</sup>

<sup>1\*</sup> University of Sri Jayewardenepura

neth00313@gmail.com

<sup>2</sup> University of Sri Jayewardenepura

bpalawatta@sjp.ac.lk

## ABSTRACT

*A quality indoor environment will create a healthy workplace and avoid sicknesses of the occupants working inside the buildings. Therefore, it is essential to identify the critical indoor environmental factors and recognize relationships among the related variables to have sustainable advantages. As a result of a quality indoor environment will reduce absenteeism, medical claims, customer complaints, and other various issues, making organizations profitable. This paper attempts to analyse the importance of indoor environment quality (IEQ) for employees working at ABC Company. Past six months, data from three branches of ABC company were used for this study and collected through the company HR department. The collected data showed a problem in one branch (B1) office than the other two branch offices. Many issues of the B1 branch did not properly address, and it created problems among the employees. The study analysed environmental indoor air quality. Indoor air and noise factors evaluated by a group of suitable people who have many experiences with the current situation are selected to investigate the issues. Primary data were collected using measuring equipment and standard guidelines for the study. To analyse data Nominal group technique, Pareto analysis, Fishbone diagrams, verification sheet technique, and five why analysis used. Based on the findings, solutions and recommendations are proposed. The study mainly identified partition issues, office layout issues, AC ventilation system issues, and maintenance planning issues. The organizational IEQ model proposed to apply to any organization with a better indoor environment. Responsibility of management, maintenance adherence, and environmental condition proposed as key strategies in the model. This study helps any organization improve their employee wellbeing and maintain a quality environment, which will lead to reduced operational costs. It is the responsibility of management to support, and routine maintenance will help keep a quality environment. This study presents an industrial case of one company and focused on quality of indoor environment and how it affects for the well-being of employees working in ABC Group of Companies. Many studies found about indoor environmental quality and how it affects the employees' well-being. This study mainly focuses on the indoor environment-related issues and how it affects the employees/ customers by investigating its route causes.*

**Keywords: IEQ, IAQ, Organizational IEQ model Paper Type: Case Study**

## **INTRODUCTION**

This study investigates the parameters of indoor environmental quality (IEQ) like Indoor air (IAQ) and sound and how it affects to the wellbeing of the people who are living in the building. IEQ consists of air quality, thermal comfort, Acoustic quality, Visual quality, lighting quality, etc. Indoor Air Quality (IAQ) defines as conditions of the IAQ, experiences within any building, and quality that directly has a bearing on the occupants of the building in ways such as impacting their physical health. It consists of many parameters like temperature, humidity, CO<sub>2</sub> level, RH, Air velocity, etc. Quality of the indoor air, lighting, and sound will avoid employee complaints, absenteeism, and illnesses called sick building syndrome (SBS). It reduces the company's profitability. SBS describes the experience occupants of the building who acute the effects of comfort and the health linked to the time spent in buildings improving the indoor environmental factors directly related to motivation, satisfaction, and productivity. Ultimately enhance the well-being of the employees.

ABC is an engineering company which is serving to industrial sector businesses and has ranged from information technology solutions and communications, mobile computing, lighting, imaging, air-conditioning, Building automation systems, office furniture, interior design, energy solutions standby power generation. ABC company engages various project-related businesses in every part of Sri Lanka and overseas. The company has had world-renowned brand agencies and distributorships for over 50 years.

ABC company has three branches and almost 1000 employees are working in these three branches. Nearly 350 employees are working in one branch (B1), and other employees are in other two branches (B2) and (B3). The B1 branch is the busiest among two different branches, and this branch is the oldest building with a hectic work environment than the other two branches. The staff in this area engage in multi-duty office work that includes providing specific information to the various customers, engaging in Projects and sales-related work, and handling different customer complaints, documentations, and different development work, etc. Due to space lacking in the area, more partitioning had to cater to the requirement. Many places have utilized maximum, and the staff engages in multi-duty tasks. B1 branch is using an old conventional Air Conditioning system. The units are inside the office area, which caused a lot of disturbances and created limited space inside the

building, designed crowded office rooms with minimum indoor air volumes per each staff member. This situation has worsened since the same limited space filled by more computers, photocopiers, and office equipment. Therefore, the area under consideration has more staff than none of the other two office buildings. Additionally, there are reported increases in medical claims and absenteeism among the employees in the area.

People are spending more than 90% of their time in indoor conditions, and it is very useful for them to know about the ventilation effect on human comfort. It was evident that the quality of the indoor environment essentially lies in the proper management and operation of their facilities, such as AC systems and mechanical ventilation systems in a closed-loop. In most Sri Lankan buildings, the practice is to achieve desired temperature levels and prevent air leakages through the conditioned spaces to outdoors. This practice will not maintain the space's environmental quality optimally.

## **LITERATURE REVIEW**

### **Indoor Environment Quality (IEQ)**

Referring to the National Institute of Occupational Safety & Health (NIOSH, 2015), they were Being a condition related to comfort, quality, and experiences in any building that directly have a bearing on the occupants in ways such as impacting their physical health. Mallawaarachchi et al., 2012, argued that quality of indoor environment is the Quality of a building's indoor environment concerning health and well-being of people who occupy the space within the building. According to ASHRAE 2007 Handbook, Thermal Comfort, Humidity, and Visual Quality affect indoor environmental quality. De Giuli et al., 2012 argued about the Thermal quality, Quality of Air, Acoustic, and quality of Visual factors are acting to indoor environment quality. Mahboob et al., 2011 and Akira Tiele et al., 2018 argued that the factors which affect indoor environmental quality are Thermal Comfort, Indoor Air Quality, Acoustic comfort, Lighting quality.

### **Indoor Air Quality (IAQ)**

As per the ASHRAE/ ANSI standard 62.1-2019, IAQ defines as “A vast majority (80% or more) of those exposed do not express discontent with the air, and there are no known toxins at dangerous amounts, according to knowledgeable authorities” Sekhar & Ching, 2001, argued that factors affecting indoor air quality are Temperature, RH, Air Velocity, and Gang & Ma, 2011, argued that factors affecting indoor air quality shall be CO<sub>2</sub>, NO<sub>2</sub>,

O<sub>3</sub>, Temperature, VOC, Humidity. According to Saad et al., 2015, Ambient Air, Chemical & fragrance presence, human activity, Temperature, and humidity affect IAQ.

### **Thermal Comfort**

According to ASHRAE Standard, 55 (2004) and Standard ISO 7730 (1994), the state of mind that expresses satisfaction with the Thermal environment where its located is defined as Thermal comfort. The ASHRAE Standard, 55 (2004) showed that Air Temperature, Humidity, Air Velocity, non-environmental factors: (Age, clothing, physical activity) are the factors affecting thermal comfort.

### **Acoustic Quality**

According to Navai and Veitch, 2003, defined acoustic quality as a state of contentment with acoustic conditions. According to ANSI Standard, 2010, Airborne sounds, noise from adjacent spaces, office equipment, outdoor noise, and nearby facilities affect acoustic quality. However, Veitch et al., 2000, argued that Noise from other people talking, telephone ringing, different irregular sounds affect acoustic quality. SP Banbury et al., 2010 showed that people talking in the background, telephones left ringing at vacant desks, and Boyce (1974) argued that AC, Ventilation and office machinery, people talking, and telephones ringing affect the acoustic quality.

### **Employee Well-Being**

Employee well-being shall refer to the state of mental and physical health of the employees. According to Oxford dictionary, well-being explains as Comfort, good health, and happiness. According to Keyes, 2002 and Huppert and Whittington, 2003, Wellbeing is a complex concept that may be quantified using a combination of positive and negative indications. Taylor and brown, 1988 argued that well-being is the Satisfaction of the indoor environment, and according to Bianca et al., 2018, indoor environment features affect employee well-being. Le Fevre et al., 2003, defined well-being in terms of strain. Stress-related behavioural, bodily, or psychological reactions are known as strain. Several stressors influence the level of well-being in the workplace. Jex, 1998; Cooper et al., 2001, argued that forms of anxiety, headache, depressed mood, absenteeism, job dissatisfaction, poor performance, turnover, and coronary heart disease manifested in strain. Leech et al., 2002, argued that Visual Comfort (view type, view quality, social density) are the factors that affect employee well-being. N. Kamarulzaman et al., 2011, argued that Physical environments such as

workplace design, temperature, lighting, ventilation, colour, noise, etc. which are the factors that affect the occupants well-being.

### **Effects Of Medical Leave, Absenteeism to Indoor Environmental Quality**

Olli A. Seppänen & William Fisk, 2006, argued in their research paper about the effects of medical leave and absenteeism on indoor environment quality as the symptoms of sick building syndrome (SBS), respiratory ailments, sick days, and productivity losses have all increased in correlation with poor indoor environmental quality (IEQ). Also, R A Elnaklah and S Natarajan, 2019, argued among respondents working in climate-controlled workplaces, there was a considerable rise in sick days.

### **IEQ And Its Effects**

Monika and Pawel, 2010, surveyed the indoor environmental conditions such as thermal, acoustic, visual, and indoor Comfort in the built environment is influenced by air quality. As per the literature surveys, many authors observed that the above factors are causing the quality of environment of the indoor. The thermal, acoustic, and quality of indoor air influences the overall satisfaction of indoor environmental quality. As per S.C. Sekhar and C.S. Ching, 2001, a strong co-relation exists with temperature, humidity, and the quality of indoor air.

### **Sick Building Syndrome (SBS)**

Jan A. J. Stolwijk, 1991, defined the Sick building syndrome as the occurrence of an excessive number of subjective complaints by building occupants. Further, he argues that these complaints contain headaches, lethargy, irritation of nose, eyes, throat, lack of ability to concentrate, unpleasant odors, etc. Further, he argues that several factors or combinations of factors affect SBS. Inadequate outdoor air supply, distribution or inadequate ventilation, temporary or long-term sources of contaminants such as adhesives, tobacco smoke, etc. Burge et al., 1987; Mendell and Smith, 1990; Hudnell et al., 1992 argued that SBS symptoms are headaches, irritation of nose, light sensitivity, eyes, and throat, depression, and other symptoms such as flue. Some researchers like Wargocki et al., 2000; Brightman, 2005; Singh, 1996, argued that increased self-reported illnesses, reduced productivity, and absences happened because of SBS.

### **Indoor Environment And Human Well-Being And Health**

Nightingale, 1860 & 1893, suggested that more recovery of patients see if the patients cared under natural light, cleanliness, ventilation, and essential

sanitization. Some researchers argued that there is a complicate linkage between well-being and indoor environment quality (IEQ). Apte et al., 2000; Jantunen et al., 1998; WHO, 2002 showed a range of indoor factors identified that affect the well-being of occupants such as acoustic, Thermal, visual, and chemical.

### **Improving Indoor Air Quality By Changing Air Supply Modes**

Yu et al. (2009) models developed to control the air supply mode of buildings and achieve a healthy and comfortable indoor environment. This study has mainly concentrated on the temperature and velocity of the airflow assess the air quality perceived by occupants. With the limited spaces in the building, it is essential to study air delivery methods to improve satisfaction and reduce the bill of energy in the company.

Therefore, the trade-off between IAQ and optimization of service capacity will play a key role. It will enable the expansion of the service capacity cost-effectively in office buildings.

### **Indoor Air Quality And Its Cost Factor**

Air filtration and circulation in a mechanically ventilated system are related to indoor air quality management (Roulet (2006). He argues that energy management structures have been unexpectedly taken without indoor air quality, thus experiencing underperformance. In contrast, he shows that mere energy-saving ways can work the opposite manner by decreasing indoor air quality. It will directly impact well-being and comfort of the occupants. He suggests improved comfort levels, indoor air quality and employee well-being simultaneously is achieved by improving energy management performance.

### **Workplace Noise And How It Affects The Well-Being Of People**

Kryter, 1970, 1994, argued that occupational noise, which means unwanted sound in the workplace, will be linked with various unfavourable effects upon well-being. There is a relation to hearing loss. In the industrial sector, noise exposure with a range of signs associated with physical health issues such as sickness related to absenteeism, Cardiac problems and fatigue (Jansen, 1961; Cuesdan et al., 1977; Cohen,1973) Carlestam, The Karlslon, & Levi, 1973. According to Sundstrom, Town, Rice, Osborn, and Brill (1994), office workers' satisfaction of job reduces due to noise from background music and telephone ringing. Also, that study found an inverse relationship between noise generated from people talking on the typewriters and telephone with environmental satisfaction. Enhancing acoustic conditions is related with less

awareness of disturbances and cognitive stress (Aram et al., 2015).

Boyce 1974; Pierrette, Parizet, Chevret, & Chatillon, 2014; Sundstrom et al., 1994, did studies in noise in an office environment and found out telephone ringing, office machines, and air conditioners are cause for creating disturbances in an office environment. Evans, 2001 and Leather et al., 2003, studied the effects of noise and found out high noise is associated with organizational commitment, increasing symptoms of infectious diseases and lower job satisfaction.

### **ASHRAE**

ASHRAE means American Society of Heating, Refrigeration, and Air-Conditioning Engineers. It is an American professional association dedicated to improving heating, ventilation, air conditioning, and refrigeration systems. It has around 57,000 members in 132 countries throughout the world. ASHRAE is a global association that promotes well-being of human through sustainable technology for the built environment, established in 1894. Society and it is focuses on building systems, , indoor air quality, energy efficiency, sustainability and sound quality. ASHRAE has 87 active standards and guideline project committees that address such broad topics as energy conservation in buildings, thermal comfort, indoor air quality, refrigerant emissions reduction, safety classification and refrigeration designation. The established standards for design of ventilation system and acceptable IAQ indoor air quality are ANSI/ASHRAE standards 62.1 and 62.2. (Indoor Air Quality).

### **Cause And Effect Diagram (Fish Bone Diagram)**

The Fishbone diagram shall be a tool used to identify root cause of quality-related problems Juran (1999). Further, to memorize Kaoru Ishikawa, he has given this name. Ishikawa, a quality control statistician from Japan, used this chart in 1960. This analysis tool offers an orderly manner of seeing effects, Watson 2004. Also, the causes which are relevant to it create the impact. Because of its function, this diagram is named a Cause and effect diagram. It is a suggestive represent or systematic way that correlates with an effect or event with many happening causes. Fish Bone diagram provides a structure that helps to think systematically. This will help to determine the root causes of any problem by utilizing an early approach. Diagram encourages the involvement of a group to find the possible causes of a particular issue and use the knowledge of the group of the process. Further, Fishbone diagrams will discover the areas where the problem solver should collect data for future studies.

### **Five Why Analysis**

Serrat 2009, argued from his article, the Five why technique, you never stopped and asked “why” five times when challenged with a problem. The right question needs to ask; otherwise, you will not get the correct answer. This technique will ask simple questions to explore the cause-and-effect relationships with the identified problems. H argued that to solve a particular problem, you need to solve it at the end of the result. If asked five times about a specific issue, why it happened, you will get the honest answer to what caused that particular problem. This approach will approach deeper thinking by continuous questioning.

### **Pareto Diagram**

Italian economist named Vilfredo Pareto has introduced the Pareto analysis technique. He identified that fewer people consumed wealth in a more significant portion. He recognized that such a pattern of distribution was regular in most fields. This principle is known as the 80/20 (eighty-twenty) rule. The eighty-twenty use in the material management field in ABC analysis. The Pareto analysis applies to prioritizing projects for various purposes as follows.

### **A Case Study on IEQ And Its Effects On Employee Wellbeing Of ABC Company**

#### **Problem Identification**

Researcher analysed six months of medical claims, absenteeism, and Customer complaints against headaches, drowsiness, and other issues regarding temperature, noise, and everyday matters of three branches collected from the HR department. Compared to the other two units, the data showed a high rate of medical claims, absenteeism and customer complaints, and other matters in the B1 branch.

### **METHODOLOGY**

To identify the problem and analyse, Student “T” test, barnstorming, fishbone diagram, nominal group technique, Pareto analysis, Verification sheet technique, and five why the analysis technique will follow. IEQ is measured by using Indoor Air quality (Temperature, humidity) and noise parameters will be measured using measuring equipment. Thermo hydrometer and sound meter were used. The data was collected from three branches over six months and analysed through the graphs. The parameters

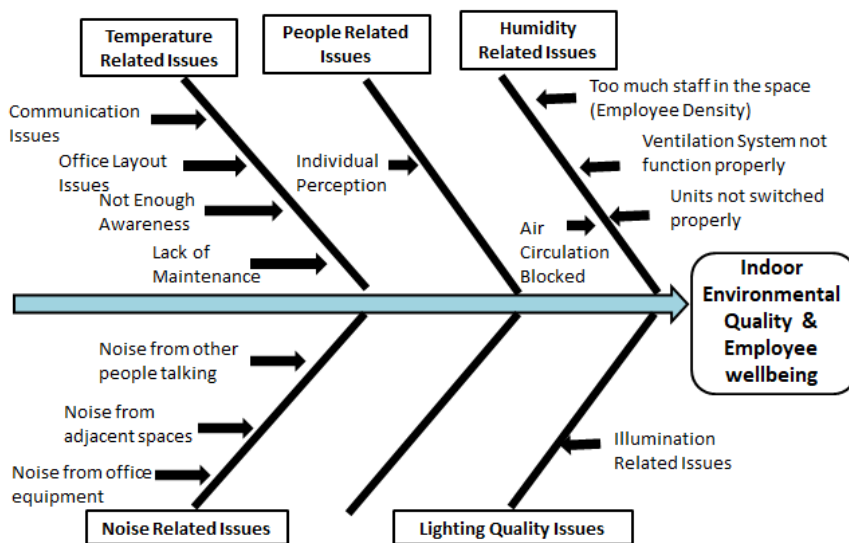
took three times and considered the average of the three readings daily to eliminate the errors that occur in the data collecting point.

There will be 15 nos. of technical staff selected with more than six years of working experience and enough awareness about the existing situation. Therefore, these people can conduct a brainstorming session to identify the main temperature, humidity, and noise variations. The selected staff will cover three layers of the company: management, general, and maintenance areas.

The technical staff consists of,

Assistant General Manager	- 01
Manager	- 02
Assistant Engineers	- 03
Engineers	- 04
Supervisors	- 03
Technicians	- <u>02</u>
Total no. participants	- 15 nos.

**Figure 1: Fishbone diagram for indoor environmental quality and employee well-being**



Student “T” test measures the significance by analysing HR records of medical claims, absenteeism, customer complaints, and other issues. The Student “T” test does identify which branch has a significant difference in the above cases. The Temperature, humidity, and sound-related data were measured using meters and graphs drawn to determine the three branches' variance. The calculated P-value is higher than the theoretical P-value in B1 branch than the other two branches (B1 & B2). Thus there is a significant difference between B1 Than B1 & B2. Therefore, based on the student “T” test results and analysis, the study mainly make attention on the effects of the temperature, humidity, and noise-related issues and further analyses the causes of the above three factors.

ASHRAE handbook is the primary source of reference, which provides guidance and standards for Heating, Refrigeration, and Air Conditioning in building plans. ASHRAE provides the standard levels and various guidelines for building designers and AC and ventilation system designers, architectures, etc., to use as a base for their designs and follows its guidelines to keep the comfort level for the occupants of the building.

The acceptable range of a few guidelines as stated below, which relates to the study.

The ASHRAE standard 62, the recommended temperature level is 22<sup>0</sup>C–26<sup>0</sup>C

As per the ASHRAE standard 55, the recommended maximum temperature difference should not exceed 3<sup>0</sup>C.

The recommended range for the humidity should be 50-60%.

Recommended range for the sound level should be 65 dB

The last six months' data and the graphs showed that temperature in the B1 branch is not in line with the acceptable range (ASHRAE standard 62, acceptable range is 22<sup>0</sup>C–26<sup>0</sup>C) and ASHRAE standard 55, recommended maximum temperature difference should not exceed 3<sup>0</sup>C). Mostly it is above the acceptable and recommended range. Also Customer complaints about drowsiness increase with the temperature difference in the B1 branch compared with the other branches. Therefore, there is a problem with temperature in the B1 branch.

Separate fishbone diagrams were drawn to identify the leading causes and sub-causes of varying the above parameters. After identifying the main

reasons, The Nominal group technique will prioritize the identified issues. Therefore, based on the student “T” test results and analysis, the study mainly make attention on the effects of the temperature, humidity, and also for the noise-related issues and further analyses the causes of the above three factors.

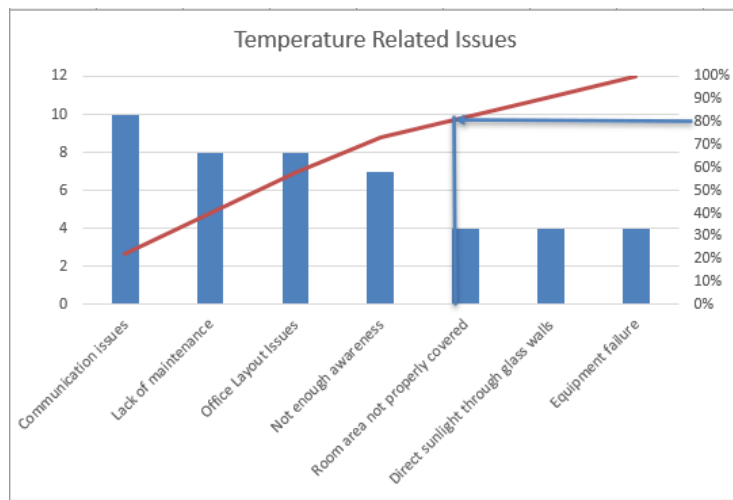
The 15 nos. of technical staff analyse the possible reasons for the temperature variations. All the technical team has enough awareness, knowledge, and experience about the existing condition of the indoor environment of the building. Therefore, these people can conduct a brainstorming session to identify the main issues related to temperature variations. The Brainstorming session identifies the seven possible reasons for temperature variations in the B1 branch. After that, the Nominal group technique uses to prioritize the specified 07 reasons, and feedbacks tabulated.

**Table 1: Temperature related issues and their scores Analysis**

No	Category	Total	Cumulative	Cu. %
1	Communication issues	10	10	22%
2	Lack of maintenance	8	18	40%
3	Office Layout issues	8	26	58%
4	Not enough awareness	7	33	73%
5	Room area not properly covered	4	37	82%
6	Direct sunlight through glass walls	4	41	91%
7	Equipment failure	4	45	100%
		45		

After that, Pareto Analysis draw to identify the most impactful issue among the seven possible identified issues. Communication issues, Lack of Maintenance, Office Layout issues, not enough awareness identify as significant issues caused for temperature-related problems. Separate fishbone diagrams draw to identify the possible causes of these significant problems.

**Figure 2: Temperature related issues**



The Pareto analysis shows the significant issues related to the problem, and 80% of the temperature-related issues can be solved. Those considerable issues are,

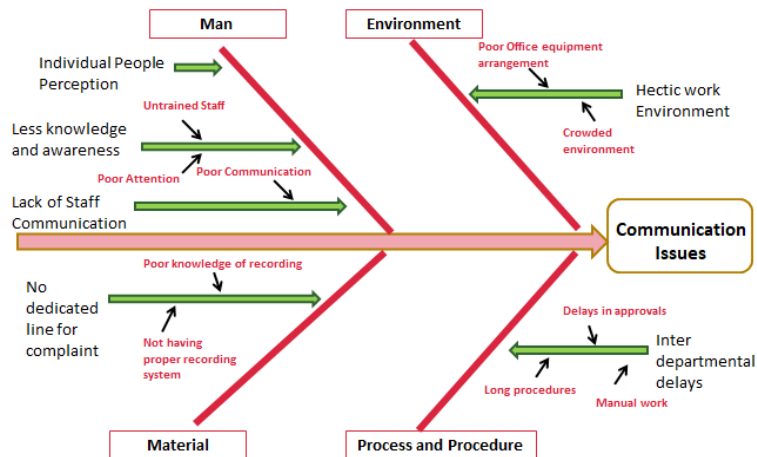
- Communication issues
- Lack of Maintenance
- Office Layout issues
- Not enough awareness

According to Pareto analysis, the Rests of the other issues are not very much contributing to the problem. In order to categorize and describe the possible causes of this problem by constructing a cause-and-effect diagrams (fish bone diagrams) for each considerable issues for temperature related issues.

## Analysis Of Temperature Related Issues

Fishbone diagram for Communication issue

**Figure 3: Fishbone Diagram for Communication related issues**



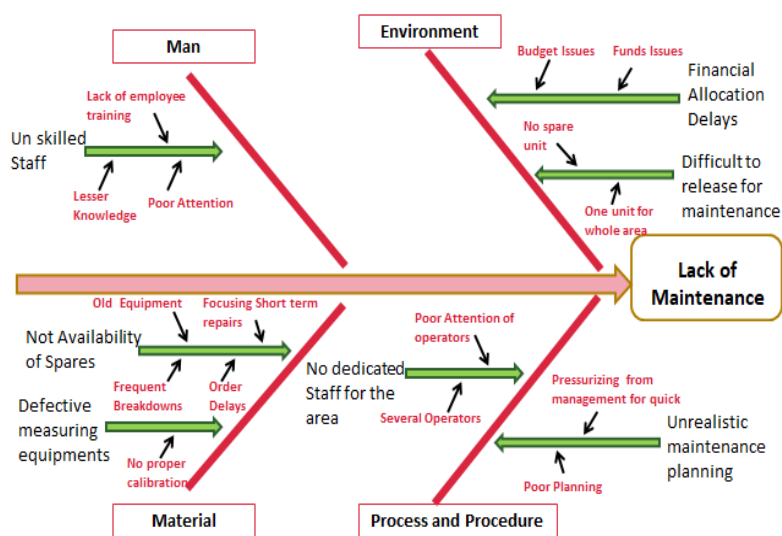
## Analysing Most Critical Issues

Possible route causes for the Communication issues were analysed through the diagrams of Fishbone. As per this diagram, possible main 06 causes and 10 nos. of sub causes were recognized under the above four categories. A verification sheet helps to confirm which causes are really contributed to the main problem among 06 causes and sample of it is shown below.

Issue	Indicators	Cause	Verification Method	Analysis Method	Results	Does the cause really contribute to the
		Less knowledge and awareness	Discussions had with the head of Maintenance	Operator CVs and qualifications /experiences evaluated	There is no such problem	NO
		Hectic work environment	Observation / Discussions	Summary of Observation/ discussions	There is a problem of the work environment	YES

### Fishbone diagram for Lack of Maintenance

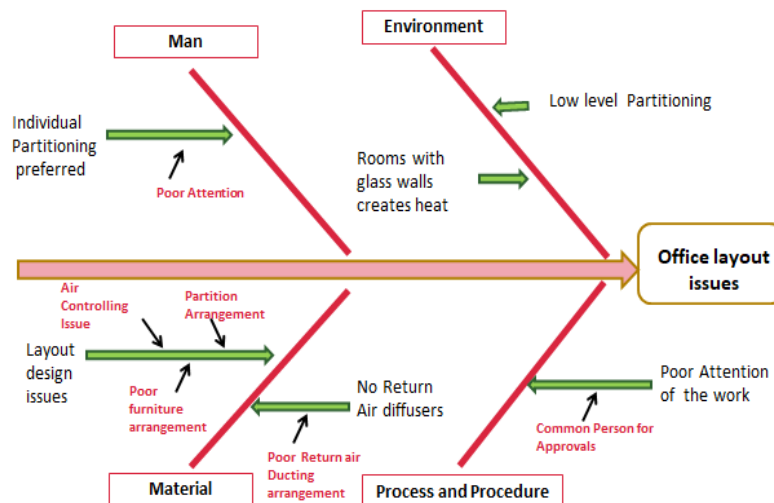
Figure 4: Fishbone Diagram for Lack of Maintenance related issues



Possible route causes for the Office Layout issues were analysed through the diagram of Fishbone. As per this diagram, possible main 07 nos. of causes and 16 sub causes were recognized under four categories. A verification sheet helps verify which causes really contributed to the problem among 07 causes.

Fishbone diagram for Office Layout Issues

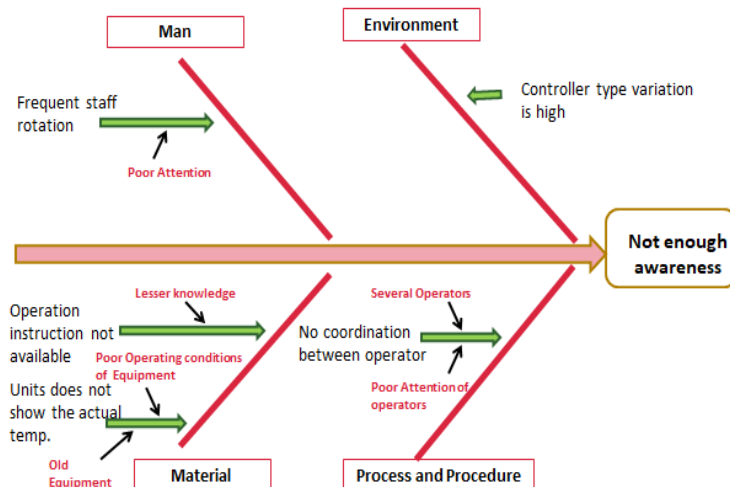
Figure 5: Fishbone Diagram for Office Layout related issues



Possible route causes for the Office Layout issues were analysed through the Fishbone diagram. According to this diagram, possible 06 main causes and 06 sub causes were identified under four categories. A verification sheet verifies which causes really contributed to the main problem among 06 causes.

## Fishbone diagram for Not enough awareness

Figure 6: Fishbone Diagram for Not enough awareness related issues



Possible route causes for the Office Layout issues were analysed through the Fishbone diagrams. According to this diagram, possible 05 main causes and 06 sub causes were identified under four categories. A verification sheet helps verify which causes really contributed to the main problem among 05 causes.

## Summary of Verification Sheets - Main Causes Contributed to Indoor Air Quality (IAQ) Issues

- Temperature related Issues
- Hectic work environment
- Layout design issues
- No Return Air diffusers
- Rooms with glass walls creates heat
- Units do not show the actual temp.
- Difficult to release for Maintenance
- Unrealistic maintenance planning

Also, according to the 5Y Analysis reason for high Temperature caused because of Hectic work environment. To overcome this problem, it is suggesting to Separation of each department and rearranging the floor layout. Also, the Rooms with glass walls create heat. To overcome this problem, the glass Sandblasting of glass walls in addition to curtains and removing all the hot air through the perforated diffusers are suggested. The units do not Air Conditioning Units do not show the actual temperature also caused for

temperature variations. To overcome this problem, it is suggested to replace the sensor or replace with a new AC unit. For uncomfortable, it is suggested to temperatures design & Propose AC & Ventilation Ducting System and rearrange Return Air Ducting System and also to avoid Frequent breakdowns, it is suggested to avoid ad hoc requests for maintenance. Obtain prior request confirmation, Preparing a proper maintenance Plan.

### **Analysis Of Indoor Humidity Variations and Its Effect On IAQ**

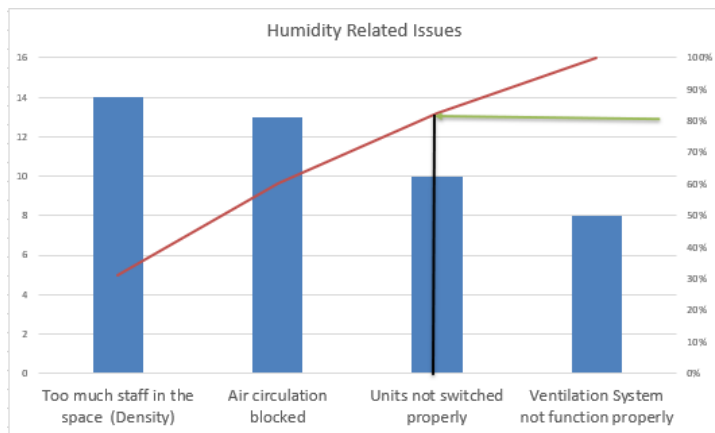
The brainstorming session identifies four possible reasons for humidity variations. After that, the Nominal group technique uses to prioritize the specified 04 reasons, and feedbacks tabulate to the following order.

**Table 2: Humidity related issues cumulative percentages**

<b>No.</b>	<b>Category</b>	<b>Total</b>	<b>Cumulative</b>	<b>Cu. %</b>
		<b>l</b>		
<b>1</b>	Too much staff in the space (Density)	14	14	31%
<b>2</b>	Air circulation blocked	13	27	60%
<b>3</b>	Units not switched properly	10	37	82%
<b>4</b>	Ventilation System not function properly	8	45	100%
		45		

Pareto Analysis draws to identify the most impactful issue among the four possible identified issues.

**Figure 7: Humidity Related Issues**



The Pareto analysis shows the significant issues most related to the problem, and 80% of the humidity-related issues can be solved. Those important causes are,

- Too much staff in the space (Density)
- Air circulation blocked

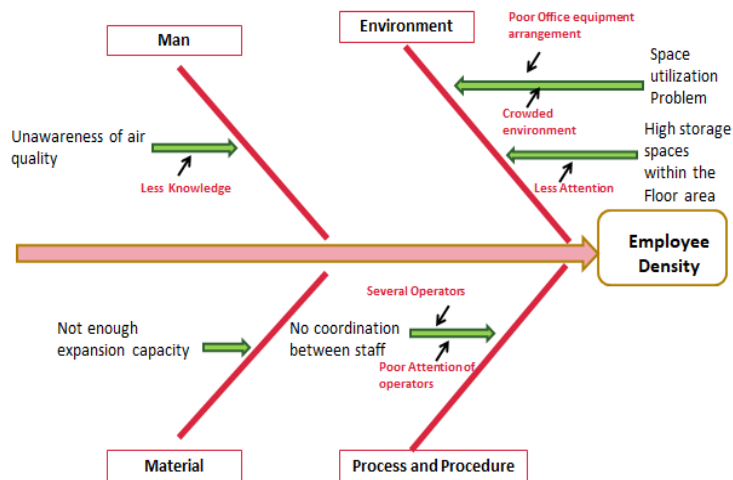
According to Pareto analysis, the Rests of the other issues, such as Units not being switched properly and the Ventilation system not functioning correctly, are not very much contributing to the problem. As per ASHRAE standard, 50-65% is the comfort level. There may be many reasons for the variation of humidity in a building. Many employees work in the floor area, so the employee density is high in a limited space. Air volumes per person reduce because of the excess partitioning. Therefore, humidity increases, making the employees feel uncomfortable, creating discomfort. There are several split AC units available within some cubicles. Sometimes these individual units are working continuously even there is no staff in the cubicle. This incident creates a dry, humid condition. Ultimately this will create uncomfortable situations and affect the well-being of the employees.

### **Analysing The Critical Humidity Related Issues Through Fishbone Diagrams And Verification Sheets**

According to the Pareto analysis, employee density and air circulation issues identify as significant issues caused for humidity-related issues. Separate fishbone diagrams draw to identify the possible root causes of these significant problems.

Fishbone diagram for Employee density

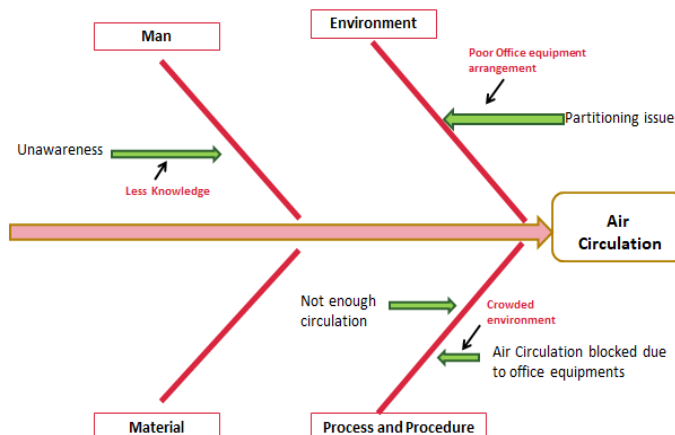
**Figure 8: Fishbone Diagram for Employee density related issues**



Possible route causes for the Communication issues were analysed through the Fishbone diagrams. According to this diagram, possible 05 main causes and 06 sub causes were identified under four categories. A verification sheet helps verify which causes contributed to the significant problem among 05 causes.

Fishbone diagram for Air circulation

**Figure 9: Fishbone Diagram for Air circulation related issues**



Possible route causes for the Communication issues were analysed through the Fishbone diagrams. According to this diagram, possible 04 main causes and 03 sub causes were identified under four categories. A verification sheet helps to verify which causes really contribute to the main problem among 04

causes,

### **Verification Sheets - Main Causes Contributed To Indoor Air Quality (IAQ) Issues**

- Humidity Related Issues
- Not enough expansion capacity
- Partitioning issue
- Not enough circulation
- Air Circulation blocked due to office equipment

### **Data Analysis – Indoor Noise Variations In Each Branch And Its Effect On IAQ**

According to the last six months' data, the noise level in the B1 branch is not in line with the acceptable range (ASHRAE standard recommended range for the sound level should be 65 dB). Always it is above the acceptable and recommended range. No. complaints about headaches increased with the noise level difference in the B1 branch compared with the other branches. Also No. of customer complaints of headaches Therefore, there is a problem with noise in the B1 branch. Therefore, there is a problem with the noise level in the B1 branch.

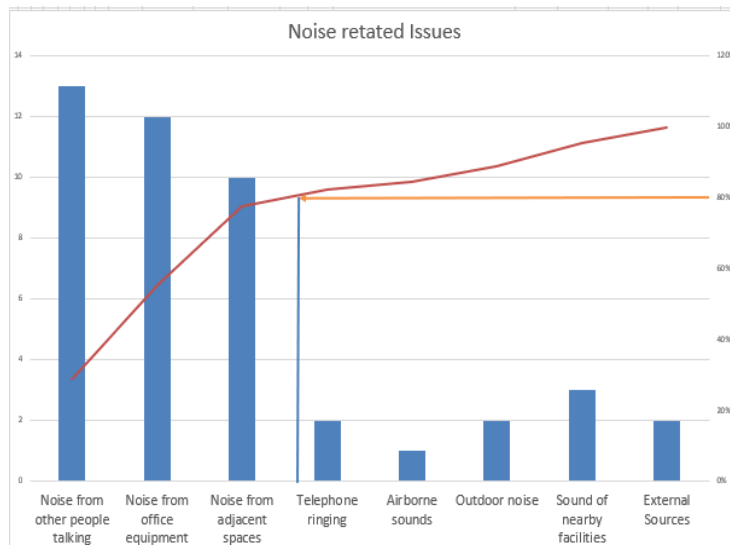
04 possible reasons identify for the noise variations in the brainstorming session. After that, the Nominal group technique uses to prioritize the identify 08 reasons and tabulate feedback.

**Table 3: Noise Related Cumulative Percentages**

No.	Category	Total	Cumulative	Cu. %
1	Noise from other people talking	13	13	29%
2	Noise from office equipment	12	25	56%
3	Noise from adjacent spaces	10	35	78%
4	Telephone ringing	2	37	82%
5	Airborne sounds	1	38	84%
6	Outdoor noise	2	40	89%
7	Sound of nearby facilities	3	43	96%
8	External Sources	2	45	100%
		<b>45</b>		

Pareto Analysis draws to identify the most impactful issue among the eight possible identified issues.

**Figure 10: Noise related issues**



The Pareto analysis shows the significant issues most related to the problem, and 80% of the noise-related issues can be solved. Those important causes are,

- Noise from other people talking
- Noise from the office equipment
- Noise from adjacent spaces

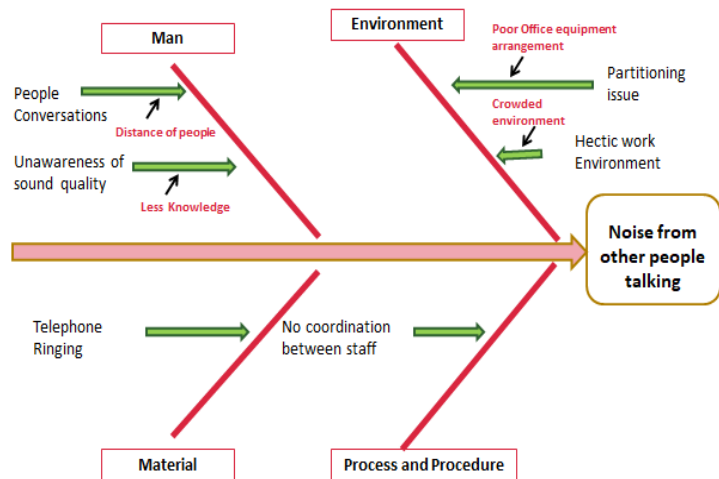
According to Pareto analysis, the Rest of the other five causes, such as telephone ringing, air-bone sounds, outdoor noise, nearby sound facilities, and external sources, do not contribute to the problem. As per ASHRAE standard, 65dB is the comfort level. Reasons for the variation of sound in a building are high people density is high in the floor area. Therefore, noise generation will be increased from the people talking because the staff is engaging in multi-duty work such as discussions, meetings, customer negotiations, etc., which will increase the sound. It is necessary to separate sales and project divisions to reduce the noise. There is much office equipment in the floor area, such as photocopiers, printers, computers, telephones, and indoor air conditioners, which generate high sound and create high noise due to free space limitation. This kind of situation created uncomfortable situations within the employees, which will ultimately affect the well-being of the employees.

According to the Pareto analysis, noise from other people talking, noise from

adjacent places, and noise from office equipment identify as significant issues caused for noise-related problems—a separate fishbone diagram helps determine the possible route causes.

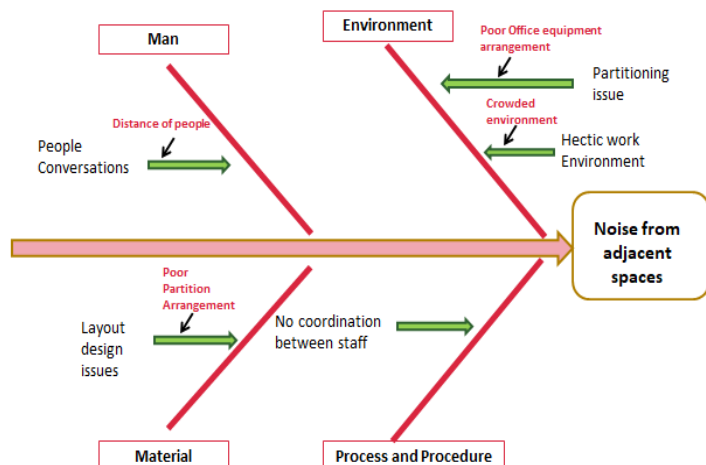
Fishbone diagram for Noise from other people talking

**Figure 11: Fishbone Diagram for Noise from other people talking**



Possible route causes for the noise from other people talking problem analyse through the Fishbone diagrams. According to this diagram, possible 06 main causes and 04 sub causes were identified under four categories. A verification sheet helps verify the causes that contribute to the significant problem among the 06 causes,

Fishbone diagram for Noise from adjacent spaces

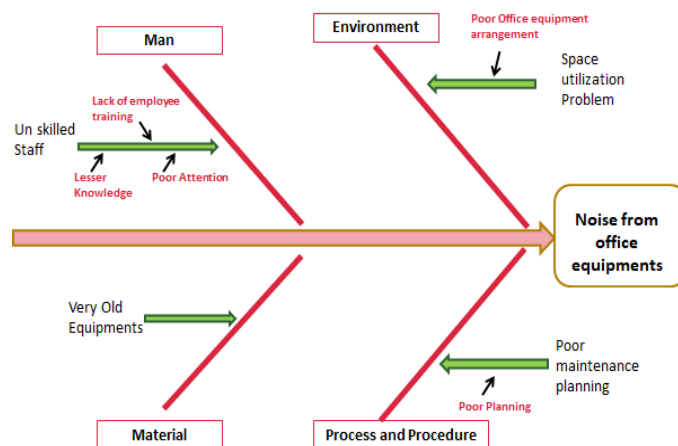


**Figure 12: Fishbone Diagram for Noise from adjacent spaces**

Possible route causes for the noise from noise from adjacent spaces issue were analysed through the Fishbone diagrams. As per this diagram, possible main 05 nos. of causes and 04 sub causes were identified under four categories. To prove causes which are really contribute for the significant problem among 05 nos. of causes by using verification sheets.

Fishbone diagram for Noise from office equipment

**Figure 13: Fishbone Diagram for Noise from office equipment**



Possible route causes for the noise from noise from office equipment issues were analysed through the Fishbone diagrams. According to this diagram, possible 04 main causes and 05 sub causes were identified under four categories. Verification sheet used to verify which causes contributed to the significant problem among the 04 causes.

### **Main Causes Contributed to Noise Related Issues**

- People Conversations
- Partitioning issue
- Hectic work Environment
- Telephone Ringing
- Layout design issues
- Space utilization Problem
- Very Old Equipment

Five why techniques can be used to recurrent the current problems and further analyse the identified issue and have exact solutions to avoid repetition using this analysis.

## **DISCUSSION AND RECOMMENDATIONS**

During the study, many more unknown situations were recognized, which impacted the well-being of occupants of the building. Many issues are noticed and not appropriately addressed due to unawareness of the current problems. Customer complaints like headaches, drowsiness should address a timely. Otherwise, they will grow day by day. Proper research has to be done for a healthy building because this will directly impact the people inside the building. Satisfied employees and healthy employees will give a productive output to the organization. Ultimately affect the triple bottom line of an organization. Therefore, incorporating all these factors when designing buildings is essential to keep employees' well-being high. The hectic work environment creates an uncomfortable environment for the people occupying the building. It is critical to control the indoor setting, which shall include the control of the thermal environment, Monika & Pawel, 2010. The partition layout and floor should be redesigned to improve the existing environment. There should be a proper maintenance plan which will avoid most of the issues in the branch office. Apart from the above leading solutions, there were many other solutions and suggestions proposed to improve the quality of the existing environment.

### **Solutions/Recommendations**

This study suggests doing the maintenance in two ways: daily care and planned maintenance. Temperature, humidity variations happened mainly because of the air conditioning system. Therefore, it is essential for daily inspection of the AC unit. It will eliminate unnecessary breakdowns of the system. Measuring temperature, humidity, noise, and CO<sub>2</sub> levels is critical. The variations mean there is a problem compared with the standards. It suggested nominating one person to get the readings which should appoint by the maintenance department. Maintenance staff can be recorded data through a logbook, which can later inspect and it will be easy for proper reference and early detection. Blocked filters replaced under planned maintenance. Because filter blockage will cause poor supply air circulation. Scheduled maintenance will eliminate this issue. Plan maintenance will solve problems such as checking the air outlet and grill velocities. Checking of measuring equipment is very important to keep the logbook records correctly. Customer complaints are significant to contain at least once in three months to maintain the quality of the indoor environment. Checking lighting conditions is essential of maintaining and controlling a healthy and comfortable environment with the building.

## Summary of Solutions and Recommendations

Solutions found using a five why analysis, and the summary of solutions will categorize into three categories in line with the project objectives.

Common Category	Proposed Solution/ Recommendation by using Five why Analysis
Indoor Environment Issues	Separation of departments ( Sales & projects) and rearranging the layout
	Redesign the layout to minimize issues
	Redesign the partition arrangement
	Remove unwanted things within the premises
	Move additional capacity requirement to other two branches
	Collaborative design of office partitioning
	Rearrange the space for feasible utilization of the space
	Arrange some cubicles for people discussions with soundproof portioned
	Remove and reduce no. of telephones and give one telephone for each three persons
AC & Ventilation System Issues	Need to replace the sensor or replace with a new AC unit
	Design & Propose AC & Ventilation Ducting System and rearrange Return Air Ducting System with return Air Diffusers.
	We need to redesign energy efficient low noise AC units and remove existing old units
	Sandblasting of glass walls in addition to curtains and removing all the hot air through the perforated diffusers
	Avoid ad hoc requests for maintenance. Obtain prior request confirmation
	Preparing a proper maintenance plan
Future Development Possibilities	Allocate funds in next year Budget for expansion

## **Additional Solutions and Suggestions**

Additional improvements in indoor Supply & Return Air Ducting System

Supply & Return Air Ducting should be internally lined at least 1m distance with Perforated acoustic insulation, which will cause for reducing the noise nearly 10dB in the Space.

A separate portioned room for the indoor AC unit can reduce the noise in the floor area. It may be easy to maintenance.

Using a Sound attenuator for the ducting system to reduce the noise.

Additional fresh air systems improved the indoor air. It can design by installing CO<sub>2</sub> sensors and controlling dampers within the floor area.

Propose an Open office plan layout with workstations

An open office plan layout creates a friendly work environment, shared workspaces rather than portioned offices. It will create better communication, trust, and culture.

Propose a separate space for the Customers in the Sales area for the Customer meetings & negotiations.

Prepare display boards with best-operating parameters.

Rethinking the planning process, especially in the areas of maintenance.

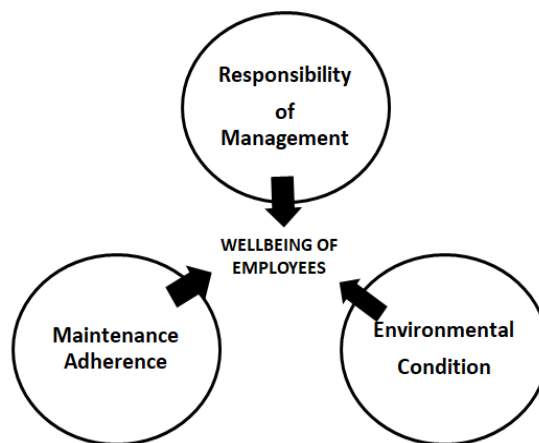
Arranging separate meeting room with soundproof portioned for people discussions and meetings.

Responsibility for a superb IEQ (indoor environmental quality) is a combination responsibility of several entities. The Developer/ engineer /designer/ contractor necessary to know about the Complex building systems, easy maintenance and appropriate location of air intakes and efficiencies of exhausts, Ventilation systems. Also, Operator /Owner - There should be better knowledge about adequate system maintenance and adequate air intake. The Occupants /Tenant - There should be better knowledge about Controlling the occupant density, introducing sources of new pollutant, and labour-management positive relations. It is very much useful to recognize in every setting the occupants' reaction. It may probably be the most sensitive monitoring of IEQ accomplished. The logbook mentioned as a suggestion should also record complaints of occupants, giving number and the dates of inquiries or complaints received in building from different parts.

Organizational IEQ Model: According to the study's findings, the indoor

environmental quality model proposes. This model will guide the organization to improve the indoor environmental quality situation. However, using advanced technologies is unsuitable for indoor environmental quality to achieve sustainability. Following the below model will help any organization to solve the IEQ issues.

**Figure 14: Organizational Model**



**Responsibility of the Management:** It is the responsibility of management to consider the quality of Indoor Environmental quality as a responsibility. It Should be followed up on the design of the system. To optimize the Indoor environmental factors, inputs of the design engineers, architectures, etc., should streamline. Also, Management has to make awareness and convey the importance of the Indoor Environment quality for the employees of the company. Frequent IEQ surveys will help to take proactive measures about IEQ.

**Maintenance Adherence:** The company Maintenance team should ensure adherence to providing procedures and guidelines for maintaining the Indoor Environment. They must monitor and control the indoor environment for the best operating parameters. Most of the problems can be avoided by Interacting with the employees

**Environmental Condition:** Environmental Condition is a critical, mainly indoor environment for any office building. Quality of the IE (Indoor environment) conditions like Indoor air quality (Temperature, Humidity, and Thermal condition), acoustic quality, etc., are essential for the people inside the building. Poor environment creates high operational & unwanted costs. It has been causing various illnesses like SBS (Sick Building Syndrome), sick leave, respiratory illnesses, and productivity losses. There may be high costs

generated because of Poor IEQ than energy costs for space conditioning and also for ventilation, and that many measures follow to better IEQ. It is highly cost-effective when accounting for savings of money resulting from improved productivity or health. Management & the Employees should understand the importance of Indoor Environment qualities, which will affect their wellbeing and health. Every person should be more vigilant about their surroundings.

## **SUMMARY AND CONCLUSION**

One branch had a high rate of medical claims, absenteeism, customer complaints, and other issues than the other two branches. My main objective is to identify the main problems in the indoor environment, including air handling and ventilation systems, and find solutions to improve indoor environmental factors that will ultimately enhance the well-being of the employees. The poor indoor environment will create a sic building, and people face various illnesses. Findings were significant, and the first time found out the various issues relating to the indoor environment. Mainly, building-related issues such as Sick Building Syndrome arise because of the poor indoor environment parameters. The ASHRAE guideline standards evaluated the existing situation. Several techniques are used to solve various indoor environmental issues discussed in the previous chapters. Layout and partition arrangement, the existing air conditioning and ventilation system, no return air diffusers, glass walls not correctly covered, air circulation blocked, no return air ducting system, etc. as part of the study, brainstorming sessions and nominal group technique used to identify the main issues contributing to the problem. Identification of the possible root causes fishbone diagrams and Pareto analysis used. Natural causes of the situation determine using the verification sheet technique, and suggestions identify using a five why analysis. During the study, many building areas need to improve than the other two branches of the group. Layout and partitioning issues should be re-arranged immediately, and the existing AC system should also need to redesign to maintain required comfort levels inside the branch office. The solutions and suggestions were categorized into three to align with the study's objectives. A Proper maintenance plan needs to implement immediately, and it should do as daily maintenance and planned maintenance which will eliminate and identify as soon as possible. A sustainable decision should be taken from the management for the wellbeing of the employees and have their expected productivity. These should be in line with all departments. This study examines and shows how to improve employee

wellbeing under the IEQ parameters. To have a healthy building for the employees, following the proposed suggestions, solutions, and recommendations are expected and enhance efficiency and productivity. It will improve the company's profits as well.

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# Anti-Money Laundering Legal Framework of Sri Lanka: A Gap Analysis

G. K. Hevavithana<sup>1\*</sup>, M. A. N. Chandratilaka<sup>2\*</sup>

<sup>1\*</sup>*Legal Draftsman's Department, Sri Lanka,  
gang\_hevi@gmail.com*

<sup>2\*</sup>*Legal Studies Unit, Faculty of Management Studies & Commerce,  
University of Sri Jayewardenepura, Gangodawila, Nugegoda, Sri Lanka,  
nihalma@sjp.ac.lk*

## ABSTRACT

*This paper comparatively assesses the legal framework currently in force to combat money laundering in Sri Lanka against the global requirements and obligations contained in three UN Conventions, namely the UN Convention against Illicit Traffic in Narcotic Drugs and Psychotropic Substances, the UN Convention against Transnational Organized Crime and the UN Convention against Corruption, and the Financial Action Task Force (FATF) recommendations on money laundering control. The said UN Conventions and the FATF recommendations are presently recognized as the anti-money laundering (AML) global standard. From time to time, Sri Lanka is getting blacklisted as a country with deficiencies in AML control systems by international organizations and there is a general perception in the society, as reported in the media, that money laundering in some form or other is taking place in the country though the perpetrators are rarely traced, prosecuted and penalized. Therefore, this research paper discusses whether the domestic AML legal system is efficient and effective enough to combat the offence of money laundering in the country and whether there are any deficiencies in the legal framework that need to be remedied.*

**Keywords:** Money Laundering, Proceeds of Crime, Customer Due Diligence, Sri Lankan AML system

## INTRODUCTION

Money laundering is the illegal act of concealing the true origin of illicit funds and making them appear legitimate and clean to avoid detection.<sup>2</sup> It has become a global threat and an international problem mostly since the last three decades and is regarded as the evil mechanism that helps perpetuate crime anywhere in the world. People who launder money, known as money

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<sup>2</sup> International Money laundering Information Bureau,  
[http://www.imlib.org/page2\\_wisml.html](http://www.imlib.org/page2_wisml.html). accessed 3 January 2020.

launderers, employ diverse state-of-the-art techniques integrating national, transnational and cross-border connections for the purpose of generating, concealing, converting and transacting with illicit funds that they derive mostly from crimes. It is presented that money laundering creates serious issues universally, and it shakes and weakens the integrity and stability of national and international financial and capital markets.<sup>3</sup> The depth of adverse impacts of money laundering on the world's economy has been illustrated by a study conducted by the United Nations Office on Drugs and Crime (UNODC) in 2009, which estimated that criminal proceeds generated from illicit funds from drug trafficking and organized crimes in 2009 amounted to 3.6% of global GDP, which is approximately US\$ 2.1 trillion, with 2.7% of it (or USD 1.6 trillion) being laundered annually.<sup>4</sup> Further, the International Monetary Fund (IMF) has suggested that the amount of money annually laundered globally is two to five per cent of world GDP, which is approximately US\$800 billion, making it one of the largest problems faced by the world today.<sup>5</sup>

### **Economic Impacts of Money Laundering**

Micro and macro-economic impacts of money laundering are numerous.<sup>6</sup> The Government of a state would find it difficult to implement their pre-set financial and fiscal policies effectively and achieve expected micro and macro-economic results due to unpredictable behaviour patterns in financial sector variables that result from money laundering activities. The hidden inflows and outflows of money through unregulated channels and evasion of tax liabilities would diminish the government revenue, which would result in increased government borrowings to raise revenue to meet its capital, recurrent and welfare expenses.

Activities connected to money laundering distort behavior of market forces making it difficult for firms to predict future trends in any given industry.

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<sup>3</sup> Vandana Ajay Kumar, 'Money Laundering: Concept, Significance and its Impact' (2012, p113) European Journal of Business and Management [www.iiste.org](http://www.iiste.org).

<sup>4</sup> UN Office on Drugs and Crime, 'Estimating Illicit Financial Flows Resulting from Drug Trafficking and Other Transnational Organized Crimes' (2011) [Online]. <[https://www.unodc.org/documents/data-and-analysis/Studies/Illicit\\_financial\\_flows\\_2011\\_web.pdf](https://www.unodc.org/documents/data-and-analysis/Studies/Illicit_financial_flows_2011_web.pdf)> accessed 10 October 2020.

<sup>5</sup> Michael Harris, 'Money laundering: Part 2 - How Money Laundering is Impacting Compliance Teams on the Ground' (2019) Compliance and Risk.

<sup>6</sup> Dayanath C. Jayasuriya, 'Money Laundering, Financial Transactions Reporting and Terrorist Financing' (2007) Zeilan Press ISBN-10-0979632455.

Money launderers usually create shell companies or front companies to mingle the proceeds of crime with legitimate funds in order to hide the true, illicit origins of their criminal proceeds.<sup>7</sup> These shell companies, with large sums of funds derived from proceeds of crime, are in a position to offer products and services much below average market prices and gain a competitive advantage over legitimate businesses that secure their capital requirements through the regulated financial market at higher interest rates. This makes it difficult for the legitimate business to survive the competition thereby creating opportunity for criminal organizations to capture and dominate the marketplace. It may even lead to a transfer of economic power of the market to money laundering criminals.

As far as financial markets are concerned, illegal acts adversely affect integrity of financial institutions and the overall financial system stability.<sup>8</sup> Accordingly, the banking sector, which is regarded as an important cornerstone in economic development, faces the risk of losing its stability in face of activities connected with money laundering.

The conditions explained above render the traditional theories and principles relating to demand, supply and determination of price levels of consumer markets, financial markets and capital markets no longer applicable, bringing more and more adverse micro and macro-economic impacts on the economy of a state.

### **Social, Cultural and Political Impact of Money Laundering**

Money laundering also creates serious adverse impacts on national and international social, cultural and national security and political spheres too. The government of a state will have to divert its scarce funds and other resources that can otherwise be utilized for health, education, infrastructure and wellbeing of the society towards investigation and law enforcement efforts relating to money laundering, leaving the development of those sectors prejudiced due to financial constraints. The freedom to launder

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<sup>7</sup> John McDowell, 'The consequences of Money laundering and Financial Crime' Economic Perspectives, An Electronic Journal of the U.S. Department of State [2001] 6,7.

<sup>8</sup> S.G.Sisira Dharmasiri Jayasekara, 'Challenges of Combatting Money laundering and Terrorist Financing Activities in Sri Lanka (January, 2018). [https://www.researchgate.net/publication/322307801\\_Challenges\\_of\\_combating\\_money\\_laundering\\_and\\_terrorist\\_financing\\_activitie](https://www.researchgate.net/publication/322307801_Challenges_of_combating_money_laundering_and_terrorist_financing_activitie) accessed on 15 January 2020.

money motivates the criminal mind to continue with the criminal conduct, endangering the sustenance of the righteous society.<sup>9</sup> It promotes other serious crimes such as illegal drug trafficking, trafficking and smuggling of persons, terrorist financing, bribery and corruption, child slavery, and environmental crimes.<sup>10</sup> Ultimately, at the political front too, money laundering may lead to regime changes of democratically elected governments by the unruly intervention of launderers into democratic processes through bribery and corrupt practices.

### **Is the Impact of Money Laundering only Felt by Developing Countries?**

The impact of money laundering is felt equally by both developed and developing countries. Money launderers enjoy the freedoms in large financial and capital markets in developed countries for their gain. They make use of liberal atmosphere in such countries to derive money through various unlawful activities and launder them in those countries and as well as in developing countries. Money laundering leads to economic underperformance, under-development, and financial instability in developing countries, and it stands as a major obstacle in poverty alleviation and achieving economic growth. Thus, money laundering has been a global challenge and issue which is required to be addressed by all nations collectively. In essence, the fight against money laundering requires global efforts supported by collective, determined cooperation by all nations.

### **Global Initiative to Combat Money Laundering**

Effective global anti-money laundering mechanisms are essential to protect the integrity of financial and capital markets and of the global financial framework as they help mitigate the factors that facilitate financial abuse.<sup>11</sup> United Nations Organization has taken part in the fight against money laundering by promulgating international instruments and setting out international standards mainly in the last three decades which are discussed in the succeeding section of this paper.

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<sup>9</sup> Michael Harris, 'Money laundering: Part 2 - How Money Laundering is Impacting Compliance Teams on the Ground' (2019) Compliance and Risk.

<sup>10</sup> Michael J. Anderson and Tracey A. Anderson, 'Anti-Money Laundering: History and Current Developments' (2015) Journal of International Banking Law and Regulation.

<sup>11</sup> Min Zhu, Deputy Managing Director of the International Monetary Fund. <https://www.imf.org/external/np/leg/amlcft/eng/> accessed 16 January 2020.

In addition, attempts by individual nations to address the problem of money laundering within their territories turned out to be a collective, regional and international initiative following the terrorist attack in New York in 2001<sup>12</sup>, which demonstrated the extent to which international terrorism had grown, backed by terrorist financing. After the attack, the USA enacted the USA Patriot Act<sup>13</sup> to combat terrorism, and enhanced existing money laundering and forfeiture laws.<sup>14</sup> This attack drew increased attention of the other countries in the world towards the detection and deterrence of funding avenues of terrorist organizations operating at national and international levels. This led on one hand to the strengthening of the then existing mechanisms and introduction of new schemes directed at tracing the origins, transit points, destinations, methods of concealments and conversions of proceeds of crime and on the other hand, finding ways of combatting both terrorist financing and money laundering globally and regionally.

Regionally too, the states have taken collective measures to address the issue of money laundering by uniting themselves into various independent inter-governmental organizations. The Financial Action Task Force (FATF), which is presently recognized worldwide as the major inter-governmental body that sets global standards for detecting and combatting money laundering, was formed by G7 countries in July 1989. It has introduced broad-based standards in relation to anti-money laundering best practices, known as the FATF recommendations, which are now recognized as the global anti-money laundering (AML) standards.

There are several other regional bodies including Asia Pacific Group on Money Laundering (APGML)<sup>15</sup> which are known as FATF-style Regional Bodies, that operate on a regional or continental basis, taking collective initiatives to monitor, develop and enforce laws in the sphere of anti-money laundering. They all too apply the aforesaid FATF recommendations as the

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12 Attack on World Trade Center, New York by Al-Qaida on September 11, 2001.

13 'The Uniting and Strengthening America by Providing Appropriate Tools Required to Intercept and Obstruct Terrorism Act' - This Act was passed by the Congress on 26 October 2001.

14 Nicole M. Healy, 'The Impact of September 11th on Anti-Money Laundering Efforts, and the European Union and Commonwealth Gatekeeper Initiatives' (2002) *The International Lawyer* 733.

15 The Asia/Pacific Group on Money Laundering (APG) is an autonomous and collaborative international organization founded in 1997 in Bangkok, Thailand consisting of 41 members and a number of international and regional observers.

global anti-money laundering standards.

## **International Anti-Money Laundering Legal Framework**

### **United Nations Initiatives:**

According to the United Nations Sustainable Development Goals, the United Nations aim to significantly reduce illicit financial and arms flows, strengthen recovery and return of stolen assets, and combat all forms of organized crime in the world by 2030.<sup>16</sup>

The United Nations, in an effort towards a coordinated and global approach to combat money laundering have introduced a number of mechanisms and the most important ones are discussed below.

### **United Nations Convention against Illicit Traffic in Narcotic Drugs and Psychotropic Substances 1988 (Vienna Convention)<sup>17</sup>**

This is the first international convention that presents the issue of money laundering on the global platform, calling upon its signatories to criminalise the proceeds of drug crimes.<sup>18</sup> The expectations of the architects of the Convention are that by making it more difficult for criminals to have access to ill-gotten wealth they will be less motivated to engage in such activities<sup>19</sup>, as is set out by the Preamble to the Convention. It provides for a framework to deprive persons engaged in illicit trafficking in narcotic drugs, of the their proceeds of crime by criminalizing the conversion or laundering of the proceed of the crime in their domestic laws.<sup>20</sup> The Convention also imposes an obligation on State Parties to adopt suitable measures to identify, trace, freeze, and confiscate the property and proceeds of rime<sup>21</sup>, extradition of

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16 United Nations Sustainable Development Goals, Goal 16.4

<https://sustainabledevelopment.un.org/focussdgs.html> accessed 25 December 2021.

17 This Convention was adopted by the United Nations Conference for the Adoption of a Convention against Illicit Traffic in Narcotic Drugs and Psychotropic Substances on December 20, 1988 and came into force November 11. Sri Lanka acceded to this Convention on June 6, 1991.

18 article 3 of the Convention.

19 Dayanath C. Jayasuriya, 'Money Laundering: The Role of Legislation in Developing Economies' (1998) *Journal of Money Laundering Control*, vol. 1 no. 3.

20 article 3 of the Convention.

21 *ibid* article 5.

offenders<sup>22</sup> and developing mutual assistance and international cooperation towards the suppression of the offence.<sup>23</sup>

### **United Nations Convention against Transnational Organized Crime (Palermo Convention) 2000 (UNTOC)<sup>24</sup>**

This Convention aims to link proceeds from all serious crime of transnational nature into the offence of money laundering. It has three supplementary protocols targeted to cover several other specific areas of organized crime namely-

- (a) the Protocol to Prevent, Suppress and Punish Trafficking in Persons, Especially Women, and Children<sup>25</sup>;
- (b) the Protocol against Smuggling of Migrants by Land, Sea and Air;<sup>26</sup> and
- (c) the Protocol against the Illicit Manufacturing of, and Trafficking in Firearms, Their Parts and Components and Ammunition.<sup>27</sup>

The preamble of the Convention, while noting the complexity of the nature of organized crime and the link it has with money laundering, states that the Convention would serve as an effective tool and provide the necessary legal framework for international cooperation in combatting organised crime including money laundering. The preamble further identifies the negative economic and social implications associated with money laundering, as a transnational organized crime.

Kofi A. Annan<sup>28</sup>, in the foreword to the Convention, emphasizes the need to

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<sup>22</sup> *ibid* article 6.

<sup>23</sup> *ibid* articles 7 & 10.

<sup>24</sup> This Convention was adopted by UN General Assembly Resolution A/RES/55/25 of November 15, 2000 and came into force on September 29, 2003. Sri Lanka has ratified this Convention on September 22, 2006.

<sup>25</sup> Adopted by UN General Assembly Resolution 55/25 and entered into force on December 25, 2003.

<sup>26</sup> Adopted by UN General Assembly Resolution 55/25 and entered into force on January 28, 2004.

<sup>27</sup> Adopted by UN General Assembly Resolution 55/255 and came into force on July 3, 2005.

<sup>28</sup> The seventh Secretary-General of the United Nations, served from 1997 to 2006.

have an international mechanism and international cooperation to act against transnational organized crimes including money laundering, stating as follows:

If crime crosses borders, so must law enforcement. If rule of law is undermined not only in one country, but in many, then those who defend it cannot limit themselves to purely national means. If the enemies of progress seek to exploit the openness and opportunities of globalization for their purposes, then we must exploit those very same factors to defeat the forces of crime, corruption, and trafficking in human beings.

This Convention applies to the prevention, investigation, and prosecution of the offence of money laundering where the offence is transnational in nature and involves an organized criminal group.<sup>29</sup>

### **United Nations Convention against Corruption 2003 (UNCAC)<sup>30</sup>**

This Convention supplements UN Convention against Transnational Organized Crime and recognizes the invariable link between corruption and other forms of crime including money laundering and the transnational nature of the crime.<sup>31</sup> The Convention, while identifying money laundering as an organized crime and an economic crime,<sup>32</sup> calls for the State Parties to employ comprehensive mechanisms to prevent the offences contained in the Convention by setting up domestic regulatory and supervisory regime in respect of banks and non-bank financial institutions, to deter and detect all forms of money laundering.<sup>33</sup>

It is noteworthy that both the UNCTOC and UNCAC recognize the significance of adopting the standards specified by various regional, interregional and multilateral organizations against money-laundering as guidelines by State Parties in establishing their domestic regulatory and

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<sup>29</sup> UN Convention against Transnational Organized Crime, article 3.

<sup>30</sup> This Convention was adopted by the UN General Assembly on October 31, 2003, by Resolution 58/4 and came into force on December 14, 2005 in accordance with article 68(1) of the Convention. Sri Lanka ratified this Convention on March 31, 2004.

<sup>31</sup> Preamble to the Convention, paragraph 2

<sup>32</sup> Preamble to the Convention.

<sup>33</sup> *ibid*, article 14.

supervisory regimes to fight money laundering.<sup>34</sup> These provisions in these Conventions seems to give due recognitions to the standards recommended by the Financial Action Task Force (FATF) and the Asia-Pacific Group on Money Laundering (APGML), which are discussed in detail in this research later.

All of the above regional bodies use the FATF's forty recommendations that are discussed in the following section as their principal guidelines for the implementation of AML/CFT measures.

### **Financial Action Task Force (FATF) Recommendations**

The Financial Action Task Force (FATF) is an inter-governmental body established in 1989 by the Finance Ministers of the countries who are members of the FATF. The FATF is mandated to formulate standards and to promote effective implementation of legal, regulatory, and operational measures for combatting money laundering and related issues affecting the integrity of international financial system.<sup>35</sup> The FATF, as a policy making body has set forth forty recommendations<sup>36</sup> that it recommends for various jurisdictions to apply to combat money laundering, and they have now earned the recognition of the accepted international standards for combatting the crime of money laundering.

These recommendations were first issued in 1990 and have been revised in 1996, 2001 2003 and 2012. The version which is presently applicable was revised in 2012. Since different countries have different administrative, legal, supervisory, and monitoring frame work and since it is impossible for them to adopt measures uniformly to fight money laundering and other financial crimes, these recommendations operate as uniform criteria upon which a country's responsiveness to the crime of money laundering can be effectively measured.

The FATF requires the countries to assess money laundering risks of their countries and apply a risk-based approach to combat the offence. It emphasizes the need to have a national cooperation among the policy makers, financial intelligence units, competent authorities, and all other stakeholders in the financial and non-financial markets to identify, asses and take

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34 article 14 of UN Convention against Corruption.

35FATF, International Standards on Combatting Money laundering and the Financing of Terrorism and Proliferation, FATF recommendations 2012.

36 These recommendations were issued first in 1990 and revised in 1996,2001 and 2003 with the current version is the version revised in 2012 <http://www.fatf-gafi.org/about/>

preventive and corrective action to minimize the money laundering risk. The FATF, in its attempt to strike directly at the crime, directs countries to criminalize money laundering on the basis of the UN Convention against Illicit Traffic in Narcotic Drugs and Psychotropic Substances 1988 and the UN Convention against Transnational Organized Crime 2000. Further, it requires the countries to apply the crime of money laundering to all serious offences in order that a broader range of predicate offences would encompass this crime.

The FATF has outlined the forty recommendations under seven categories, that contain recommendations in regard to anti money laundering policies and coordination, money laundering and confiscation, terrorist financing and financing of proliferation, preventive measures, transparency and beneficial ownership of legal persons and arrangements, powers and responsibilities of competent authorities and other institutional measures and finally, international cooperation.

### **What Steps has Sri Lanka Taken to Combat Money Laundering?**

Prevalence of a strong anti-money laundering legal and enforcement framework is vital for any country for its development. Sri Lanka, as a developing nation, has been trying to achieve economic stability and a sustainable economic growth rate since the introduction of the open economy over four decades ago. In order to achieve economic stability and economic growth, it is essential that there should be strong supervisory and regulatory mechanisms in the financial and non-financial sectors that are capable of monitoring flow of funds and ensuring transparency in financial transactions. Lack of transparency and accountability diminishes the credibility of the country's economic profile and distracts Foreign Direct Investments (FDI). Hence, preventing or minimizing the opportunities of money laundering is an essential step towards creating a business-friendly and investor-friendly environment in the country which is a pre-requisite for achieving lasting economic development.

Accordingly, following the national and international obligations, Sri Lanka has taken steps to establish a legal framework to fight money laundering by introducing new laws and amending relevant existing legislation from time to time. In the year 2005, in view of the national and international security concerns surrounded by terrorism, the Government of Sri Lanka took steps to pass the Convention on the Suppression of Terrorist Financing Act, No.

25 of 2005<sup>37</sup> (CSTFA) to criminalize terrorist financing, freeze and forfeit assets connected to terrorist financing.

In 2006, the Prevention of Money Laundering Act, No. 5 of 2006 (PMLA) was enacted<sup>38</sup> with the aim of prohibiting the crime of money laundering and providing for the necessary measures to combat and prevent money laundering in Sri Lanka. Along with this Act, the Financial Transactions Reporting Act, No. 6 of 2006 (FTRA) also was enacted to provide for the necessary mechanism to collect data for the prevention, detection, investigation and prosecution of the offence of money laundering. The FTRA established a central statutory authority, which is called the Financial Intelligence Unit (FIU<sup>39</sup>), assigned with the task of monitoring and supervising all activities relevant to deterring money laundering in Sri Lanka. It is to be noted that the Financial Transactions Reporting Act (FTRA) also provides the same supervisory and administrative framework for the fight against financing of terrorism in Sri Lanka.

### **Is Sri Lanka's Current Profile In Terms Of Aml Legal Regime Satisfactory?**

It is evident that the Prevention of Money Laundering Act (PMLA) and the Financial Transactions Reporting Act (FTRA) have now been in force nearly for a period of fifteen years. Despite having a legal framework to deter money laundering, there is common perception in the society that within the economy, moneys are generated through various unlawful activities such as fraud, bribery, corruption, illicit trafficking in drugs, human smuggling, tax evasion and misappropriation of funds and that they are circulating freely or being laundered uninterrupted within the economy. Allegations of financial crimes reported in day-to-day media against representatives of people, top-ranking officials in the government and financial institutions and leading business persons have been a common phenomenon. The recent arrests of large-scale drug dealers and underworld figures in the country and the preliminary investigations into their affairs reveal how long criminal money has gone undetected over the past, giving unfettered opportunities for various

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37 This Act came into force on August 8, 2015 and was later amended by Act, Nos. 41 of 2011 and 3 of 2013.

38 This Act was later amended by Act, No. 40 of 2011.

39 The FIU was formally established by Presidential Order issued under the FTRA on 23 March 2006.

crimes.<sup>40</sup> Presently, the thinking pattern of the society has been so generalized that the ordinary public is compelled to attribute any short-term economic success of people's representatives, government officials or business persons in the private sector, to wealth or property derived through laundering of proceeds of crime. This background suggests that there could be serious gaps in the country's anti-money laundering legal framework or the related enforcement mechanisms.

The Asia/Pacific Group on Money Laundering (APG), being the main regional body evaluating the effectiveness of a country's anti-money mechanism, in its last Mutual Evaluation Report on anti-money laundering and counter terrorist financing measures on Sri Lanka,<sup>41</sup> has expressed its concern over the very low prosecution and conviction of anti-money laundering cases and low confiscation of proceeds of crime in Sri Lanka.

According to the annual report of the Financial Intelligence Unit of Sri Lanka (FIU), the total number of money laundering cases filed in courts during the 2015-2019 period is as low as 19 with only three convictions during the said period, and with no conviction in 2019.<sup>42</sup> It is noteworthy that only four money laundering prosecution cases have ended up in the court convicting the culprits during the entire period of fifteen years in which the PMLA and the FTRA have been in operation.

In this background, in October 2017, the FATF listed Sri Lanka as a jurisdiction with strategic AML deficiencies, which list is more commonly identified as "Grey List", and provided a time-bound action plan to be fulfilled by the country.<sup>43</sup> Later in February 2018, the European Commission blacklisted Sri Lanka, along with other three countries, as a country with strategic deficiencies in anti-money laundering and terrorism financing regimes.<sup>44</sup> In October 2018 and in June 2019, the FATF issued public

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40 See. Nishadi Thennakoon, 'The Gulf between the Rule of Law and Money Laundering in Sri Lanka' (2020) SSRN Electronic Journal.

41 Annual Report 2015-2016 Asia/ Pacific Group on Money Laundering issued in September, 2015. <http://www.apgml.org/> accessed 7 March 2020.

42 Annual Report 2019, Financial Intelligence Unit of the Central Bank of Sri Lanka.

43 <https://www.cbsl.gov.lk/en/news/delisting-of-sri-lanka-by-european-commission-from-its-list-of-high-risk-3rd-countries> accessed 14 March 2020.

44 MEPs confirm Commission blacklist of countries at risk of money laundering <https://www.europarl.europa.eu/news/de/press-room/20180202IPR97031/meps-confirm-commission-blacklist-of-countries-at-risk-of-money-laundering>> accessed 22 April 2020.

statements on its assessment of Sri Lanka concerning the AML deficiencies. Further, on February 12, 2019, the European Commission (EU) adopted a new list of 23 third countries<sup>45</sup> for their failure to adhere to anti-money laundering requirements which included Sri Lanka also.<sup>46</sup> In October 2019, FATF published a report<sup>47</sup> on progress made by Sri Lanka, but noted that Sri Lanka will remain on enhanced follow-up, and that it will continue to report back to the APG on progress to strengthen its implementation of AML/CFT measures. Although Sri Lanka managed to get itself out of those lists by June 2020 by fulfilling some of the undertakings given at the time, the country is warned to be under surveillance by those international regulatory bodies. The listing of a country as a high-risk country by the international organisations results in adverse implications on the financial system as well as the downgrading of that country in terms of sovereign ratings by international financial and credit rating agencies.<sup>48</sup> Therefore, Sri Lanka needs to take measures to strengthen the overall anti-money laundering regime to avoid future listings.

The above findings by the local and international organizations that monitor anti-money laundering legal regimes, raise reasonable questions whether Sri Lanka has an efficient and effective anti-money laundering legal framework.

Despite the existence of an anti-money laundering legal regime in Sri Lanka for nearly fifteen years, researches undertaken in the area of anti-money laundering legal regime of the country is very minimum. The said literature also mostly deals with discussions on concepts and existing legal mechanisms, but none of them has undertaken a gap analysis of the domestic AML legal regime in comparison with the current global AML standards.

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45 Other countries are Afghanistan, American Samoa, the Bahamas, Botswana, the Democratic People's Republic of Korea, Ethiopia, Ghana, Guam, Iran, Iraq, Libya, Nigeria, Pakistan, Panama, Puerto Rico, Samoa, Saudi Arabia, Syria, Trinidad and Tobago, Tunisia, US Virgin Islands and Yemen. (Commission press releases IP/19/781 and MEMO/19/782, 13 February 2019).

46 Commission's press releases IP/19/781 and MEMO/19/782, 13 February 2019, EU Focus 2019, 377, 1-2.

47 FATF, '4th Follow-up Report: Mutual Evaluation of Sri Lanka' (October 2019).

48 Sisira Dharmasiri Jayasekara, 'Deficient regimes of anti-money laundering and countering the financing of terrorism: An analysis of short-term economic implications' (2020) *Journal of Money Laundering Control*.

## **What Gaps are there in the Domestic AML Legal System Compared to the International AML Legal System?**

This section aims to explore the gaps in the Sri Lankan AML legal system compared to the international standards in relation to AML control. Accordingly, the provisions of the PMLA and the FTRA will be discussed in comparison to the global anti-money laundering standards set out in the UN Convention against Illicit Traffic in Narcotic Drugs and Psychotropic Substance 1998 (Vienna Convention), the UN Convention against Transnational Organized Crime (Palermo Convention) 2000 (UNTOC) and the UN Convention against Corruption 2003 (UNCAC), along with the Financial Action Task Force (FATF) recommendations relating to anti-money laundering (AML) control. For the purpose of the discussion, the provisions in the said international legal framework and the domestic legal system are examined under four key areas of importance, namely, provisions applicable to criminalizing money laundering, seizing, freezing and confiscation of proceeds of crime, adopting preventive measures and competent authorities and international cooperation and mutual legal assistance.

### **Criminalizing Money Laundering:**

#### **UN Conventions**

All the three UN Conventions mentioned above aim to oblige State Parties to adopt legal and other measures to establish the laundering of proceeds of crime as a criminal offence in their domestic laws, in order to eliminate the main incentive to commit crimes. Those Conventions require States to criminalize ‘conversion or transfer of property’ where such conversion is done ‘intentionally’ and with the knowledge that such property is derived from any offence specified those Conventions.<sup>49</sup>

In addition, the Conventions also seek to criminalize the concealment or disguise of the true nature, source, location, disposition, movement, rights and ownership of property, where it is done with the knowledge that such property is derived from any offence under those Conventions. Further, the said Conventions also require the criminalizing of acquisition, possession, or use of property, knowing that such property was derived from any offence specified in such Conventions.<sup>50</sup> Further, they make the participation in, association with, conspiring to commit, attempting to commit and aiding,

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<sup>49</sup> article 3 of Vienna Convention, article 6 of UNTOC and article 23 of UNCAC.

<sup>50</sup> *ibid*,

abetting, facilitating and counseling the commission of any of the offences under the respective Conventions, criminal offences.<sup>51</sup>

### **FATF Recommendations**

FATF recommendations state that countries should criminalize money laundering on the basis of the UN Convention against Illicit Traffic in Narcotic Drugs and Psychotropic Substances 1998 (the Vienna Convention) and the UN Convention against Transnational Organized Crime (Palermo Convention).<sup>52</sup> It also states that countries should apply the crime of money laundering to all 'serious offences', by including the widest range of predicate offences.

Recommendation 3 explains that the offence of money laundering should be extended to cover any type of property that represents proceeds of any crime, whatever its value is. The important factor in this recommendation is that the person in question need not have been convicted of the predicate offence in order for him to be convicted for the laundering of the 'proceeds' derived from that predicate offence. The said recommendation also requires the predicate offence of money laundering to extend to any unlawful act committed in an overseas jurisdiction, provided that the same act forms a predicate offence under the domestic law too.

The FATF perceives the importance of the gravity and severity of the offence of money laundering and recommends that there should be effective, proportionate and dissuasive criminal sanctions and penalties to natural persons convicted of the offence. As far as legal persons are concerned, the FATF recommends that civil or administrative liability and sanctions should be applied if criminal liability and sanctions are not possible in relation to them. It further suggests setting out ancillary offences to the offence of money laundering, such as participation in, association with, conspiring to commit, attempting, aiding and abetting, facilitating and counseling the commission of the offence of money laundering also as offences that should carry effective, proportionate, and dissuasive sanctions, same as the predicate offence of money laundering.

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<sup>51</sup> *ibid.*,

<sup>52</sup> FATF recommendation 3.

<http://www.fatf-gafi.org/publications/fatfrecommendations/documents/fatf-recommendations.html>

## **Sri Lankan AML Legal System**

The Prevention of Money Laundering Act (PMLA) has created the offence of money laundering in section 3. The text of this section appears to comply with major requirements of the UN Conventions and the FATF requirements discussed above. In addition, it is to be noted that while the three UN Conventions under discussion have attached both mental elements of ‘intention’ and ‘knowledge’ in laundering proceeds of crime, the PMLA has limited the mental element to ‘knowledge’ only, requiring a lesser degree of *mens rea* to prove the particular predicate offence.

However, the sanctions provided for the offence of money laundering under that section is a fine not less than the value of the property up to a maximum of three times of the value of the property and imprisonment for period ranging from 5 years to 20 years, with the assets of such person being liable to forfeiture. The fine prescribed for the offence does not appear to be dissuasive enough so as to discourage the offence as recommended by the FATF recommendation 3, when considering the obvious amounts of proceeds of crime subject to money laundering are considered.

Further, even though the UN Convention on Corruption requires the inclusion of bribery in the private sector and embezzlement of property in the private sector also as predicate offences, there are no provision to that effect in the PMLA nor is there any legislation that makes them offences in Sri Lanka.

Furthermore, although the PMLA criminalizes attempting to commit, conspiring to commit, aiding, or abetting the commission of the offence of money laundering and provides for the same punishment that is specified for the commission of the offence of money laundering,<sup>53</sup> it has not criminalized participation in, association with, facilitating and counselling the commission of the relevant crimes as required by the UN Conventions and FATF recommendations.

## **Seizing, Freezing and Confiscation of Proceeds of Crime**

### **UN Conventions**

The Vienna Convention, UNCTOC and the UNCAC require States to take necessary steps to confiscate the proceeds of crime and property, and materials, substances and other instrumentalities used in the commission of

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<sup>53</sup> PMLA, s 3(2).

the offences prohibited by the respective Conventions.<sup>54</sup> Further, each State is required to adopt suitable measures to enable its competent authorities to identify, trace, freeze or seize proceeds, property or instrumentalities used in the commission of the offences under those Conventions. For confiscation purposes, the Conventions require the States to empower its courts or competent authorities to call for or seize bank records, financial or commercial records to be made available or seized, for which bank secrecy should not be a barrier.

Further, where any proceeds, property or instrumentalities of crime are in another State, the Conventions require a State, on a request by other State, to take measures to identify, trace, freeze and seize such proceeds, property or instrumentalities, subject to the provisions of its domestic law, any bilateral or multilateral treaty, agreement or arrangement applicable between the two States.

The UNCTOC and UNCAC suggest imposing the onus of proving the legitimate origin of any alleged proceeds of crime or property on the offender, in so far as such requirement is consistent with the domestic law and domestic judicial and other proceedings, while ensuring the protection of the bona fide rights of third parties.

It further adds that States should adopt necessary legislative and other measures to regulate the administration of frozen, seized or confiscated property by competent authorities.

Both UNCAC the UNCTOC provide the proceeds of crime or property confiscated by a State are required to be disposed of and returned to the requesting party in accordance with its domestic law and administrative procedures.<sup>55</sup>

### **FATF Recommendations**

The FATF recommendation in regard to freezing, seizing and confiscation of proceeds of crime suggests that countries should take measures similar to the measures set out in the Vienna Convention and UNCTOC (Palermo Convention), including legislative measures, to enable competent authorities to freeze, seize and confiscate the proceeds of money laundering or other predicate offences.<sup>56</sup>

It recommends that countries should empower their competent authorities to

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<sup>54</sup> article 5 of Vienna Convention, article 12 of UNCTOC and article

<sup>55</sup> UNCAC, article 54, 55 and 57.

<sup>56</sup> FATF recommendation 4.

identify, trace and evaluate the property suspected to be the proceeds of crime, and freeze and seize them to prevent any transaction or disposal of such property and to facilitate carrying out appropriate investigations in to the alleged offences effectively.

The FATF further suggests making provisions in the domestic law to confiscate the proceeds of crime or other instrumentalities without requiring a criminal conviction (non-conviction-based confiscation), or to place the onus of proving the legitimate origin of the proceeds or property alleged to be proceeds of crime on the offender, subject to the provisions of the domestic law.

### **Sri Lankan AML Legal System**

Provisions relating to freezing and forfeiture of assets connected to money laundering are included in Part II of the PMLA. This Part has provided for the freezing of alleged proceeds of crime by an Assistant Superintendent of Police for seven days, which may be confirmed or extended by the High Court up to two years. Even though the High Court has power to appoint a receiver to take possession and deal with the account, property or investment which is subject to the freezing order, there are no provisions in the Act to establish a regulatory authority to regulate the administration of frozen, seized or confiscated property under the PMLA or FTRA, as required by article 31 of the UNCAC.

Further, although the UN Conventions and FATF requirements recommends States to adopt suitable measures to enable its competent authorities to identify, trace, freeze or seize proceeds, property and instrumentalities used in the commission of the predicate offences for the purpose of confiscation, a freezing order issued under section 7 of the PMLA is only applicable to an ‘account, property or investment’.

Apart from that, although provisions relating to forfeiture of instrumentalities have been introduced in to section 13 of the PMLA by the Amendment introduced to the PMLA in 2011, the said amendment is not reflected in that meaning in some other provisions of the PMLA. Accordingly, whereas instrumentalities used in the commission of offences have been identified as distinct from ‘account, property or investment’ for forfeiture purposes in section 14, those instrumentalities have been regarded as part of such ‘account, property, or investment’ in dealing with rights of *bona fide* claimants under section 14(2)(a) and section 13(2) of PMLA. Further, the instrumentalities forfeited under section 13(2) are not placed under the charge of the receiver appointed under section 15 as amended by the amendment in

2011, which appears to be a mistake in making consequential amendments to that provision.

Further, the punishment specified in the PMLA for the contravention of the freezing order is a maximum of rupees one hundred thousand rupees or one and a half a half times of the value of the property or maximum one year period of imprisonment, which does not seem to be dissuasive and proportionate as the FATF recommends for such purpose.

## **Adopting Preventive Measures and Competent Authorities**

### **UN Conventions**

The UN Conventions require the State Parties to take all measures to prevent the occurrence of the offence of money laundering in their local jurisdictions. Accordingly, they require the State Parties to introduce a comprehensive domestic regulatory and supervisory regime for banks and non-bank financial institutions and other bodies to detect and deter all forms of money laundering, including the requirements to identify customers, maintain records and report suspicious transactions (STRs).<sup>57</sup> It is to be noted further that the UNCAC focuses on the importance of veiling off the ‘beneficial owners’ by requiring the identification of beneficial owners of transactions, and highlights the requirement of regulating and supervising of natural and legal persons that provide money or value transmission services.<sup>58</sup>

The Conventions require the States to establish Financial Intelligence Units (FIUs) to act as the central authority for collection, analyzing and distribution of information on money laundering related matters in the domestic jurisdiction.<sup>59</sup> They further oblige States to ensure that their administrative, regulatory, law enforcement and other authorities that deal with anti-money laundering measures are able to cooperate with and exchange information at national and international level, subject to prescribed conditions under their domestic law.

Further, the State Parties are required to implement measures to identify and monitor cross-border flows of cash and negotiable instruments, for which purpose the States should require individuals and businesses to declare the amount of cash and negotiable instruments that they take and bring across

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<sup>57</sup> article 7 of UNCTOC, article 14 of UNCAC

<sup>58</sup> article 14 of UNCAC

<sup>59</sup> article 7 of UNCTOC, article 14 of UNCAC.

borders.<sup>60</sup> The UNCTOC and UNCAC too recognize the initiatives taken by numerous inter regional bodies such as FATF and other “FATF-Style Regional Bodies” (FSRBs) towards combatting money laundering.

### **FATF Recommendations**

The FATF requires the States to ensure that laws governing secrecy in financial transactions do not hamper the implementation of its recommendations on preventive measures and competent authorities.<sup>61</sup>

It attaches heavy emphasis on the requirement of applying Customer Due Diligence (CDD) measures by financial institutions<sup>62</sup> and Designated Non-Financial Businesses and Professions (DNFBPs)<sup>63</sup> to identify and verify the identity of customers, beneficial owners of legal persons as well as legal arrangements and also to conduct on going due diligence (ongoing CDD) on the business relationship with customers and to make suspicious transaction reports (STRs) to the FIU when necessary. It further recommends to use a Risk Based Approach (RBA) in applying the said CDD measures to determine the extent of measures that should be taken.

In addition, the FATF requires financial institutions to identify the money laundering risks associated with domestic or foreign politically exposed persons (PEPs)<sup>64</sup> and cross-border correspondent banking activities.<sup>65</sup> It further recommends to monitor the money or value transfer services (MVTs) providers by way of licensing or registrations, with appropriate penal sanctions.<sup>66</sup>

As far as disclosure of information is concerned, the FATF recommendations on CDD measures require the countries to provide, by law, to protect financial institutions, their directors, officers and employees from criminal and civil liability arising out any disclosure of information, where such disclosures on suspicious transactions are made in good faith to the FIU.<sup>67</sup> On the other hand, it requires to introduce laws prohibiting the disclosure or ‘tipping off’ of any information to outside parties regarding the filing of

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<sup>60</sup> *ibid.*

<sup>61</sup> FATF recommendation 9.

<sup>62</sup> *ibid.*, recommendation 10.

<sup>63</sup> *ibid.*, recommendations 22 and 23.

<sup>64</sup> *ibid.*, recommendation 12.

<sup>65</sup> *ibid.*, recommendation 13.

<sup>66</sup> *ibid.*, recommendation 14.

<sup>67</sup> *ibid.*, recommendation 21.

STRs.<sup>68</sup>

Furthermore, the FATF obliges countries to take steps to ensure that legal persons and legal arrangements are not misused for money laundering purposes and to make sure to collect and maintain adequate, accurate and timely information on the beneficial ownership and control of legal persons and express trusts with timely access to that information by the competent authorities.

As far as regulation and supervision of financial institutions are concerned, the FATF requires financial institutions to be subject to adequate regulation and supervision and ensure that they effectively implement FATF recommendations<sup>69</sup> and the respective supervisory authorities to have adequate powers to supervise and monitor such financial institutions including the power to conduct inspections, call for information and impose sanctions.<sup>70</sup>

The FATF requires countries to establish a Financial Intelligence Unit (FIU) as the central authority to receive and analyse STRs and other information relating to money laundering and to disseminate the findings of the analysis to relevant law enforcement authorities.<sup>71</sup> The FIU should have powers to obtain any additional information from the relevant reporting institutions, and have access to any financial, administrative, and law enforcement information required by it to exercise its functions effectively.

Further, the FATF recommends that there should be ‘designated law enforcement authorities’ with proper responsibility and powers to investigate money laundering and predicate offences through the conduct of a ‘financial investigation’. In addition, it requires to designate a competent authority to promptly identify, trace, freeze and seize property which is suspected to be proceeds of crime.<sup>72</sup> The competent authorities should have power to access all necessary documents and information required for investigations and prosecutions, power to search persons and premises and to take statements from witnesses. It also requires that investigation authorities to have the power to use diverse investigative techniques such as intercepting communications and accessing computer systems. It further requires that the

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<sup>68</sup> *ibid*, recommendation 21.

<sup>69</sup> *ibid*, recommendation 26.

<sup>70</sup> *ibid*, recommendation 27.

<sup>71</sup> *ibid*, recommendation 29.

<sup>72</sup> *ibid*, recommendation 30 and 31 and interpretative notes to those recommendations.

law enforcement and investigative authorities (competent authorities) should in turn be able to access all relevant information held by the FIU.

Furthermore, the FATF states that countries are required by law to ensure that effective, proportionate and dissuasive criminal, civil or administrative sanctions are in force to deal with natural or legal persons who fail to comply with the relevant requirements.

### **Sri Lankan AML Legal System**

The provisions relating to preventive measures and competent authorities are mostly contained in the Financial Transactions Reporting Act (FTRA). There are wide provisions in relation to the designation of an FIU,<sup>73</sup> Customer Due Diligence Rules (CDD rules) in relation to finance businesses and Designated Non-Finance Businesses and Persons (DNFBPs),<sup>74</sup> and supervisory authorities and enforcement authorities<sup>75</sup> in the FTRA.

However, it is to be noted that the FIU is designated by the Minister by an Order published in the Gazette, and as such, it could be argued that it lacks autonomy and independence as required by the FATF recommendations. The present system of designation of any government department, public corporation, statutory body or institution as the FIU, by an Order of the Minister leads to uncertainty in the continued existence of a designated FIU, as the Minister has the power to revoke an existing Order and designate a new institution as the FIU any time. Further, there are no clear provisions in the FTRA in regard to the staff of the Unit, appointments of a Head of the Unit, and terms of office of such staff etc. Nevertheless, powers and functions of the FIU seems to sufficiently comply with the Convention requirements and FATF recommendations relating to the establishment of an FIU to serve as a national center to collect, analyse and distribute information on money laundering.<sup>76</sup>

However, it is noted that there are no provisions in the FTRA for law enforcement agencies in turn to call for information held by the FIU for investigation and prosecution purposes. In this respect, the FTRA falls short of the international requirements of the Conventions and the FATF which highly recommend affording access to law enforcement agencies to information with the FIU, as discussed in a previous section.

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<sup>73</sup> Part III of FTRA

<sup>74</sup> Part I of FTRA

<sup>75</sup> Part IV of the FTRA

<sup>76</sup> article 7 of UNCTOC, article 14 of UNCAC and the FATF recommendation 29.

Further, in order to enhance the due diligence requirements, the Companies Act has recently been amended to require companies to unveil beneficial owners of legal persons,<sup>77</sup> whereas the Trusts Ordinance has also been recently amended to require legal arrangements, such as express trusts, to unveil the beneficial owners of legal arrangements,<sup>78</sup> as required by the UNCAC.<sup>79</sup>

As for record keeping requirements, the FTRA sets out that every institution is required to maintain records of transactions and related correspondence for a period of six years from the date of transaction and correspondence which is extendable by the FIU as per the circumstances of any given case. However, the said period as recommended by the FATF has to be reckoned from the date of ending the business relationship with such customer,<sup>80</sup> which allows the records to be kept for a longer period.

As far as supervisory authorities are concerned, although the FATF recommendation 27 requires that the supervisory authorities should have adequate powers to supervise and monitor institutions including the power to conduct inspections, call for information and impose sanctions for failures to comply with any requirements or withdrawal or suspension of their licences, the FTRA does not specify any such powers. Further, the FTRA has not defined what is a 'supervisory authority' of an Institution to enable to identify its functions under the Act. They are to make STRs under section 22 and to perform a very limited function of reporting any non-compliance of Institutions to the FIU and cooperate with the FIU and law enforcement agencies.

According to the aforesaid background, it is not clear as to who has the ultimate responsibility for AML supervision under the AML as the FIU too is to conduct certain supervisory activities under section 15.

Further, certain powers of the FIU, supervisory authorities and law enforcement agencies are either overlapping, duplicating or uncertain. An instance of this would be section 15(1)(f), in which the FIU has power to refer any intelligence information to supervisory authorities, even though they are not investigators nor law enforcement agencies. Further, the power given to the FIU to call suspicious transactions reports from law enforcement agencies under section 15(1)(f) appears to serve no purpose as it is the FIU's

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<sup>77</sup> Companies (Amendment) Act, No. 13 of 2019.

<sup>78</sup> Trusts (Amendment) Act, No. 6 of 2018.

<sup>79</sup> UNCAC, article 14,

<sup>80</sup> FATF, recommendation 11.

duty to refer such reports to law enforcement agencies for investigation and prosecution, and not vice versa. Further, the functions of compliance officers under section 14 of the Act appears to overlap with those of supervisory authorities as per section 22 of the FTRA.

The provisions in the FTRA respecting currency-reporting obligations at border appear only partly to comply with the relevant requirements in UN Conventions.<sup>81</sup> The Convention requirement is to the effect that individuals and businesses should report the cross-border transfer of cash and negotiable bearer instruments (BNIs) in substantial quantities to an authorized officer. Although the marginal note to section 24 of the FTRA denotes that the section is about ‘currency reporting at boarder’, the provisions within the section do not impose any direct, positive obligation on a person to declare or report such currency or negotiable instrument, nor specify any procedure for such reporting. It merely empowers an authorized officer to examine, search and seize any cash or negotiable instrument suspected to be connected to an unlawful activity. This ambiguity creates further problems in prosecuting and imposing penalties under section 27, as that section specifies a punishment for ‘failure to report’ such cash or negotiable instruments.

Furthermore, some textual errors in the both PMLA and FTRA are also to be identified. Accordingly, it is observed that the establishment of the FIU is provided for in the interpretation section of the FTRA,<sup>82</sup> whereas it should have been a substantive provision in the body of the legislation. This omission is reflected in the PMLA also when it defines the FIU in section 35, having to omit the reference to a section under which it is established.

Further, in the interpretation of the term ‘money laundering’ in section 33 of the FTRA, the reference to the section creating the offence of money laundering in the PMLA has erroneously been mentioned as section 4, whereas it should be section 3 of the PMLA. Further, in the interpretation to the term ‘suspicious transactions report’ in section 33 of the FTRA, the reference to the particular section erroneously referred to as section 6, where as it should be section 7.

Further, even though acts constituting ‘unlawful activities’ set out in section 35 of the PMLA have been broadened by the relevant amendment introduced in 2011, the corresponding definition in the FTRA has not been amended yet, to reflect that situation. In addition, threshold provision relating to the predicate offences in the definition of the term “unlawful activity” under the

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<sup>81</sup> article 7 of UNCTOC, article 14 of UNCAC

<sup>82</sup> FTRA, s 33.

FTRA still remains at 7 years, whereas it is 5 years in the PMLA as amended. Since the FTRA provides for the mechanism for data collection, regulation and supervision of financial and non-finance businesses, reporting requirements and CDD measures relation to money laundering, it is a must that the provisions in these two complementary legislations are not contradictory to each other, as it otherwise would cause problems in implementation and enforcement.

Further, until 2011 the businesses that were regarded as ‘finance business’ and ‘designated non-finance businesses were exactly the same as provided for in the interpretation sections of both the PMLA (section 35) and the FTRA (section 33). However, even though the amendment brought to the PMLA in 2011 has broadened that definition in the PMLA, no such corresponding amendments have been brought to the FTRA to broaden the scope of those definitions, creating contradiction in the application of the two legislations.

Further, the definition of ‘off-shore banking’ in the FTRA covers ‘unit or department of licensed commercial bank or a licensed specialized bank’, while the definition of the same term in the PMLA has omitted licensed specialized banks in its scope. The definition of ‘person’ in the PMLA is narrow, whereas it is wider in the FTRA.

Furthermore, the section 19 of the FTRA has provided for the imposition of administrative sanctions up to rupees one million by the FIU, for contravention of the provision of Part I and Part II of the FTRA. However, it is observed that text of this provision is quite vague as to whether it focuses on ‘Institutions’ or ‘persons’ in the sections of the said Part I and Part II. Since Part I of the Act mainly deals with the obligations of ‘Institutions’ rather than ‘persons’, the reference in section 19 of the Act to ‘[a] person required to conform to the requirement’ causes confusion as to its application, which could have been cured by a reference to “a person or an institution required to conform to the requirement’. Further, the said section 19 has been placed in part III of the Act, hence it is unclear whether its application is really intended for Part I and Part II of the Act. The said ambiguity may have diminished the value and usefulness of the said important provision.

## **International Cooperation and Mutual Legal Assistance**

### **UN Conventions**

The Vienna Convention, the UNCTOC and the UNCAC<sup>83</sup> require the State Parties to extend widest possible mutual legal assistance in investigations, prosecutions and judicial proceedings in relation to relevant offences under relevant laws, treaties, agreements and arrangements applicable within their jurisdictions.

According to the Vienna Convention, the UNCTOC and the UNCAC, the purposes that the mutual assistance can be sought or afforded include taking evidence or statements from persons, serving judicial documents, executing searches and seizures, examining objects and making site visits, obtaining information and evidentiary items, obtaining and providing originals or certified copies of records including bank, financial, corporate or business records, identifying, freezing or tracing proceeds of crime, property or instrumentalities for evidentiary purposes and facilitation of voluntary appearance of persons in the requesting party.<sup>84</sup>

These Conventions provide that a State Party should not refuse to extend mutual assistance to another State Party on the ground of bank secrecy.<sup>85</sup> Nevertheless, the Conventions recognize the fact that State Parties may decline to render mutual legal assistance on the ground of absence of dual criminality.<sup>86</sup> However, they state that a State Party may provide information relating to a criminal matter to another State Party, without a request, on assumption that such information may be useful in successfully conducting inquiries and investigations in that other State Party.

These Conventions recommends the States to enter into bilateral or multilateral agreements or arrangements, where possible, to facilitate mutual legal assistance, where no treaty is available for mutual legal assistance.

As far as extradition of offenders are concerned, the three Conventions have

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<sup>83</sup> article 7 of the Vienna Convention, article 18 of the UNCTOC and article 46 of the UNCAC.

<sup>84</sup> article 7 para 2 of Vienna Convention, article 46 para 3 of UNCAC and article 18 para 3 of UNCTOC.

<sup>85</sup> article 7 para 15 of Vienna Convention, article 46 para 9 of UNCAC and article 18 para 9 of UNCTOC.

<sup>86</sup> article 7 para 5 of Vienna Convention, article 46 para 8 of UNCAC and article 18 para 8 of UNCTOC

almost similar provisions.<sup>87</sup> They provide that where a person suspected of an offence under any such Convention is present in the territory of the requested State, his extradition can be sought only if the requirement of dual criminality is met, while where dual criminality lacks, State Parties are free to decide the matter according to the provisions of its domestic law.

### **FATF Recommendations**

According to the FATF recommendations relating to international corporation and mutual legal assistance, countries are required to take immediate steps to become a party to and implement fully the Vienna Convention, UNCTOC and UNCAC. Countries are also expected to ‘rapidly, constructively and effectively provide widest possible range of mutual assistance’<sup>88</sup> in deterring money laundering, associated predicate offences, prosecution of offenders and related proceedings. Countries are also required to lay necessary legal foundation for providing mutual assistance and enter into treaties, agreements, arrangements or other mechanisms to foster cooperation.

FATF further recommends countries to empower the relevant authorities to take prompt action in respect of requests from other countries to freeze, seize and confiscate property that is suspected to have derived by criminal activities.<sup>89</sup> The authorities concerned should have necessary powers to respond to those requests on the basis of non-conviction-based confiscation proceedings, if it is not inconsistent with the fundamental principles of law of the country.

As for extradition of persons charged with money laundering and associated predicate offences, the FATF recommends countries to take expeditious actions to execute extradition requests made by other countries<sup>90</sup> and to make money laundering an extraditable offence, to introduce effective, clear mechanisms to execute extradition requests on a priority basis, not to place undue restrictive conditions on execution of extradition requests and most importantly, to formulate and put into effect a feasible legal framework for extradition.

Where dual criminality is a prerequisite for extradition in a country, the requirement should be deemed to have met if both countries criminalize the

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<sup>87</sup> article 6 of Vienna Convention, article 16 of the UNCTOC and article 44 of the UNCAC.

<sup>88</sup> *ibid*, recommendation 37.

<sup>89</sup> *ibid*, recommendation 38.

<sup>90</sup> *ibid*, recommendation 39.

act or conduct without raising terminological differences as grounds for refusal. Further, the FATF recommends putting in place simple extradition mechanisms, including extraditing persons based on warrants of arrests or judgments of courts.

The FATF also recommends the countries to ensure that their competent authorities could provide maximum international cooperation expeditiously, in relation to money laundering and associated predicate offences. Bi-lateral or multilateral agreements or arrangements or Memorandum of Understanding (MOU) are recommended to be negotiated, signed and executed in a timely manner with the widest range of foreign stake-holders whenever such measures are needed for the effective provision of mutual cooperation.

### **Sri Lankan AML legal system**

As far as the provisions relating to international cooperation and mutual legal assistance on combatting money laundering are concerned, they are dealt with in Chapter IV of the PMLA and section 17 of the FTRA. Accordingly, the PMLA has provided that the Mutual Assistance in Criminal Matters Act, No. 25 of 2002 (MACMA)<sup>91</sup>, as amended, shall be applicable where it is necessary to obtain assistance in relation to investigation and prosecution of the money laundering offence set out in section 3 of the PMLA. Prior to 2018, the application of the MACMA was primarily limited to Commonwealth countries, but the amendment brought to the MACMA in 2018 has enabled the Minister to issue an Order to extend its application to cover other countries as well as intergovernmental organisations.

Other than the provisions of the MACMA, the FTRA also authorizes the FIU, with the approval of the Minister, to enter into an agreement or arrangement with an institution or agency of a foreign state for the exchange of information relevant to any investigation or prosecution of an offence constituting a unlawful activity relating to money laundering.<sup>92</sup> However, it is observed here that seeking the approval of the Minister to enter into an agreement with a foreign FIU etc., affects autonomy of the FIU, as it is a matter that should entirely be with the FIU.

As far as extradition provisions are concerned, the PMLA has provided for the extradition of money laundering offenders by incorporating the offence of money laundering as an extraditable offence under the Extradition Law,

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<sup>91</sup> MACMA was amended in 2018 by Act No. 24 of 2018.

<sup>92</sup> FTRA, s 17

No. 8 of 1977. However, it is observed that section 27 of the PMLA has not been amended in consequential to the amendment introduced to the MACMA in 2018, despite the scope of the MACMA as amended is presently not confined to the Commonwealth countries.

## **CONCLUSIONS AND RECOMMENDATIONS**

This section of the paper aims to draw conclusions on and make recommendations to increase the efficiency and effectiveness of the Sri Lankan anti-money laundering (AML) legal framework.

### **Conclusion**

The gap analysis of the provisions of the Sri Lankan AML legal system demonstrates that

Sri Lankan AML legal framework has achieved considerable level of compliance with the standards, requirements and obligations of the relevant UN Conventions and Financial Action Task Force (FATF) recommendations. However, there are certain deficiencies which are assumed to have adversely affected efficiency and effectiveness of the domestic AML legal framework.

### **Recommendations**

Based on conclusions reached above, the following measures are recommended in order to further increase the efficiency and effectiveness of the domestic anti-money laundering legal framework of Sri Lanka.

1. In view of the extent of the amendments needed to rectify the deficiencies in the FTRA and, in particular, of the improper organization, lay out and structure, it is recommended that the FTRA should be replaced with a new legislation.
2. The new FTRA needs to provide for the following matters, in addition to the existing legal provisions: -
  - (i) the FIU should be permanently established as an autonomous statutory body or a Department of the Central Bank of Sri Lanka. It should provide for its own staff including the Head of the Unit, the appointments, terms of office etc., of such staff.

- (ii) the powers, duties and functions of the FIU, supervisory authorities, compliance officers and law enforcement agencies should be clearly defined. The law enforcement agencies should be given access to the information held by the FIU for effective and efficient investigation and prosecution.
- (iii) the obligation of a person to declare currency or bearer negotiable instruments at border should be clearly set out, along with and the relevant forms and procedures to be prescribed by regulations.
- (iv) it should be ensured that all the definitions in the new FRTA correspond with the definitions in the PMLA as these two legislations are complementary legislations.
- (v) provisions should be made to establish a specific regime to regulate the frozen, seized or confiscated proceeds of crime.
- (vi) provisions should be introduced to adopt an effective conviction-based and non-conviction-based confiscation measures and civil confiscation measures in relation to predicate offences of money laundering.
- (vii) the substantive provisions relating to Customer Due Diligence (CDD) that are presently contained in the CDD rules should be brought into the new FRTA and those rules then should be amended accordingly.

3. The PMLA should be amended to give effect to the following amendments: -

- (i) the offence of money laundering should be properly established together with the relevant ancillary offences such as aiding, abetting, assisting, participation in, association with, facilitating and counselling the commission of predicate offences and appropriate sanctions that are proportionate, effective and dissuasive should also be introduced.
- (ii) all the definitions in the PMLA should be reviewed and necessary amendments done in order that they correspond with the relevant definitions in the FTRA, as these two legislations are complementary to each other.
- (iii) provisions relating to mutual legal assistance in the PMLA should be amended to correspond with the respective provisions of the MACMA.

4. Having a legal system alone will not be sufficient to successfully combat money laundering. Therefore, the following measures are also recommended to ensure the achievement of the objective of combatting and controlling

money laundering in Sri Lanka.

- (i) all laws, regulations and rules relating to AML should be strictly enforced.
- (ii) the officers in law relevant enforcement agencies such as the Police, Department of Customs, Department of Immigration and Emigration, Bribery Commission, and of the Attorney-General's Department and the Judiciary should be properly trained in the area of 'financial investigation and enforcement'.
- (iii) the FIU, financial institutions, supervisory and regulatory agencies should be encouraged to use modern TECHs in finance, namely, FinTech, RegTech, SupTech and CopmTech for efficient supervision, regulation and control of the financial sector.
- (iv) all law enforcement agencies including prosecutors connected with AML control and the FIU should be adequately equipped with the necessary human and physical resources and the state-of-the-art technological facilities to facilitate efficient detection, investigation and prosecution of money laundering.
- (v) a separate legal regime on proceeds of crime should be introduced to specifically deal with identification, detection, investigation and prosecution, management and disposal of proceeds of crime.
- (vi) a new legal regime should be introduced to criminalize bribery and corruption in the private sector.
- (vii) a whistleblowers' legislation should be enacted to provide for prompt investigation of tip-offs from informants.
- (viii) an effective conflict of interest policy with appropriate sanctions should be introduced with clear guidelines for public officers involved in investigation and prosecution of money laundering offences to require them to disclose personal interests that may conflict with their duties.
- (ix) public awareness in the area of money laundering should be promoted.
- (x) all laws, systems and mechanisms should be periodically evaluated to examine their efficacy in combatting money laundering and necessary amendments and modifications should be affected in a timely manner.

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# Antecedents and Consequences of Green Scepticism: Evidence from a Frontier Market

Ratnam Umanakenan<sup>1\*</sup>, Sabina Dineshkumar<sup>2\*</sup>, Sivapalan Achchuthan<sup>3\*</sup>,  
Konalingam Kajenthiran<sup>4\*</sup>

<sup>1</sup> Department of Commerce, Faculty of Management Studies and Commerce,  
University of Jaffna, Sri Lanka.

*umana@univ.jfn.ac.lk*

*sabinaa@univ.jfn.ac.lk*

*achchu@univ.jfn.ac.lk*

<sup>2</sup> Department of Marketing, Faculty of Management Studies and Commerce,  
University of Jaffna, Sri Lanka.

*kkajenthiran@univ.jfn.ac.lk*

## ABSTRACT

*Explaining how skepticism affects a consumer's green purchasing behaviour is pivotal because it has the potential to alter consumer behaviour. Therefore, this study aims to fill this void by exploring how green skepticism influences green purchasing intention in Sri Lanka. The current research looks into the relationship between environmental concerns and green perceived risk. Besides, it empirically examines the impact of environmental concerns and perceived green risk on green skepticism. A google form questionnaire was distributed through social media to test the study hypotheses, and 212 responses were received from the participants who were aware of environmentally friendly products and their benefits. The survey results revealed that environmental concerns increase green perceived risk. Besides, environmental concerns and perceived green risk positively impact green skepticism, which in turn has a significant and negative influence on consumer purchase intention of green products. As an outcome, the research result provides novel insights for scholars and practitioners to use in developing anthropomorphic marketing strategies to increase consumers' intentions to buy green products.*

**Keywords: Environmental Concerns, Green Perceived Risk, Green Skepticism, Purchase Intention**

## INTRODUCTION

Over the years, environmental concerns have become popular among academics and marketing practitioners (Albayrak et al., 2013). Because everything is turning green these days, including people. Environmentally

friendly items can be found nearly everywhere: in renewable energy, semiconductors, semiconductor architecture, government buildings, commerce and investment, fashion, fabrics and packaging, counters, light bulbs, eggs, refrigerators, wedding bands, holidays, etc. Green products are becoming increasingly popular around the world, fuelled by a desire for a more environmentally friendly manner of consuming and living (Liu et al., 2019; H. V. Nguyen et al., 2019; Usharani & Gopinath, 2021). To achieve a common greener aim, many marketing players, including consumers, businesses, and policymakers, must collaborate and interact with each other. Further, this piques people's attention because environmentally conscious people tend to act in ways that benefit the planet (Czap & Czap, 2010).

Besides, one of the United Nations' sustainable development goals is to encourage the use of eco-friendly products. Environmentalists, governments, and non-profit entities are interested in promoting greener consumption habits (Jain & Kaur, 2004; Oliver, 2016). Nevertheless, the most critical question is whether or not people have a reason to choose eco-friendly products over regular ones. Skepticism is not a state of mind; it only manifests itself when certain things happen. Skeptics are doubts about what others say or do (Sosa, 2000). However, if convincing evidence is provided, they might change their minds. In line with Pomeroy and Johnson (2009) and Mohr et al. (1998), a person's level of skepticism is a cognitive response that varies depending on the communication's context and content.

Customers who are skeptical of an organisation's claims reduce the effectiveness of advertisements (Bae, 2018). In a supporting view, Obermiller et al. (2005) pointed out that Skeptics do not exhibit the expected correlation between advertisement and purchase intention regarding advertising claims. As a result, skepticism must be applied when studying environmentally conscious consumer behaviour. The effects of skepticism are rarely investigated in the realm of consumers' green purchasing behaviour, and studies linking consumer green buying behaviour and skepticism are scarce. Therefore, this work focuses on the causes of consumer skepticism and how that affects the consumer's ability to make wise decisions towards eco-friendly products. According to a previous study, green skepticism can help consumers make more informed judgement by raising the amount of effort they put into evaluating a message (Matthes & Wonneberger, 2014).

However, consumers' scepticism towards green products has received insufficient attention from researchers. According to a review of the existing literature, only a few attempts have been made to investigate the drivers,

deterrents, and consequences of green skepticism (Leonidou & Skarmeas, 2017). Consumers, companies, investors, governments, and society at large all have differing views about green skepticism. Consumers may be dissuaded from buying green products for the first time, repurchasing them, or choosing the most environmentally friendly products from their alternatives (Albayrak et al., 2011; Nekmahmud & Fekete-Farkas, 2020). Consequently, fewer individuals will consider purchasing green products, and others will contribute less to environmental sustainability. (Udokporo et al., 2020).

A survey of industry professionals found that businesses invest billions of dollars annually into marketing their green products, creating brand awareness, differentiating their products, and enhancing market competitiveness (Pimonenko et al., 2019). Similarly, governments invest tens of millions of dollars to combat various forms of environmental deterioration and conduct a variety of programs to encourage positive behavioural changes in favour of environmental conservation (Clark et al., 2020). Despite the facts and figures presented above, research in green skepticism is still in its early stages and remains incoherent and fragmented (Silva et al., 2020). Overall, the existing literature lacks a comprehensive theoretical model demonstrating the antecedents and behavioural outcomes of green skepticism, indicating a gap in the literature. As a result, this work seeks to scrutinise the causes and consequences of green skepticism. The following section describes how the study was carried out and how it contributed to the literature.

## **REVIEW OF THE LITERATURE**

### **Environmental Concern and Green Perceived Risk**

In the field of environmental studies, "environmental concern" is typically one of the earliest conceptual terms to be used (Antil, 1984). Hosta and Zabkar (2021) supported the early theory of environmental concern, which is a general approach to problems in natural ecological settings and may include either a positive or negative assessment of environmental flaws (De Pelsmacker & Janssens, 2007). Environmental concern has been discovered to be an essential predictive variable of consumer pro-environmental behaviour (Bhuan et al., 2018). Drawing on the above discussion, we argued that environmentally conscious consumers expect their purchasing decisions may have a significant and positive impact on the environment (green perceived risk). In light of this, we formulate that:

*Hypothesis 1: Environmental concerns increase green perceived risk*

### **Environmental Concern and Green Skepticism**

Environmental issues have drawn more and more attention from academics and marketing professionals over the years. Individuals concerned about the planet are more likely to take care of it through their eco-friendly practices (Czap & Czap, 2010). Previous studies found that environmentalists are more likely to engage in environmentally conscious buying practices (do Paço et al., 2019; Ketelsen et al., 2020; Yue et al., 2020). Based on the above discussion, this study suggests that consumers who care deeply about the environment are more skeptical towards environmentally friendly purchases. Therefore, we postulate that:

*Hypothesis 2: Environmental concern increases green skepticism*

### **Green Perceived Risk and Green Skepticism**

Customers' negative attitudes toward risk negatively influence their purchase decisions (Chaudhary & Bisai, 2018; Harridge-March, 2006; Kim & Gupta, 2009; Pires et al., 2004; Vlachos et al., 2016). There is a strong association between risk perceptions and negative consumption emotions, which immediately affects customer satisfaction (Baker et al., 2016). On the other hand, the term "green perceived risk" refers to the anticipation of unfavourable environmental effects resulting from a consumer's purchasing decisions. (Chen & Chang, 2013; Chen & Chang, 2012; Juliana et al., 2020; Peter & Ryan, 1976). As a result, consumers who perceive a high level of risk in green offerings are more skeptical of eco-friendly goods. Hence, we hypothesise as follows:

*Hypothesis 3: Green perceived risk increases green skepticism*

### **Green Skepticism and Purchase Intention**

In the field of business management, skepticism has been studied in relation to advertising, organic products, corporate social responsibility, environmental settings, and cause-related marketing (Fabiola & Mayangsari, 2020; Goh & Balaji, 2016; T. T. H. Nguyen et al., 2019; Skarmeeas et al., 2014). Inaccurate product labelling, customer misunderstanding, misrepresentation of products, and a lack of uniform standards and credentialing contribute to consumer skepticism about green products. (Goh & Balaji, 2016). Because of this, even if customers intend to purchase eco-friendly products, their skepticism regarding their environmental impact may

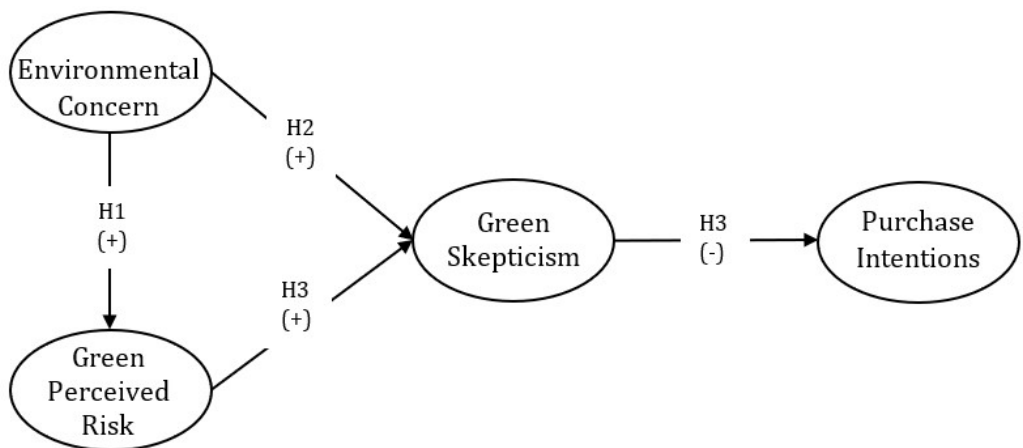
demotivate them from making green purchases. According to Elving (2013), skeptical consumers tend to emphasise considerations like profit and image enhancement when evaluating the veracity of green claims made in advertising or on product labels. The result of this skepticism in a company's intentions is a negative attitude toward both the company and the products it sells that are environmentally friendly. On the basis of the discussion above, we suggest that:

*Hypothesis 4: Green Skepticism decreases green purchase intentions.*

## Conceptual Model

Figure 1 shows a conceptual model proposed for this work based on the literature review and the hypothesised linkages.

**Figure 1: Conceptual Model**



## METHODS

A sample of 268 participants was sourced via social media platforms from February to March 2022. To guarantee that data was obtained from respondents who were aware of green products, researchers asked a screening question: "Do you know about green products and their benefits?". Only those respondents who qualified based on our screening criteria were considered to proceed to the rest of the survey. In this sense, 79.1% (n=212) of respondents in this survey were aware of green products and taken into account. Among them, a total of 184 usable data obtained from the online respondents were used for further examination. Based on the online survey

data, 55.4% of respondents are female (n=102), and 44.6 % are males (n=82). Further, most respondents fall in the age category of 31 to 45 years old (n=76, 41.3%), and most hold degrees from state and private Universities (n=82, 48.2%). Regarding respondents' family size, 64.7% have 4 to 6 members, 18.5% have 1 to 3 members, and 16.8% have more than seven members in their family. Regarding the respondent's monthly household income, most participants earn LKR 80,001 to LKR 110,000 (53.3%, n=98).

Besides, items on the online survey instrument were adapted from established scales and checked for suitability to the present study. Further, this survey instrument consists of four constructs: environmental concerns, green perceived risk, green skepticism and purchase intentions towards energy-efficient appliances. Besides, these scales have shown sufficient validity and reliability in prior studies, and all the previous studies used these constructs as reflective scales. Hence we also used them as reflective constructs in our study. The researchers used a five-point Likert scale ranging from 1 to 5 to assess this study's items. A score of 1 indicates "strongly disagree", while a score of 5 means "strongly agree". However, in the measure of environmental concern, 5 being "very much concern" and 1 being "not at all". Table I represents all scale items and sources. The scale items and their sources are listed in Table I.

## **RESULTS**

Researchers used the Partial Least Squares (PLS) mechanism, a variance-based structural equation modelling (SEM) approach, to evaluate the hypotheses. PLS is well-matched for this investigation for two reasons: first, the research model is quite complicated due to the hypotheses' types of associations; and second, the study is focused on predicting and explaining variance in key target dimensions (Chin et al., 2003; Roldán & Sánchez-Franco, 2012). Thus, the PLS-SEM was performed using SmartPLS 3.3.9 tool. Consequently, the PLS-SEM model was conducted in two phases: the measurement model (to measure the construct reliability and validity) and the structural model (to examine the hypothesised relationships in the research model).

### **Measurement Model Assessment**

As previously mentioned, the conceptual model is constructed on a reflective nature, and the criteria for the reflective measurement model are summarised in Table I. As per the result, all of the model evaluation prerequisites were satisfied, which implies that the model's reliability and convergent both seem

to be strong. Table I shows that the factor loading, Cronbach's alpha, and composite reliability of each independent variable were all greater than 0.7, indicating that the indicators combined adequately assess each construct (Hair et al., 2013). The Average Variance Extracted (AVE) for every construct ranges from 0.596 to 0.758, exceeding the minimum threshold of 0.5 (Götz et al., 2010). This means that the indicators for each latent construct in the model share more variance with their own indicators than with indicators of other latent variables (at a level of 50% or more). The findings confirmed that the measurement model has internal consistency and convergent validity (Hair et al., 2013).

**Table 1: Measurement Model Summaries and Insights**

Scale items	$\lambda$
<b>Environmental Concern</b> (Lee, 2009)	
$\alpha = 0.841$ , CR (0.888), AVE (0.613)	
How concerned are you about the environment?	0.781
How concerned are you about pollution?	0.772
How concerned are you about water and air pollution in your city?	0.825
How concerned are you about extravagant water usage in your city?	0.838
How concerned are you about the environment when making purchases?	0.790
<b>Green Perceived Risk</b> (Chen & Chang, 2012)	
$\alpha = 0.843$ , CR (0.876), AVE (0.615)	
There is a chance that there will be something wrong with the environmental performance of energy-efficient appliances	0.738
There is a chance that energy-efficient appliances will not work properly to their environmental design	0.791
There is a chance that you would get an environmental penalty or loss if you use energy-efficient appliances	0.810
There is a chance that using energy-efficient appliances will negatively affect the environment	0.822
There is a chance that using energy-efficient appliances would damage your green reputation or image	0.756
<b>Green Skepticism</b> (Albayrak et al., 2011)	
$\alpha = 0.814$ , CR (0.911), AVE (0.596)	

Most environmental claims made on package labels or in advertising about energy-efficient appliances are false	0.765
I do not believe most environmental claims about energy-efficient appliances made on package labels or in advertising	0.755
Environmental claims about energy-efficient appliances made on package labels or in advertisements are false	0.767
Most environmental claims about energy-efficient appliances on package labels or in advertising are intended to mislead rather than to inform consumers	0.809
Environmental claims about energy-efficient appliances on package labels or in advertising lead people to believe things that are not true	0.872
Because environmental claims about energy-efficient appliances are exaggerated, consumers would be better off if such claims on package labels or in advertising were eliminated	0.840
I am sceptical about the accuracy of environmental claims about energy-efficient appliances made on package labels or in advertising	0.715

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**Purchase Intention** (Nguyen et al., 2017)

$\alpha = 0.893$ , CR (0.626), AVE (0.758)

I will consider buying energy-efficient appliances	0.900
I plan to switch to other brands/versions of electrical appliances that are more energy-efficient	0.789
I intend to buy energy-efficient appliances	0.916
I will buy energy-efficient appliances in my next purchase	0.872

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To assess the discriminant validity of the measures, researchers adopted the procedure proposed by Fornell and Larcker (1981). As shown in Table II, the scales were found to be discriminately valid because the square root of the average variance extracted for each construct on the upper diagonal was greater than the respective off-diagonal correlation coefficients (Fornell & Larcker, 1981). The HTMT values (Heterotrait-Monotrait) are highlighted in bold in the same table. The HTMT values for every possible construct combination are lower than the cutoff of 0.90 (Henseler et al., 2015). As a result, it is possible to conclude that the constructs have adequate discriminant validity (Hair et al., 2013). Therefore, the indicators for each construct in the model are not substantially associated with other constructs.

**Table 2: Fornell-Larcker criterion analysis for checking discriminant validity**

	1	2	3	4
1. Environmental Concern	0.783			
2. Green Perceived Risk	0.200** <b>(0.265)</b>	0.784		
3. Green Skepticism	0.317** <b>(0.357)</b>	0.726** <b>(0.829)</b>	0.772	
4. Purchase Intention	0.540** <b>(0.623)</b>	0.492** <b>(0.568)</b>	0.446** <b>(0.482)</b>	0.871

Notes: *The square root of each latent construct's AVE is represented by the diagonal value.*

*\*\**: Correlation is significant at  $p < 0.01$ .

*HTMT stats are shown in Bold letters within the bracket.*

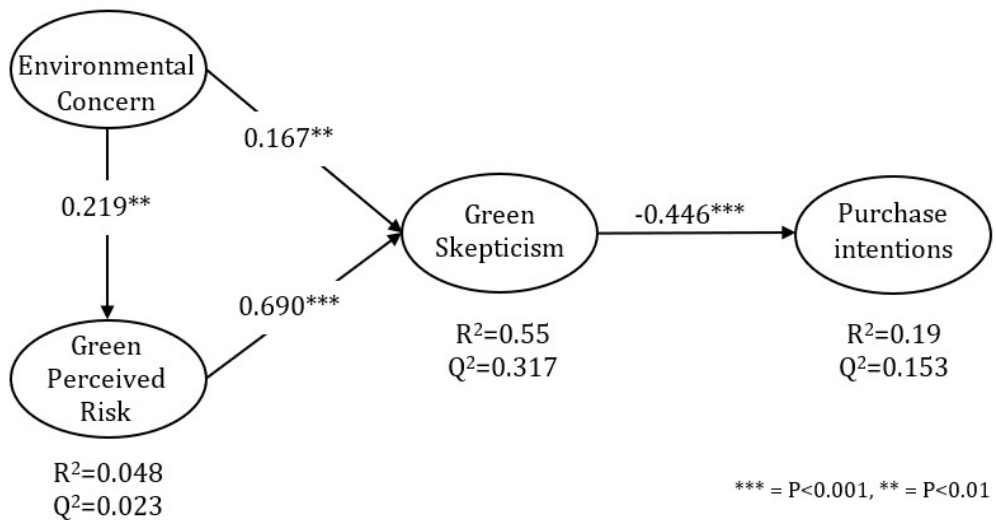
## Hypothesis Testing

The path coefficients of the model are used to gauge the strength of the study's hypotheses. Researchers used bootstrapping (with 2,000 resamples) to generate standard errors and t-statistics to test the statistical significance of the path coefficients. The VIF values for the proposed model were less than the threshold value of 5.0 (Hair et al., 2010), and it can be concluded that the model does not showcase a multicollinearity problem. Besides, the VIF values for the research variables ranged between 1.657 to 2.946. The hypothesis testing results in Figure 2 ensure that there are significant positive associations between environmental concern (H1:  $\beta = 0.219$ ,  $p < 0.01$ ) and green perceived risk. Next, we discovered that green skepticism was significantly and positively associated with environmental concern (H2:  $\beta = 0.167$ ,  $p < 0.01$ ) and green perceived risk (H3:  $\beta = 0.690$ ,  $p < 0.001$ ) was significantly and positively associated with green skepticism. Finally, this study's finding corroborated the hypothesis that green skepticism has significantly and negatively related to purchase intention (H4:  $\beta = -0.446$ ,  $p < 0.001$ ). As a result, hypotheses H1, H2, H3, and H4 were confirmed.

Further, the coefficient of determination ( $R^2$ ) indicates the extent to which a predictor variable accounts for variation in an endogenous construct. Our proposed model explained 4.8% of the variance in environmental concern to

green perceived risk, 55% in environmental concern and green perceived risk to green skepticism and 19% in green skepticism to their purchase intentions. Further, the model's predictive relevance was determined via Stone-Geisser's  $Q^2$  parameters (Götz et al., 2010). In addition to  $R^2$ , this can be employed to determine the extent to which endogenous latent variables (dependent variables) contribute to the overall predictive accuracy of the model. According to the above note in this analysis, endogenous latent variables include purchase intention, green skepticism, and green perceived risk. In line with the guidance provided by Henseler et al. (2015), the  $Q^2$  values of 0.02, 0.15, and 0.35 indicate that the endogenous variables have a minor, medium, or substantial predictive relevance. As a result, green perceived risk had a score of 0.023, suggesting that it has only minor predictive relevance. Leftover, the model's  $Q^2$  values for green skepticism and purchase intention were 0.317 and 0.153, respectively, implying that the proposed framework would have medium predictive relevance for both green skepticism and purchase intention.

**Figure 2: Result of Hypothesis Testing**



There is a gap in the literature regarding How to form and maintain purchase intentions in the context of green skepticism. Thus, the study's primary purpose was to investigate how green skepticism affects customers' purchase intentions of green products. To be more specific, the first objective was to evaluate the association between environmental concern and green perceived risk. The second objective of this study was to examine the effect of environmental concern and green perceived risk on green skepticism. To

achieve these objectives, the sample population of this study consists of individuals living in Sri Lanka. Whilst these respondents were selected by using a virtual snowball sampling process.

The empirical results show that environmental concern is significantly and positively correlated with green perceived risk (Iqbal et al., 2021; Szabo & Webster, 2021). In addition, this study explores how environmental concern positively impacts green skepticism. As a result, the findings of this study are consistent with existing research outcomes (Bhuian et al., 2018; Golob et al., 2018; Silva et al., 2020). The study's findings also suggest that an individual's perceived risk associated with green products influences their level of skepticism toward green products. This study's results align with previous studies that examined the association between individuals' perceived risk and their skepticism towards green products (Aji & Sutikno, 2015; Chen & Chang, 2013; Chen & Chang, 2012; Tarabieh, 2021). In addition, the findings indicate that skepticism about green products has a negative impact on consumers' purchase intentions for eco-friendly products (Albayrak et al., 2011; Fabiola & Mayangsari, 2020; Goh & Balaji, 2016; Luo et al., 2020; T. T. H. Nguyen et al., 2019). This study adds to the body of knowledge by analysing the skepticism of green products among Sri Lankan consumers and how it influences their intention to purchase such goods. In comparison, most prior research on green skepticism has focused on its impact on purchase intention among consumers in Western cultures (Albayrak et al., 2011; Zhang et al., 2021).

Moreover, this piece of work has significant theoretical and practical ramifications. Theoretically, a comprehensive model for addressing the effects of green consumer skepticism on purchase intention was proposed in this study, and it was empirically tested. The scholarly work of green skepticism and consumer behaviour is in its infancy in the south Asian context. To that end, our research will contribute to a better understanding of how environmental concern and green perceived risk lead to green skepticism, which in turn influences purchase intention in developing economies such as Sri Lanka. Aside from a theoretical standpoint, the new study has insightful practical implications. According to the study's findings, business managers may modify their marketing communications and strategies to incorporate into account environmental concerns, environmental knowledge, and perceived risk in the context of how green skepticism influences green buying behaviours. Notably, when they develop promotional campaigns, they need to emphasise the key benefits of their eco-friendly products and their effect on the environment. Besides, practitioners

should be aware of the widespread distrust among consumers regarding green products. Further, it is better to create and communicate green marketing and claims; they should regularly conduct surveys and interviews to identify and evaluate the skepticism among customers. Importantly, they must try to understand the skeptical customers' behaviour and urge or persuade them to purchase environmentally friendly products.

Despite its theoretical and practical contributions, this study has some limitations that future researchers could address. First, consumers in Sri Lanka are the subject of this study. Therefore, generalising the finding is dubious. Future studies could compare this study to other consumers in different nations in Asia to improve the generalizability of these conclusions. Further, this study empirically tests the direct effect of the study construct. Therefore, future research can use either a mediating or a moderating role in the existing model of environmental knowledge, green perceived value, green trust, green image, and personal norms.

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# Optimizing Last-Mile Delivery Cost While Maximizing Customer Preferences Considering Time Windows on Delivery: A Systematic Literature Review

G. Kasuri Abhilashani<sup>1\*</sup>, M.I.D. Ranathunga<sup>2</sup>, A.N. Wijayanayake<sup>3</sup>

<sup>1\*</sup> *Department of Industrial Management, Faculty of Science,  
University of Kelaniya, Sri Lanka  
abhilash\_im17002@stu.kln.ac.lk*

<sup>2</sup> *Department of Industrial Management, Faculty of Science, University of  
Kelaniya, Sri Lanka  
isharadil26@gmail.com*

<sup>3</sup> *Department of Industrial Management, Faculty of Science, University of  
Kelaniya, Sri Lanka  
anni@kln.ac.lk*

## ABSTRACT

*The recent years of numerous industries around the world have been characterised by the impressive expansion of e-commerce. The e-commerce boom in e-retail is driven by customers and results from the last mile of the supply chain. Consumer demands for additional options and rising expectations for the last mile experience are upending "traditional" supply chain management. Every business may expand and improve last-mile logistics with today's cutting-edge technological solutions. Today's businesses, from large corporations to minor e-commerce vendors, must understand last-mile delivery and its impact on consumer satisfaction. Home deliveries are expanding quickly due to the e-commerce boom, posing new and distinct issues for last-mile logistics companies. Retailers and parcel recipients must be happy with the services shipping firms provide; therefore, they must stay up to rising consumer expectations and meet them. New customer expectations surrounding last-mile fulfilment speed, convenience, and costs have intensified already-existing issues for online retailers and logistics providers as the transition from brick-and-mortar to online retail continue. The last-mile delivery in the e-commerce industry is facing high costs due to a going economic crisis which led to fuel and other operating cost increments. To overcome this situation, the e-commerce industry needs to optimise vehicle delivery routing based on time windows to minimise the overall cost. The literature discusses Vehicle Routing Problem with Time Windows (VRPTW) as a solution for this issue from the customer's point of view. This study has two goals: first, to analyse and categorise scientific publications that discuss creative approaches to improving last-mile delivery efficiency utilising VRPTW as a solution approach, and second, to lay out potential avenues for future research in this area. According to the findings, few publications were found on last-*

*mile deliveries made within time windows from the recipient's perspective utilising a cluster-based strategy to maximise customer preferences while minimising delivery costs.*

**Keywords: Vehicle routing problem with time windows, E-commerce, Last-mile Delivery, Clustering, Heuristic**

## **INTRODUCTION**

This study considered cost minimisation through vehicle routing optimisation with time windows in the last-mile delivery operations for the e-commerce industry.

E-commerce has now become the most current way to sell or buy products in the market. It will help to choose from millions of products from all over the world. It will provide delivery products to doorsteps without considering the geographical location. It shows an increase in last-mile delivery over past years and colossal customer demand over last-mile delivery. Therefore, they need to satisfy customer demand as well as manage the costs associated with the operations. However, researchers prefer to identify the most effective, efficient, and optimised delivery ways for e-commerce delivery to offer a better-quality and sustainable service for their customers.

Several optimisation methodologies have been created to optimise the vehicle routing process in last-mile delivery to minimise the overall delivery cost and satisfy customer needs quickly. There is a lack of research investigating vehicle routing problems with time windows considering receivers using cluster-based methods to minimise delivery vehicle count and travel distance to minimise the overall cost.

## **E-Commerce**

Ecommerce, often known as electronic commerce or internet commerce, is the purchase and sale of goods or services over the internet. The E-commerce market is frequently used to refer to the online sale of physical products. It can also apply to any commercial transaction made possible by the internet. More people than ever turned to online shopping during the COVID-19 pandemic as they embraced social isolation. Because of COVID-19, 67% of consumers now make online purchases. Statistics show that by 2022, worldwide e-commerce sales will be \$5 trillion, and by 2024, they will be \$6 trillion.

E-commerce consists of business-to-consumer and business-to-business commerce and internal organisational transactions that support those

activities. For the success of e-commerce operations, we need to optimise the resources we have in order to run operations efficiently. E-commerce delivery plays a significant role in delivering products on time to customers. It consists of delivery operation costs which we need to optimise because it will affect the profit of the e-commerce platform and the buyer perspective.

Faster delivery is not just an extra convenience for the expanding number of online shoppers; they are necessary for a better shopping experience. Prioritising quicker delivery can aid retailers and their logistics partners capture a more massive portion of the market. Companies like Amazon, FedEx, and UPS have mastered the art of last-mile delivery. Even though customer delivery expectations are rising quickly, their delivery experiences have not been great, leaving them dissatisfied due to a lack of professionalism, transparency, and accuracy.

Today's consumers are more likely to shop online because everything is at their fingertips. The "good to have" list quickly turns into a "must-have" list, and with such a quick shift in shopping habits, the consumer's expectation of speedier delivery develops. In order to turn a consumer into a loyal one, online retailers must keep up with the delivery pace and not just meet but surpass their customers' expectations. With Amazon Prime's next-day delivery, which up to 99% of US customers expect, the rivalry has been fiercer, and last-mile e-commerce has gained more attention. Additionally, it has been found that customers are willing to pay more for same-day delivery service.

### **Last-Mile Delivery in E-commerce**

The term "last-mile delivery" refers to the movement of items from a distribution centre to the final delivery location (the customer's door). Logistics for last-mile delivery strives to deliver packages as efficiently, quickly, and precisely as possible. Last-mile delivery presents a challenge in that it usually represents the most expensive aspect of the process, accounting for more than half of overall shipping costs.

Deliveries are not sending many to a single site, as with large-scale shipment and distribution. Instead, delivery drivers transport many more miniature goods, each with a specific destination. That is the core of the last mile issue, and more stops equal more complicated routes, more idle time, and more time on the road. To ship a modest number of products, one must maintain a more extensive fleet of delivery vehicles and drivers. Furthermore, some products may be required to provide inside delivery, which is an additional step that can complicate the procedure. Every day, hundreds of shipments must be delivered to their destination, posing a complicated logistical task. Last-mile

fulfilment is complex, as several factors influence the overall cost.

### **Vehicle Routing Problem with Time-Windows (VRPTW)**

Many vehicle routing issues include scheduling visits to customers who are only available at specified times. These are known as vehicle routing problems with time windows (VRPTWs). The objective of VRPTW is to serve customers for a given period at once. VRPTW has several variants: vehicle fleet, depot, and product. This issue is frequently encountered in real-world applications since the assumption of complete consumer availability across time is frequently inaccurate. Time windows can be configured to any width, from days to minutes, but their width is frequently experimentally restricted to the planning horizon's width. Even if the distance and time matrices were initially symmetric, the inclusion of time windows enforces a series of precedence on visits, making the problem asymmetric. Several solutions have been developed to solve VRPTW and its derivatives, such as heuristic algorithms, metaheuristic algorithms, evolutionary algorithms, and exact methods.

Due to the substantial developments in information technology, businesses can now focus on supply chain efficiency and timeliness. The VRPTW has consequently developed into a crucial tool for modelling various supply chain operations and design concerns. Significant VRPTW uses include grocery store delivery, bank, and postal services, industrial rubbish collection, school bus routing, security patrol services, and distribution of metropolitan newspapers. Along with the expansion of more detailed research into its answer, its practical visibility has expanded. Heuristic development, as well as the development of optimal tactics, have advanced significantly.

### **Cluster-Based Approach**

Discovering structure in data by locating homogenous (or natural) clusters of patterns is the technique of clustering. Thus, a similarity or distance function is the foundation for the entire process. Most experts believe patterns inside a cluster should resemble one another more than patterns from other clusters. However, the definition of a cluster as a homogeneous or natural collection of patterns is still not detailed enough because it does not explain the properties a clustering technique should have. As a result, there are many widely used concepts of clusters, such as well-distributed groups with little distance between cluster members (e.g., K-means clustering algorithm), dense regions of the input space (e.g., Expectation Maximisation clustering algorithm), or collections of patterns with specific information-theoretic

properties (e.g., Cauchy-Schwarz divergence clustering algorithm)(Budka, n.d.).

Hard and soft clustering are the two broad categories into which clustering is divided. The former maintains just one cluster for the data point. This means that either every data point is entirely placed into a cluster, or it is not. Instead of placing every data point into its cluster, soft clustering assigns each one a chance or likelihood of being in that cluster. A variety of data can be processed efficiently and effectively using clustering methods. By comparable grouping data, clustering aims to reduce the amount of data being processed(Kononenko & Kukar, 2007).

## **METHODOLOGY**

The last-mile delivery operations, the vehicle routing problem with time windows, and the clustering algorithm were the foundation for the systematic review of the literature. For the literature, we searched and analysed the process, and the publications were reviewed in the following steps:

- 1) Choose online websites to select appropriate publications
- 2) Choose search key terms and areas
- 3) Select publications with ten years of publishing
- 4) Evaluate the appropriateness of the literature subset
- 5) Review selected literature papers

Various academic websites, including Google Scholar, Research Gate, Z-Library, Science Direct, IEEE, and Scopus, were searched and used to gather the literature. Sixty papers were chosen using keyword searches, index identification, and publication year sorting. Only articles that were released after 2017 were considered. Then, thirty papers were examined and chosen for analysis based on inclusion and exclusion criteria. Study design, keywords, year, and index serve as inclusion criteria, while irrelevant material, texts that are not available in their entirety, papers that have been published for more than ten years, and papers written in languages other than English are excluded. Analysis of the Literature using the VRPTW variants, clustering-related approaches, and objective functions employed in the chosen papers.

## **LITERATURE REVIEW**

### **E-Commerce**

In the past few years, e-commerce product delivery has grown dramatically. Most deliveries made in e-commerce (also known as "home shopping") involve packages, small items, and food (Manerba et al., 2018). The world is experiencing a digital growth spurt, impacting every aspect of nature and human life. E-commerce and logistics integration will be a successful endeavour. Due to this incorporation, customer service, tracking, delivery, time effectiveness, and overall cost will all improve (Keerthy et al., 2022).

The explosion of information technology services is profoundly reshaping the economy and the business world by creating new industries, fields of production, and services that were unthinkable even 30 years ago. E-commerce has revolutionised consumer needs and behaviour, directly impacting how businesses conduct themselves (Archetti & Bertazzi, 2021).

The onset of the pandemic has sped up the process of consumers switching their purchasing behaviour from conventional brick-and-mortar retail stores to online e-commerce websites (Gupta et al., 2022). The number of deliveries of goods to customers' homes increased as the e-commerce industry grew (Ranna et al., 2022). Because they are closely related to customer satisfaction, quantity and quality are essential for the development of e-commerce in order to deliver products on time. Therefore, in e-commerce, product delivery requires speed (Escudero-Santana et al., 2022). Due to the customer's absence from the delivery location, there are an increasing number of first-time delivery failures as e-commerce continues to grow (Tilk et al., 2021).

Since ordered items must be delivered to specific customers, the popularity of e-commerce in today's world poses a significant challenge for last-mile delivery (Yuan et al., 2021).

### **Last-Mile Delivery**

In order to reduce the cost of on-time delivery while maintaining quality, this research will concentrate on last-mile delivery in the e-commerce sector.

The express or last-mile delivery market has grown due to the quickly developing e-commerce sector. Several activities and processes make up last-mile delivery from the last transit point to the delivery destination point, specifically at the B2C/end-user level (Ayu & Nahry, 2021).

The home delivery method is typically used for last-mile distribution in e-

commerce businesses, where packages are delivered to customers' or end users' homes. In the e-commerce industry, last-mile delivery performance is crucial in the relationship between sellers and customers. This directly influences the customer's decision to reorder. Delivering goods to customers faster while lowering delivery costs is today's challenge for logistics companies offering last-mile delivery services. Contrarily, last-mile delivery is regarded as the most pricy, ineffective, and environmentally damaging link in the logistics chain. Last-mile deliveries account for 53% of total shipping costs (Ranna et al., 2022). As a result, e-commerce is growing, and logistics firms must deal with an increase in parcel delivery, particularly in urban areas. Even though impressive e-commerce growth statistics have been provided, it has been noted that distribution costs, particularly for the last mile, could reach 40% of the price of a product (Mancini & Gansterer, 2021). The customer must be present during the delivery process in attended home delivery, and delivery window requirements typically define the service. Deliveries may be made at a few collection locations (post offices, reception/delivery boxes, banks) or, more commonly, at the customer's home (Manerba et al., 2018). According to research, there can be two types of deliveries identified are Fast delivery (FD) allows customers to place online orders up to a set deadline, after which they will receive their products in a specified window of time (usually a few hours). Such deadlines are set by retailers and are evenly spaced throughout the day (for example, six deadlines from 8 a.m. to 8 p.m., one every two hours). As a result, the vehicles of the retailers must leave the depot and return within a set number of time windows. This distribution strategy's speed is its vital strength. The retailer might be forced to use additional vehicles to serve customers within the allotted time(Manerba et al., 2018)

Moreover, another type is Lazy delivery (LD), The day before the delivery, and customers must place their orders in advance. The customer can choose one of the time windows offered and will receive the delivery within that window the following day [1]. There are numerous last-mile delivery services available at the moment. Deliveries to homes are the most typical. Customers wait for their packages at home. Additionally, the delivery can be made to pick-up locations like stores or designated lockers [8].

The significant increase in requests for home deliveries has started to have a considerable impact on last-mile delivery. Because there are so many requests, businesses are forced to extend the delivery windows by several hours to guarantee that the delivery will be made during the customers' preferred time windows, typically at the beginning or end of the day. This could lead to a drop in the perceived quality of the service and, as a result, a

decrease in customer satisfaction and loyalty. Additionally, efficiency losses are being experienced by logistics providers as a result of multiple visits to the exact locations caused by customers' absence. This harms ecological goals and transportation costs due to increased traffic in urban areas (Mancini & Gansterer, 2021).

Nevertheless, the ineffective distribution system for last-mile delivery is the issue with increasing the volume of parcels delivered to customers' homes. Due to this, more delivery vehicles are operating in cities, which can add to the negative externalities of traffic, noise, and pollution, all of which are harmful to human health. Failures during delivery to the customer's home or end user are another issue that frequently arises from last-mile delivery activities. Re-delivering the item to the customer's home will result in higher costs (Ranna et al., 2022).

The success of the online retail industry is heavily dependent on home delivery. However, last-mile delivery is currently regarded as one of the supply chain's most pricy, ineffective, and environmentally damaging parts (Manerba et al., 2018). The rapid delivery of online orders creates recent problems that the traditional routing problems of the previous 30 years did not have to deal with (Archetti & Bertazzi, 2021).

### **Vehicle Routing Problem with Time-Windows**

The logistics system problem of vehicle routing with time windows (VRPTW) has recently received much attention. The problem can be summed up as choosing routes for a limited fleet of vehicles to serve a given clientele over a predetermined period. Each car has a particular volume. Both the beginning and the end are at the depot. Only one service should be provided to each client. The VRPTW wants to keep the overall cost of transportation as low as possible. Researchers have focused on the VRPTW, an essential variation of the VRP. The VRPTW aims to satisfy the time frame limitations and identify the best possible routes for a group of similar, restricted-capacity vehicles (Le et al., 2022).

The VRP with Time Windows (VRPTW), one of the wide varieties of VRP, is most often studied. Each request in VRPTW has a time window outlining the desired time frame for the service. Then, VRPTW seeks to minimise the violation of the requests' time restrictions when designing routes. Numerous efficient algorithms have been proposed to resolve VRPTW, and substantial investigations have been conducted (Jacobsen-Grocott et al., n.d.).

Recent years have seen much research into three distinct kinds of problem that considers dynamic customer wants: VRPTW with stochastic customer demands, VRPTW with SCDs and DCDs, and VRPTW with dynamic and

stochastic customer demands. The subject of most studies is the VRPTW with DCDs in a single depot logistics network. (38) Numerous academics have researched the VRP extensively, notably the vehicle routing problem with time windows (VRPTW). When tackling difficulties, researchers frequently apply precise algorithms and metaheuristics. In recent years, some academics have also suggested specific techniques, like the branch-price and branch-and-cut algorithms, to solve VRPTW successfully. When solving problems with small sizes (fewer than thirty nodes), exact algorithms offer a clear advantage, but as the scale increases, using these methods results in an extra computing effort to solve the problem correctly and has a limited set of applications. The metaheuristic algorithm, as opposed to the exact algorithm, is better suited to addressing complicated problems since it does a complete search, which can boost the solution's effectiveness and be applied more widely. Genetic algorithms, ant colony algorithms, simulated annealing algorithms (SAA), and particle swarm algorithms are the current methods for resolving these problems. (Xiang et al., n.d.).

Within the time between the earliest and latest timings, a vehicle serves each customer exactly once. Each vehicle journey begins and ends at the designated depot. Priority consumers' locations, demands, and time windows are known (Le et al., 2022). An altered version of the Ant Colony Optimization utilising K-Means Clustering has been used in this research to solve the Vehicle Routing Problem with Time Window Constraints (Keerthy et al., 2022).

Reference (Manerba et al., 2018) examined how the length of time windows affects the distances the vehicles used in last-mile product delivery covers. Retailers frequently request shorter travel distances (measured in kilometres) to reduce costs and boost profits. Create these two policies for different iterations of the vehicle routing problem to evaluate this (VRP). Swift delivery employs a VRP with distance/time limits (DCVRP), whereas lazy delivery employs a VRP with time windows (VRPTW). Due to their compactness, the suggested formulations for the two issues can be resolved using a commercial Mixed Integer Linear Programming (MILP) solver (i.e., containing a polynomial number of constraints). Use real-world examples offered by a store that gave historical data for two days structured as quick delivery to evaluate and analyse the difficulties. The same real-case facts have been combined to create instances of the lazy delivery policy (Manerba et al., 2018).

In (Aydinalp & Özgen, 2022) mathematical model was constructed by adding time restrictions, capacity limitations, and maximum distance travelled to the models to create a mixed-integer programming (MIP) model based on the

vehicle routing problem with time windows (VRPTW). As the model uses the GUROBI® solver to find the best solution for small issue sizes, metaheuristic techniques that imitate annealing and adaptive large neighbourhood search algorithms are proposed for solving significant problems. A real dataset was employed to evaluate the efficiency of the metaheuristic algorithms. The simulated annealing (SA) and adaptive extensive neighbourhood search (ALNS) were assessed and contrasted with GUROBI® and one another through a collection of actual problem examples. HFVRPTW (Heterogeneous Fleet Vehicle Routing Problem with Time Windows) refers to distribution system planning with many scenarios solved by vehicle routing issues considering various vehicle modes and time windows. VRP Spreadsheet Solver was used to address the VRP problem in this study (Ranna et al., 2022). In addition to the customer Time Windows (VRPTW) variation, this research attempts to present a novel agent-based optimisation model to capture the uniqueness of vehicles in this routing problem. By centralising the solution search with a metaheuristic algorithm, methodology gets beyond the localised greedy solutions produced using decentralised and hybrid agent-based methodologies. Due to their rigidity in addressing combinatorial optimisation problems like VRP, heuristics evolved into metaheuristics, which is how centralised search has changed (Abu-Monshar & Al-Bazi, 2022).

The Heterogeneous Fleet Vehicle Routing Problem with Time Window (HFVRP-TW) model optimises the last-mile delivery route in metropolitan locations. During route optimisation, information from express delivery is used to construct and apply the HFVRP-TW model. The information was collected from an express delivery company, notably the same-day delivery service in Jakarta, Indonesia, which was withheld out of respect for privacy. Multiple operating scenarios and simulations were used to conduct the optimisation procedure. The depot's location, the client's address, latitude and longitude coordinates, the type of vehicle, the number of vehicles, the vehicle capacity, the service time, the earliest start time, and the latest end time are all crucial pieces of information (time window). The two sides of the time frame, which are the earliest time and latest time, must be met by each customer. (Ayu & Nahry, 2021).

This research (da Silva Júnior et al., 2021) conducts a theoretical investigation, develops a novel method for a solution, and assesses the performance of optimisation algorithms (meta-heuristics) for the dynamic vehicle routing issue with time windows (DVRPTW). The two key contributions of this study are the framework for solving the DVRPTW and the proposed seven novel algorithms, as well as the successful outcomes in

reducing the number of unsatisfied consumers. To solve the DVRPTW, we had to offer seven algorithmic variations. Consider both continuous and periodic re-optimisation.

This research discusses the Electric VRP with Time Windows (EVRPTW), a variation of the well-known VRP with Time Windows (VRPTW). The EVRPTW manages a homogeneous fleet of EVs dispatched from a single depot to serve a group of clients with defined demands and time windows. The EVs depart from the depot to begin their routes, serving each customer exactly once before making their way back to the depot at the end of the day. They can be recharged at charging points because they have a constrained driving range. The stations are few but not fully occupied. The goal is to travel as little as possible overall (Duman et al., 2021).

In order to accurately represent the nature of systems like home visitation or home healthcare (HHC) systems, this study (Saksuriya & Likasiri, 2022) uses a heuristic for solving vehicle routing problems with time windows (VRPTW) with generic compatibility-matching between customer/patient and server/caretaker requirements. Any VRPTW variation is more sophisticated than the original VRP. Consequently, the solution calls for a particular, customised heuristic. This study's heuristic is a compelling fusion of the novice Local Search (LS), Ruin and Recreate method (R&R), and Particle Swarm Optimization (PSO). A practical/local optimal is found using the suggested LS as both the initial solution finder and the search engine. The LS algorithm returns the solution to the feasible side, the R&R component allows the solution to be over-optimised, and PSO helps move the solution from the best solution to the next best solution. They evaluated our heuristic by solving fifty-six benchmark problems with 25, 50, and 100 customers, and found that it could locate 52, 21, and 18 optimal examples, respectively. Changed the benchmark instances to incorporate compatibility requirements to examine the effectiveness of our heuristic more thoroughly. The findings demonstrate that the heuristic can find the best answers in five out of fifty-six cases (Saksuriya & Likasiri, 2022).

### **Cluster-Based Approach**

VRPTW can be addressed using a cluster-based algorithm to cluster constraints. There are few types of research done combined with vehicle routing problems with time windows.

The objectives of this study are to establish the fleet size and reduce overall logistics expenses. Labour, gasoline, and refrigeration costs are included in the logistical costs. The MIP model represents the 39-node product

distribution network. The proposed MIP model is resolved using the clustering approach. According to the findings, thirty-nine clients are served by eleven trucks, and the vehicle utilisation efficiency is greater than 70%. These ideal outcomes are discovered in an average of 0.36 seconds. Introduce the cluster-first route-second strategy to address large-scale issues. This hierarchical strategy was applied on a big scale using a precise algorithm in a fair amount of time. A clustering algorithm is used in the first part of the procedure to create the clusters. Then, by modifying cluster members, each cluster's capacity is managed. In the second phase, the branch and bound algorithm is used to solve each subproblem for each cluster. Customers are grouped using the k-means clustering algorithm and the capacitated k-means clustering technique (Le et al., 2022).

In this study (Yuan et al., 2021), Instead of choosing just one delivery location while making an online purchase, a client can suggest a set of delivery destinations (home, pick-up spots, and car boot) with the corresponding time limits. All these delivery services can be integrated and offered to customers. The courier must pick one of the addresses the customer has provided to deliver a product to a specific consumer. Customers gain from additional freedom following their preferences. It may also lower delivery costs and raise the percentage of successful first-time deliveries. The Generalized Vehicle Routing Problem with Time Windows can be used to mimic the underlying routing issue in the application discussed above (GVRPTW). The vertex set of a directed graph with clustered vertex sets defines the GVRPTW. One cluster merely has the depot, where a uniform fleet of vehicles with fixed capacities is housed. The other clusters stand in for clients. The customer's potential delivery sites are represented by a cluster's vertices, each of which has a time frame during which the visit must occur if the vertex is visited. Each client has a demand attached to them. The goal is to identify a set of routes that minimises overall travel expenses, visits exactly one vertex per cluster, and abides by all capacity and time restrictions (Yuan et al., 2021).

In this research study (Dutta et al., 2022) proposed problem is to consider the closest cities or clients together in a cluster so that one truck can service them. This is done by using a cluster primary-route secondary strategy. As a result, it decreases the number of vehicles used and the carbon emissions those vehicles emit. The clusters are located using a modified distance-based k-means algorithm, and a collection of alternative pathways connected to each cluster is located using SPEA2. In order to choose the option that best fits the Decision Maker's preferences, it then applies the VIKOR ("VIekriterijumsko KOmpromisno Rangiranje", a Serbian term for "multi-criteria optimisation

and compromise solution") approach.

Reference [2] proposed that to transport goods from the depot to the customer on time or earlier, this paper will explore how Ant Colony Optimization with K-Means Clustering (ACO-K-Means) has been used to save costs. The mathematical model described in this study will address the distribution, e-logistics, and retail network concerns.

Methods that partition the customer set and then choose a vehicle route for each cluster are known as cluster-first routes. By resolving the issue's several minor examples, the complexity of the overall issue can be reduced. The first writer to use the cluster-first and route-second approach to resolve VRPs was Gillett in 1974. They created a sweep-based heuristic in which consumers are divided into groups based on their polar coordinates and vehicle capacity (Presidente et al., 2014).

Fisher presented a two-phase vehicle routing algorithm in 1981. The first step involves assigning customers to vehicle routes, while the second phase involves improving the route. The cost from each non-seed customer to each seed customer is then determined by the extra distance when the non-seed customer is inserted between the seed customer and the depot after several seed customers have been chosen based on specific criteria (Presidente et al., 2014).

Dondo suggested a strategy with three stages in 2007. Requests are grouped into clusters during stage 1. The second stage involves solving a new problem with an exact MILP solver based on the combined clusters and the remaining unclustered requests. The perfect order of visits within each route is then determined by running a separate TSP optimisation for each route as part of stage 3 (Presidente et al., 2014).

In 2012, Qi suggested grouping customers into clusters considering spatial and temporal data. It creates a mechanism to calculate the space-temporal separation between two consumers and expresses time and space in the same coordination system. The method, however, considers the soft version of the time window problem, where a violation of the time window only reduces the value of the objective function and does not invalidate a solution (Presidente et al., 2014).

## **LITERATURE OVERVIEW**

This section summarises the literature on the VRPTW and includes a comprehensive descriptive analysis of papers published between 2017 and 2022. A list of research gaps that need to be filled and a literature summary round out the section. The VRPTW versions used in the prior literature are

listed in Table 3.1, along with a synopsis of the problem-solving methods, objective functions, and kinds of algorithms employed. The selected articles were summarised after literature from the most recent six-year period, from 2017 to 2022, was analysed.

- Abbreviations for solution Methods: Meta Heuristic (MH), Heuristic (H), Mix Integer Programming (MIP), Mix Integer Linear Programming (MILP)
- Abbreviations for Characteristics: Vehicle Routing Problem with Time Windows (VRTW), Generalized Vehicle Routing Problem With Time Windows (GVRPTW), Travelling Salesman Problem With Time Windows For The Last Mile Delivery In Online Shopping (TSPTWLMDOS), Full Truckload Multi-Depot Vehicle Routing Problem With Time Windows (SFTMDVRPTW), Dynamic Vehicle Routing Problem with Time Windows (DVRPTW), Collaborative Multi depot Vehicle Routing Problem With Dynamic Customer Demands And Time Windows (CMVRPDCDTW), Open Vehicle Routing Problem (OVRP), Constrained Clustering for the Capacitated Vehicle Routing Problem (CC-CVRP), Electric Location Routing Problem With Time Windows (E-LRPTW)
- Abbreviations for Depot and Product: Single(S), Multiple(M)
- Abbreviations for a fleet of vehicles: Homogeneous (Ho), Heterogeneous (He)

After analysing all literature, the Vehicle routing problem with time windows-based papers used mostly meta-heuristic or heuristic-based algorithms to solve VRPTW. According to past literature cluster-based approach to VRPTW is limited and only used for unique scenarios, and most of every paper looked at VRPTW from the senders' point of view and applied solution but not the point of view of the receiver.

As of Table 3.2, after analysing objective functions and Industry, most papers have done cost minimisation and minimisation of carbon emission but not for the VRPTW from the viewpoint of the receiver but from the sender. Moreover, Last-mile delivery in the e-commerce sector has been affected chiefly in the last few years due to covid-19 and the economic crisis. However, it had both positive and negative impacts on last-mile delivery.

**Table I Literature review summary table**

<b>Reference</b>	<b>Solution Method</b>	<b>characteristics</b>	<b>Fleet of vehicles</b>	<b>Deport</b>	<b>Product</b>
<b>(Manerba et al., 2018)</b>	MILP	VRPTW	Ho	S	M
<b>(Keerthy et al., 2022)</b>	MIP/ K- Means Clustering	VRPTW	Ho	S	M
<b>(Gupta et al., 2022)</b>	Deep-RL model	VRPTW	He	S	M
<b>(Ranna et al., 2022)</b>	VRP Spreadsheet Solver	VRPTW	He	S	M
<b>(Escudero-Santana et al., 2022)</b>	MH	VRPTW	Ho	S	M
<b>(Yuan et al., 2021)</b>	H / cluster	GVRPTW	Ho	S	M
<b>(Ayu &amp; Nahry, 2021)</b>	VRP Spreadsheet Solver	VRPTW	He	S	M
<b>(Le et al., 2022)</b>	MIP / cluster	VRPTW	Ho	S	M
<b>(Aydinalp &amp; Özgen, 2022)</b>	MH	VRPTW	Ho	S	M
<b>(Abu-Monshar &amp; Al-Bazi, 2022)</b>	agent-based MH	VRPTW	He	S	M
<b>(De Silva Júnior et al., 2021)</b>	H	DVRPTW	Ho	S	M
<b>(Dutta et al., 2022)</b>	Cluster-based algorithm	OVRP	Ho	M	M

(Wu & Wu, 2022)	MH	VRPTW	Ho	S	M
(Dondo & Cerdá, 2007)	H	VRPTW	He	M	M
(Jiang et al., 2020)	H	TSPTWL MDOS	He	M	M
(el Bouyahyiouy & Bellabdaoui, n.d.)	MIP/ Generic algorithm	SFTMDV RPTW	Ho	M	M
(Wang et al., 2022)	IMOPSO- DIS	CMVRPD CDTW	He	M	M
(Alesiani et al., 2022)	Cluster- based algorithm	CC-CVRP	Ho	S	M
(Sánchez et al., 2022)	MILP/ K-Means Clustering	E- LRPTW	Ho	S	M
(Villalba & la Rotta, 2022)	H / k-means clustering	VRPTW	Ho	S	M

- Abbreviations for Objective Functions: Cost minimisation (CM), Customer Satisfaction (CS), Reduce Number of Vehicles (RNV), Reduce Travel Distance (RTD), and Minimise Carbon Emission (MCE.)

**Table II Literature review summary of objectives**

Reference	Objective Functions						Industry
	CM	C S	OL M	RN V	RT D	M CE	
(Manerba et al., 2018)					X		E-commerce
(Keerthy et al., 2022)	X						Transportation
(Gupta et al., 2022)				X	X		E-commerce

(Ranna et al., 2022)	X			E-commerce
(Escudero-Santana et al., 2022)	X			E-commerce
(Yuan et al., 2021)	X			E-commerce
(Ayu & Nahry, 2021)		X		E-commerce
(Le et al., 2022)	X		X	Logistic
(Aydinalp & Özgen, 2022)	X			Pharmaceutical Industry
(Abu-Monshar & Al-Bazi, 2022)	X			Logistic
(da Silva Júnior et al., 2021)	X	X		E-commerce
(Dutta et al., 2022)	X		X	E-commerce
(Wu & Wu, 2022)	X	X		Agri – E-commerce
(Dondo & Cerdá, 2007)		X		Logistic
(Jiang et al., 2020)	X			Parcel Delivery
(el Bouyahyiouy & Bellabdaoui, n.d.)			X	Truck Delivery
(Wang et al., 2022)	X		X	Logistic
(Alesiani et al., 2022)		X		Postal e-commerce
(Sánchez et al., 2022)		X	X	Electric Vehicle Transport
(Villalba & la Rotta, 2022)			X	Logistic

## CONCLUSION

Considering the past literature, most papers focus on the point of view of

business and address the vehicle routing problem with time windows but not the receiver's point of view, which will impact customer satisfaction. There are fewer publications around a cluster-based approach to vehicle routing problems with time windows when considering cost optimisation. The VRP and its variations focus on the traditional optimisation techniques connected to operational research, focusing on demand forecasting problems and the multi-modal fleet. In addition, the research demonstrates that new models have been created that modify the traditional models to fit different aspects, and the majority of the case studies concentrate on urban last-mile logistics. As can be observed, cost-optimisation models are frequently developed in last-mile logistics nowadays to solve these difficulties due to rising customer demand and the need to improve urban environmental quality.

The analysis showed that while addressing models related to last-mile delivery, most papers used approximation techniques, including meta-heuristics and heuristics. The study concludes that there is a need to fill this gap by creating a model to maximise consumer preferences while maximising the cost of last-mile delivery while considering a diverse fleet of vehicles and various product categories to solve the VRPTW.

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# **After Market Pricing Performance of Initial Public Offerings (IPOs): Evidence from Colombo Stock Exchange (CSE) 2008 – 2018**

P. H. Palihawadana<sup>1\*</sup>, P. K. V. N. Payagala<sup>2</sup>

<sup>1\*</sup>*Department of Finance, University of Sri Jayewardenepura, Nugegoda, Sri Lanka  
phansini@sjp.ac.lk*

<sup>2</sup>*University of Sri Jayewardenepura, Nugegoda, Sri Lanka  
vinodnavinka@gmail.com*

## **ABSTRACT**

*The Initial Public Offering (IPO) can be seen as one of the crucial stages in the expansion of a company operations and it has led the after-market performance of IPOs being a point of discussion from its beginning. The study attempts to investigate the after-market performance of Initial Public Offerings of Sri Lankan companies by examining equity IPOs took place on the Colombo Stock Exchange. The sample consists of 39 firms listed and traded on the Colombo Stock Exchange during the period of 2008-2018. The focus was to analyse how the sample IPOs behaved in the first few trading days, in the long run and a key contribution of the study was to identify and examine the factors behind the long run performance. Market Adjusted Abnormal Returns (MAAR) was used in evaluating short run performance while Wealth Relatives (WR) and Buy-and-Hold Abnormal Returns (BHAR) were employed in assessing long run performance. All the measurements were adjusted with the All Share Price Index (ASPI) to incorporate the market movement. In line with the literature, the study was able to confirm short-run underpricing and long-run underperformance for the sample IPOs analysed. Multiple regression analysis was conducted in examining the determinants of IPO long-term underperformance, employing thirteen variables used and tested in previous studies. Results of the study revealed that only 20% of the total variation in IPO long run underperformance was explained by the final model developed and only the leverage ratio and offer price variables were significant. Findings of the study offer valuable insights for the investors of CSE while suggesting further research on behavioral aspects of IPO long run underperformance.*

**Key Words:** Initial Public Offerings, Market performance, Underpricing, Underperformance, CSE

## **INTRODUCTION**

After-market performance of Initial Public Offerings has been a topic of conversation since its inception. Various researchers have presented their findings on the market performance of listed companies after initial public

offerings through their scholarly work. The unrestricted nature of this topic has led the scholars from different nations to discuss and uncover many intriguing things including the uptrends and downtrends in the company's performance soon after the IPO, in the medium run and in the long run.

The return from an IPO, which is closely watched by investors, can be impacted by several factors; Yet when they are open to the general public, most IPOs are widely recognized for increasing in short-term trading. Scholarly evidence from the Sri Lankan context also confirms that the short-run price performance of Initial Public Offerings indicates prices are often underpriced which is widely documented as a universal phenomenon. (S. M. R. K. Samarakoon & Perera, 2018) On the other hand, contradicting evidence was found with respect to the long-term performance of IPOs discovering both over performance and under performance in various stock market contexts. (N. A. Ahmad-Zaluki et al., 2007; Yaakub et al., 2018) Nevertheless, a handful of studies were conducted in examining the reasons for the uncovered performances in those markets, raising the need of searching the factors affecting IPO performance, especially in a national context.

This study attempts to explore the market price performance of Initial Public Offerings of Sri Lankan companies by investigating the companies listed on the Colombo Stock Exchange during the period of 2008 to 2018. The focus here is to analyse how the sample IPOs have behaved in the first few trading days and in the long run. Novel contribution of this study to the existing literature is to identify and examine the determinants of the long-run performance of IPOs on the Colombo Stock Exchange during 2008 – 2018. All Share Price Index (ASPI) has been used to adjust IPO returns in-line with the market. Underpricing rate, offer size, market volatility after the IPO, intense of IPO activity period, subscription rate, age of the firm at IPO, leverage ratio at IPO, firm retention ratio after IPO, price to book value ratio, earnings per share, earnings before interest and tax, offer price and delay in listing are identified and tested as the factors affecting the long-run performance for the sample IPOs. Statistical techniques and software are employed to analyse the short-run and long-run performance of IPOs and identify and examine the significance and correlations among the determinants of the long-run performance.

## LITERATURE REVIEW

National and international scholarly evidence of firm performance in the short run and long run after Initial Public Offerings and the determinants of the long run performance of IPOs are presented in this section.

### Short Run Performance

The short term performance of an IPO is normally estimated using the initial return of an IPO, and it is usually measured by the pricing disparity (degree of underpricing or overpricing) prevalent on the listing day. Pricing disparity is calculated by taking the difference between the IPO issue price (offer price) and the stock market's closing price on the first trading day. The offering is deemed underpriced if the first day closing price is higher than the issue price; on the other hand, the IPO is deemed overpriced if the closing price is lower than the offer price.

Studies conducted by many researchers agree that the initial return of IPOs are often favorable; that is initial underpricing is apparent on international stock exchanges. However, there is a considerable gap in underpricing among stock markets. Seshadev Sahoo and Prabina Rajib in 2010 (Sahoo & Rajib, 2010) found that the sample taken from the Indian stock market show an average of 46.55% underpricing, while Falguni H. Pandya in 2016 (Pandya, 2016) considering IPOs occurred in the same market concluded positive returns are visible for about first 150 days after the IPO. Contrarily, Muhammad Khalid Sohail and Mohamed Nasr in 2017 (Sohail & Nasr, 2007) claim abnormal negative returns were observed in Pakistan Stock market which prevailed for about 12 months after the IPO. Apart from that many other scholars from different countries such as the USA (Guo et al., 2006), Turkey (Banu Durukan, 2002), Thailand (Wong *et al.*, 2017), China (Chang et al., 2010), and Australia (Liyanage & Perera, 2014) etc. confirmed positive initial returns were apparent as shown in appendix 01.

In terms of Colombo Stock Exchange, various researchers have found positive initial returns after IPOs (underpricing) including, Samarakoon SMRK and Perera KLW in 2018 (30%) (S. M. R. K. Samarakoon & Perera, 2018), Lalith P. Samarakoon in 2010 (34%) (L. P. Samarakoon, 2010), Suren Peter in 2015 (57%) (Peter, 2015) (Peter, 2007), Dilesa Nawadali Rathnayake, Pierre Axel Louembe, Diby Francois Kassi, Gang Sun, Ding Ning in 2019 (Rathnayake et al., 2019) (47%) and Dayaratne and Wijethunga (Dai & AWGCN, 2015) and Thilakaratne (Bruce & Thilakaratne, 2015). So, the study is designed to analyse the conformity of the price disparity that prevailed during the initial days after the IPO during the concerned period

with previous findings.

### **Long Run Performance**

Long run performance of IPOs describes how company prices behave after the listing day (IPO), commonly after 12 months or even beyond. A variety of approaches are utilized in national and international practice to assess IPOs' long-term performance including Event Study Approach (Cai et al., 2008), Calendar Study Approach (Time Series Analysis)(Guo et al., 2006) and Mixed Study Approach (combination of both Calendar and Event study approaches) (N. A. Ahmad-Zaluki et al., 2007), (Yaakub et al., 2018).

Unlike the literature on IPO short run performance, international past studies on IPO long run performance have uncovered contradicting evidence supporting both under performance and over performance in the long run after the IPO. Most of the studies revealed long run underperformance (Aggarwal et al., 1993; Paul A. Gompers and Josh Lerner, 2001), while some studies claimed over performance was apparent in their respective markets such as, Australia, Malaysia and China (N. A. A. Ahmad-Zaluki et al., 2011), (Chi et al., 2010; da Silva Rosa et al., 2003).

Focusing Colombo Stock Exchange, various scholars including T.C Ediriwickrama and A.A Azeez in 2015 (Ediriwickrama & Azeez, 2013), Madushani KGK, Samarakoon SMRK , Dissanayake AR in 2019 (Smrk & Ar, 2019), Hewage, J. K. and Fernando, C. S. P. K. in 2018, and Ediriwickrama (Ediriwickrama, 2014) observed underperformance in IPO firms up to 12 months and further. Nevertheless, varying study results about the continuation of long run underperformance in the post-listing scenario have been found in the research (Arora & Singh, 2020), (Tajuddin et al., 2015), signifying the importance of different factors (firm-specific and non-firm-specific) in deciding the performance of IPO firm.

### **Determinants of Long Run Performance**

Even though vast number of studies have been conducted globally (Jain & Kini, 1994) (Dhamija & Arora, 2017), (Chang et al., 2010), (Sunde & Sanderson, 2009), (Tajuddin et al., 2015), (Cai et al., 2008), (Agarwal et al., 2008) to identify and test the factors affecting the long run performance of IPO firms as shown in the table 1, none is available in Sri Lankan context to conclude on the factors affecting long run performance of firms listed on Colombo Stock Exchange. As a result, this study attempts to address and fill that gap by identifying predictors (explanatory variables), focusing on variables that have empirically proven predictive power in explaining long

run performance.

**Table 1: Literature on determinants of long run performance**

Author	Year	Country	Key Determinants
Sanjay Dhamija and Ravinder Kumar Arora	2017	India	Initial excess return, Type of issuer, Type of sale, Method of pricing, Grading, Anchor investor, Market sentiment, Market condition, Auditor prestige, Lead manager prestige, Premium, Oversubscription, Promoters' holding, Issue size, Issuer age, Industry
Xin Changa, Shi Hua Linb, Lewis H. K. Tamb, George Wong	2010	China	Aftermarket P/E ratio, Industry-median P/E ratio, Underwriter reputation, Board Size, State ownership, Legal-person ownership, Firm Size, Book-to-market ratio, First-day tradable share turnover
Chimwemwe Chipeta and Adrian Jardine	2014	South Africa	IPO Volume, IPO Revenue, Listing expenses, International investment banks, Auditor prestige, Firm Size, Growth prospects, Timing of Listing, Contingent liabilities
Nurwati A. Ahmad-Zaluki, Kevin Campbell and Alan Goodacre	2007	Malaysia	Initial excess return, Firm Size, Board Listed, Type of issuer
Kotalawala Liyanage Wasantha Perera	2014	Australia	Initial return, Operating Performance, Industry, Age, Years, Original ownership, Issue size, Market return and Hot issue market and market sentiment

Xiaoqiong Cai, Guy S. Liu & Bryan Mase	2008	China	Initial excess return, Firm Size, EPS, International investment banks, whether purchased by foreign investors, Government shareholding after issue
Sumit Agarwal a , Chunlin Liu b,*, S. Ghon Rhee	2006	Hong Kong	Oversubscription ratio, Issuing firm's market capitalization, Offering proceeds, Standard deviation of daily returns for the 25 days, First annual cash dividend yield after the issuance, Industry, Year of IPO

## METHODOLOGY

Data for this study have been collected from various sources. Colombo Stock Exchange (CSE) website (<https://cse.lk>) was the main data source, from where the key information regarding IPOs have been collected. Additionally, annual reports of IPO companies and website of Bloomberg Sri Lanka (<https://www.bloomberg.com/quote/CSEALL:IND>) were also employed in collecting data.

The sample consists of 39 firms listed and traded on the Colombo Stock Exchange (CSE) during the period of 2008 to 2018. There were 46 equity Initial Public Offerings took place in CSE during the concerned period 2008 to 2018 and 7 IPOs had to be removed due to the reason of being on default. Sample selection procedure for the study is shown in appendix 02.

Figure 1: Distribution of IPOs during the study period

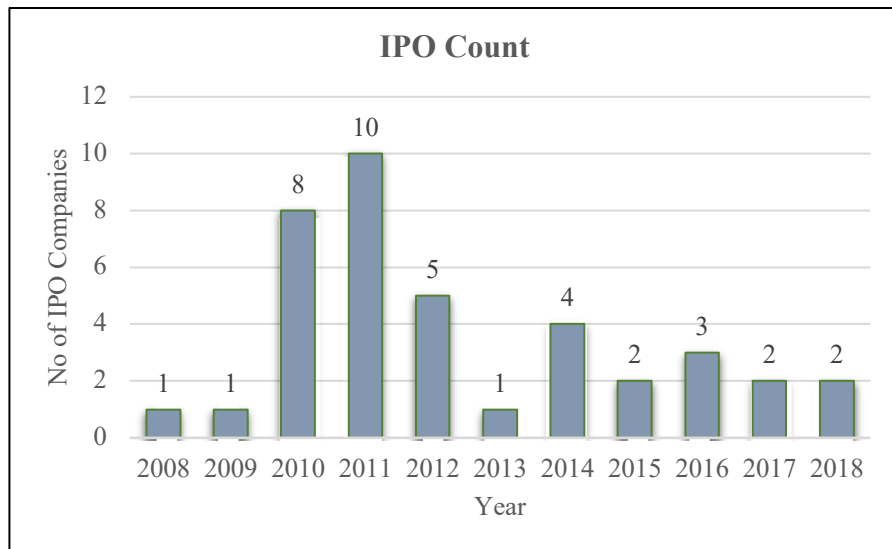


Figure 1 depicts the frequency of IPOs on CSE during the study period and the graph shows high IPO frequency in 2010 and 2011, probably because of the optimism and confidence Sri Lankan companies experienced after the end of civil war in 2009.

### **Computing Short Run and Long Run Performance**

Past studies on this topic have applied various techniques to calculate short run and long run performance of IPOs as shown previously and after reviewing the same, following techniques were employed for this study in assessing the performance of Sri Lankan IPOs in short run and long run separately. For both the short and long run performance calculations, stock returns were adjusted with the market return for the relevant period. At present the Colombo Stock exchange has two main indices to measure the market return namely, All Share Price Index (ASPI) and S&P Sri Lanka 20 Index. This study utilizes ASPI which measures the price movements of all the companies listed in Colombo Stock Exchange for the calculation of market return along with stock return.

### **Method of calculating short-run price performance:**

#### Market-Adjusted Abnormal rate of Return (MAAR)

The short run IPO performance was examined by measuring the return

generated during the initial days after IPO; thus, the difference between offer price (issue price) and the closing price on the first trading day (list price) has been concerned for the calculation of short run abnormal return as shown in equation 1 and it is adjusted with the market return generated during the same time period. A positive return would provide evidence of underpricing prevailed during the initial days after the IPO and overpricing is evident if otherwise.

$$MAAR_i = \left[ \left( \frac{1+R_i}{1+R_m} \right) - 1 \right] \times 100 \quad (1)$$

Where,

$$R_i = \frac{\text{List price} - \text{Issue price}}{\text{Issue price}} \times 100 \quad (2)$$

$$R_m = \frac{\text{ASPI on List date} - \text{ASPI on Issue date}}{\text{ASPI on Issue date}} \times 100 \quad (3)$$

### **Method of calculating long-run abnormal returns:**

Long run performance of IPOs has been evaluated employing an event study approach which has many performance measures such as, Market Adjusted Returns (MAR), Wealth Relatives (WR), Buy-and-Hold Returns (BHR) and Buy-and-Hold Abnormal Returns (BHAR). This study has utilized two methods which are empirically proven and justified by previous studies viz. Wealth Relatives (WR) and Buy-and-Hold Abnormal Returns (BHAR) in assessing the IPO long run performance. (Ediriwickrama & Azeez, 2013), (Liyanage & Perera, 2014; Sahoo & Rajib, 2010)

WR and BHAR are calculated compared to both the offer price and list price, with the intention of comparing the returns of investors who purchased shares on IPO day itself (IPO investors) and investors who purchased shares on the first trading day (initial day traders). Both the measures are calculated after one month, six months, twelve months, twenty-four months, and thirty-six months from the IPO to analyse the fluctuation in market prices at each time.

### **Wealth Relatives (WR)**

This measures the change in the wealth of IPO investors of stock *i* on day *t* from the list day or offer day compared to the ASPI return of CSE for the corresponding period. A value greater than one indicates superior performance of individual IPO relative to the market index, whereas a value less than one indicates inferior performance of the IPO. When calculating the overall WR for the entire sample of size *n*, average of the individual returns was used as below.

$$WR_{i1} = \frac{1 + \frac{\sum_{i=1}^n R_{i1}}{n}}{1 + \frac{\sum_{i=1}^n R_{m1}}{n}} \quad (4)$$

$R_{i1}$  is the return of an individual IPO shares I at time t and  $R_{m1}$  is the market return of CSE for the corresponding time t calculated using ASPI as shown in the equation 2 and 3 above.

#### Buy-and-hold Abnormal Returns (BHAR)

BHAR also compares IPO return with the market return in evaluating abnormal return of the IPO for a specific time period. However, an assumption would be, investors follow a passive investment strategy, and they would hold the shares for a longer period of time despite the market fluctuations. Thus, the geometric mean of all the periodic returns of the concerned period time T has calculated.

As same in WR calculation, a positive value indicates better performance compared to the market and vice versa for a negative value.

$$BHAR_{iT} = \prod_{t=1}^T (1 + R_{i1}) - \prod_{t=1}^T (1 + R_{m1}) \quad (5)$$

For the intention of evaluating total IPOs in the sample, arithmetic average of all the individual BHARs is calculated as below.

$$\overline{BHAR} = \frac{\sum_{i=1}^n BHAR_{iT}}{n} \quad (6)$$

#### **Factors Affecting Long-Run Abnormal Returns:**

Multiple regression (OLS) is used to assess the impact of identified independent variables on the long-run performance. Out of the two methods that are discussed in above section, the study has employed Buy-and-Hold Abnormal Returns (BHAR) after 36 months from the listing day as the dependent variable, to denote the long run performance of IPO firms which is empirically proven to be the better measure in an event study approach.

Since no evidence found in Sri Lankan context about determinants of IPO long run performance, following explanatory variables were identified from international scholarly studies as shown in table 1 and tested using statistical methods.

**Table 2: Summary of determinants of long run performance**

<b>Dependent Variable</b>	<b>Abbrev.</b>	<b>Description</b>	
Buy and Hold Abnormal Returns	BHAR	Average BHAR is calculated using the equation 6, after 36 months from the list date, compared to list price <sup>93</sup>	
<b>Independent Variables</b>	<b>Abbrev.</b>	<b>Description</b>	<b>Proxy for</b>
Underpricing rate	UR	MAAR is used to measure the initial day return which represents the initial return of IPO	-
Offer size	OS	Amount of capital the firm expected to raise through the IPO (Issue price $\times$ No of shares offered)	IPO firm risk
Ex-ante uncertainty	EU	The volatility prevailed in the market prices post IPO scenario. Measured by Standard Deviation of initial 20 trading days after the list date.	Price Volatility after IPO
IPO activity period	TM	This is to denote whether IPO took place during a high activity period or low activity period. <sup>94</sup>	Timing Risk
Rate of subscription	SR	Ratio of application size to the offer size. (Application size / Offer size)	Investor demand for the IPO
Age	AGE	The age of the IPO firm from incorporated date to the IPO date	-

<sup>93</sup> BHAR was calculated at different time periods from IPO compared to both offer price and list price. But the focus is to identify determinants of long run underperformance, BHAR value after 36 months from listing day compared to the list price was taken as the dependent variable since it reports the highest underperformance compared to other time periods.

<sup>94</sup> All the years in the concerned period have assigned 0 or 1 depending on the frequency of IPOs took place that year. 0 was assigned if number of IPOs for the given year is less than 5, and for the years with more than 5 IPOs were assigned with 1.

Leverage ratio	LR	Book value of long-term debt to the equity capital of the company at the IPO date	Financial Risk
Retention ratio	RR	The number of shares retained among the company owners and insiders such as promoters, managers, CEO etc. after the IPO	Managerial Entrenchment
Growth Rate	GR	Ratio of offer price to the book value per share (book value of total assets minus outside liabilities) of the firm at the IPO date	Optimistic growth of the company
Earnings per Share	EPS	Earnings per share of the company before the IPO (Net Profit / No of shares)	Earnings capacity of the company
Offer Price	OP	Price at which the shares were offered initially	-
Listing Delay	LD	The time gap (in days) between the closing date of IPO and the list date	Delay in listing
Earnings Before Interest and Tax	EBIT	Earnings Before Interest and Tax or the Operating Profit of the company before IPO	Operational Performance

Accordingly, developed multiple regression equation would be,

$$\text{BHAR}_T = \beta_0 + \beta_1 \text{UR} + \beta_2 \text{OS} + \beta_3 \text{EU} + \beta_4 \text{TM} + \beta_5 \text{SR} + \beta_6 \text{AGE} + \beta_7 \text{LR} + \beta_8 \text{RR} + \beta_9 \text{GR} + \beta_{10} \text{EPS} + \beta_{11} \text{OP} + \beta_{12} \text{LD} + \beta_{13} \text{EBIT} \quad (7)$$

## Hypotheses Development

Based on the above identified factors and selected techniques, this study developed two main hypotheses to be tested using statistical methods as follows.

H0: Sri Lankan IPOs are fairly priced in the short run

H1: Sri Lankan IPOs are underpriced in the short run

H0: Sri Lankan IPOs are fairly performed in the long run

H2: Sri Lankan IPOs are underperformed in the long run

Moreover, separate hypotheses were developed for the thirteen independent variables identified above to test the individual significance in explaining the IPO long run performance as shown in appendix 03.

## ANALYSIS

This section presents the results of short run and long run performance analysis of IPOs and explanation of long run IPO underperformance.

### Summary Statistics

Table 3 presents the key characteristics (descriptive statistics) of the variables selected for the study in assessing the short run, long run and factors affecting long run underperformance. The study employed natural logarithm values for age (AGE), odder price (OP), and offer size (OS) variables since they had highly skewed distributions. After converting all three variables are having approximately normal distributions which is proven by closer mean and median values and low skewness and kurtosis values. Using the data from 39 Initial Public Offerings on CSE during 2008 to 2019, the average value for listing delay (LD) is approximately 57.02 days and it is quite high from the median value for the same which is 14.23 days. This signals the asymmetry in the distribution which is also proven by the skewness and kurtosis values, 4.53 and 22.18 respectively.

**Table 3: Summary Statistics**

Variables	Mean	Median	Sd	Min	Max	Skewness	Kurtosis
UR / MAAR	0.25	0.05	0.80	-0.66	4.29	3.84	17.92
AGE	2.11	2.30	0.91	0.00	3.58	-0.76	0.48
EBIT	493.00	112.00	853.00	-119.00	4,094.00	2.63	8.13
EPS	12.05	0.62	64.65	-4.69	404.89	6.22	38.77
EU	1.12	0.63	2.22	0.05	13.69	5.08	28.57
GR	4.62	2.04	8.22	0.12	44.81	3.81	15.93
LD	57.02	14.23	163.14	0.23	924.23	4.53	22.18
LR	0.60	0.23	1.00	0.00	4.35	2.56	6.35

OP	2.39	2.53	0.83	0.41	4.61	-0.36	0.93
OS	19.90	19.72	1.07	18.1 3	22.67	0.46	0.11
RR	0.80	0.80	0.13	0.25	0.98	-2.18	6.93
SR	15.48	1.83	42.25	0.96	225.00	4.05	17.45

Descriptive statistics of EBIT variable are given in millions, which ranges from -119 Mn. to 4094 Mn with a high standard deviation of 853 and it occupies a positively skewed and leptokurtic distribution. Earnings per share (EPS) of IPO firms ranges from Rs. -4.69 to Rs. 404.89 while leverage ratio (LR), offer size (OS), retention ratio (RR), price volatility (EU) and age of IPO firms are somewhat consistent among the sample with low standard deviation values. Most of the variables are having high kurtosis values. But it should be considered that a small sample size (39) was used for the study due to the lack of IPO activities during the concerned period, since skewness and kurtosis values can be manipulated with the number of units in the sample.

### **Evaluation of IPO Short Run Performance**

The average underpricing rate which is calculated using Market Adjusted Abnormal Returns is approximately 25% and it is quite high from the median value for the same which is 5%. This signals the asymmetry in the distribution which is also proven by the skewness and kurtosis values, 3.84 and 17.92 respectively. MAAR for IPOs ranges from -66% to 429% with a standard deviation of approximately 80%. The reason behind high variance percentage is the outliers apparent in the data set as shown in the appendix 04.

The industry wise average values of Market Adjusted Abnormal Return for IPOs during the study period are depicted in the appendix 05 which reveals most industries have experienced positive returns (underpricing) in the short run while three industries viz. capital goods, consume durables & apparels and health care equipment & services experienced the other way. Highest underpricing rate which is 81.81% is collectively recorded by IPOs in diversified financials industry.

The average MAAR values arranged according to the quoted year in appendix 05 shows highest underpricing apparent in IPOs which is 71.83%, took place in the year 2010 and short run overpricing (negative returns) were

apparent in 2009, 2013, 2014 and 2018 years.

### **Evaluation of IPO Long Run Performance**

Table 4 depicts average WR values calculated for different time periods after the IPO. When compared to the issue price, WR values are greater than one, up to 6 months from the listing day and within the next six months it has decreased by 10.87%.

**Table 4: Average WR with respect to Offer Price and List price**

<b>Time Period</b>	<b>Compared to Issue price</b>	<b>Compared to List price</b>
Listing Day (L)	1.1747	N/A
L + 1 Month	1.0934	0.9301
L + 6 Months	1.0763	0.8670
L + 12 Months	0.9593	0.7913
L + 24 Months	1.0097	0.8638
L + 36 Months	0.8613	0.7511

After 24 months from the listing day WR value is greater than one and again within the next year it has reduced to 0.8613. When it comes to the WR compared to the list price, the results show values less than one for all the time periods concerned. Returns for both types of investors are showing decreasing pattern at each time period concerned.

The longest time from IPO, 36 months after the listing day shows lowest WR value irrespective of the investor type. Thus, industry and quoted year wise analysis was done to examine the average WR value obtained as shown in appendix 06. Out of the fifteen industries concerned, six industries were over performing while IPOs in insurance industry have recorded the highest. According to the year wise analysis, it is visible that IPOs took place in 2015 and 2016 years have recorded relatively higher WR values after three years of going public.

BHAR values generated for different time periods after listing day is shown in the table 5 and it is evident when compared to the issue price, positive abnormal returns are apparent in all time periods even up to 36 months (3 years) and conversely, returns for all the time periods are negative when compared to the list price.

**Table 5: Average BHAR with respect to Offer Price and List price**

<b>Time Period</b>	<b>Compared to Issue price</b>	<b>Compared to List price</b>
Listing Day (L)	0.18	N/A
L + 1 Month	0.52	-0.07
L + 6 Months	2.20	-0.18
L + 12 Months	8.67	-0.35
L + 24 Months	34.47	-0.67
L + 36 Months	105.27	-1.46

To examine the contradicting BHAR results generated for IPO investors and initial day traders, industry and year wise analysis was done by expanding BHAR values at 36 months after the IPO as presented in appendix 07. Large average BHAR values for IPO investors was resulted because of few industries outperformed the market compared to the offer price, specifically diversified financials. Another reason for the same would be the over performance of firms listed in 2010, without which the average value would be negative as BHAR compared to the list price.

Overall, the analysis of IPO short run and long run performance reveal that most of the IPOs were issues at a lower price which has led the IPO investors to have positive returns by the listing day. But in the medium to long run after going public firms have failed to keep up the momentum which has led the investors to lose eventually, and it was visible those negative returns were growing with the time.

### **Explanation for IPO Long Run Underperformance**

Multiple linear regression model was developed to identify the factors affecting long run underperformance of the selected IPOs, considering BHAR as the response variable and 13 factors identified from literature as explanatory variables. Apparently, the full model developed<sup>95</sup> using all the

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<sup>95</sup>

#### **Test Statistics of the Full Model**

Dependent Variable: BHAR\_36 compared to list price

Independent Variables: EPS, LD, EBIT, SR, LR, RR, EU, MAAR, AGE, TM, OP, OS, GR

explanatory variables was insignificant with a p-value greater than 0.05 and the adjusted R-squared value revealed that the model explains only 5.9% of the total variation in the response variable.

Since the full model was found to be statistically insignificant, alternative models were developed employing backward elimination regression method<sup>96</sup> and the final model developed accordingly is shown in the equation 8 below and the test statistics are depicted in table 6.

$$\text{BHAR}_T = 5.955 - 2.919 \text{ LR} - 2.801 \text{ OP} + .008 \text{ LD} + 0.000 \text{ EBIT} \quad (8)$$

Out of the thirteen original independent variables only four were included in the final model and individual p-values disclose only leverage ratio and offer price are significantly associated with the response variable. Both the significant variables are negatively related to the IPO long run underperformance.

Based on the correlation matrix developed for the final model as shown in the appendix 08, BHAR values are interrelated with each of the independent variables. Anyhow, based on the correlation coefficients values, the variables do not appear to be substituted for each other (proves no autocorrelations exists among the variables) since the correlations between variables are less than 0.5. which is further proven by tolerance and VIF values calculated.

Residual analysis results of the developed model depicted in appendix 09 further establish evidence for the adequacy in the final model with constant variation and approximate normality in residuals.

**Table 6: Summary of the Final Regression Model developed**

Predictor Variables: EBIT, LD, LR, OP			
Response Variable: BHAR_36 compared to list price			
R Square	Adjusted Square	R F	Sig.
0.288	0.204	3.438	0.018

R Square	Adjusted R Square	F	Sig.
0.381	0.059	1.184	0.345

<sup>96</sup> Backward Elimination Method is a stepwise regression approach that begins with a full (saturated) model and at each step gradually eliminates variables from the model to find a reduced model that best explains the data.

Variable	Beta Value	Std. Error	Sig.	Tolerance	VIF
Constant	5.955	3.039	.058		
LR	-2.919	.932	.004	.977	1.024
LD	.008	.006	.228	.791	1.264
OP	-2.801	1.283	.036	.740	1.350
EBIT	1.199E-009	.000	.303	.885	1.130

## DISCUSSION

Analysis of short run performance of IPOs took place in CSE during 2008 to 2018 proves positive returns are generated for the investors, suggesting underpricing is evident in Sri Lankan context as depicted in most of the literature. So, the investors who have bought shares on the IPO can earn a higher return on the listing day by selling the shares at a higher price compared to the offer price. The reason behind the high underpricing rate experienced by diversified financials shown in industry wise analysis may be due to the constant increase in market prices as a result of high demand for those company shares. The reason behind the high underpricing rate experienced by IPOs in 2010 may be the boost exhibited in the economy and stock market due to the end of the civil war in Sri Lanka.

Nevertheless, WR values calculated to measure the long run performance of IPOs suggests IPO investors can gain up to 1 month, 6 months, and 24 months after going public but the returns are exhibiting a decreasing trend. Conversely, initial day traders are experiencing lower returns irrespective of the duration they hold the IPO shares. In depth analysis conducted revealed that average WR values were closer to one because few industries outperformed the market and earned large positive returns; specially Amana Takaful Life Plc under insurance industry which was listed in the year 2016. Addressing the BHAR values generated to measure the long run performance of IPOs suggests investors who invest through IPO have gained through the time after going public and the returns are booming eventually. Contrarily, investors who bought the shares on the listing day experience constant loss and it has worsened by the end of 36 months after the IPO. Industry and year wise analysis revealed average BHAR of IPO investors was positive only because of the overperformance experienced in Vallibel Finance Plc under the diversified financials listed in 2010 which explains the disagreement in

average BHAR values for IPO investors and initial day traders.

This suggests, after exhibiting positive returns on the listing day, IPOs tend to underperform in the long run even after 36 months of going public which is in line with the previous studies conducted on IPOs in CSE. Analysis of short run underpricing and long run underperformance prevailed in IPOs during 2008 to 2018 revealed a weak negative relationship is visible among the two (after removing the outliers) as depicted in appendix 10 and it confirms the same pattern observed in Turkey stock market by Durukan (Banu Durukan, 2002).

The main objective of this study was to examine the determinants of long run underperformance in Sri Lankan IPOs: Thus, multiple linear regression model was developed, and it was found that only leverage ratio (LR) and offer price (OP) are significant in explaining long run IPO underperformance and both variables are negatively associated with the response variables. Remaining variables in the model, listing delay (LD) and earnings before interest and tax (EBIT) are not statistically significant in explaining the long run underperformance which is proven by the small beta coefficient values 0.008 and 0.000 generated respectively. The adjusted R-squared value concludes that, the developed model explains approximately 20% of the total variance in the long run underperformance measured by BHAR. This suggests that there should be other explanatory variables in the market which explains the long run underperformance of IPOs in Sri Lankan context. However, it also should be considered that the small R-squared value and the insignificance of most of the independent variables tested can be due to methodological problems<sup>97</sup> and one such could be the small sample size (n = 39) concerned due to the low magnitude of CSE operations during the study period.

However, concluding on the IPO performance of Colombo Stock Exchange, it is essential to look into the investor behavior and market characteristics in Sri Lankan context. Retail investors<sup>98</sup> representing the majority of stock market (quantity wise), are panic sellers and most of them are purchasing IPO

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<sup>97</sup> Methodological problems such as Sample issues, Time period issues, Measurement issues and Benchmark issues are used in explaining the long run IPO underperformance.

<sup>98</sup> Retail investors are non-professional individuals who are investing on securities for the individual profit.

shares without performing any market analysis<sup>99</sup>, only to make a positive short-term return. When there are market fluctuations in the medium to long run, market prices will change accordingly which lead the investors to panic and sell quickly before any adverse situation. Thus, in general Sri Lankan companies are proven to underperform in the longer run owing to volatility of investor behavior. Yet companies in some industries such as insurance and diversified financials have performed exceptionally due to the fact that those companies in SL earn greater profits owing to their well-diversified product portfolios and constant increase in market prices because of timely dividends paid to shareholders. Thus, long term investors are recommended to be attentive in assessing the industry and company specific characteristics before investing in securities specially in emerging stock markets.

The inadequacy of numerical evidence in explaining the IPO long run underperformance compels the study to suggest the future researchers to assess whether behavioral theories that are been introduced to explain the long run IPO underperformance such as Window of Opportunity Hypothesis, Impresario Hypothesis or Fads Hypothesis and Divergence of Opinion Hypothesis etc. can be applicable for the Sri Lankan context and also to discover further behavioral aspects of stock market investors which are specific in national context in explaining the long run IPO underperformance apparent in Colombo Stock Exchange.

## CONCLUSION

The study was conducted to analyse short run underpricing and long run underperformance of IPOs took place during 2008 and 2018 in Colombo Stock Exchange. The results generated by the study complies with the empirical findings of the same in various other contexts, revealing underpricing on the listing day and underperformance up to 36 months after the listing day.

Analyzing the determinants of IPO long run underperformance which was the centerpiece of the study revealed leverage ratio, offer price, operating profit and delay in listing together explain only 20% of the total variance of the response variables, raising the search for other important variables prevailing in the stock market which affect the underperformance in the long

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<sup>99</sup> A rational investor considered to perform Fundamental and Technical analysis before investing on securities.

run.

Adding the author's insights about the volatility of investor behavior in practice which affects IPO long run underperformance, the study recommended that future researchers assess the applicability of already proven theories in explaining IPO long run underperformance and uncover any other specific investor behavior in a national context.

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## APPENDICES

### Appendix 01: Literature on IPO Underpricing

<u>Author</u>	<u>Year</u>	<u>Sample Period</u>	<u>Coun try</u>	<u>Abnormal Return %</u>
Re-Jin Guo, Baruch Lev and Charles Shi	20 06	1980 - 1995	USA	20
Kotalawala Liyanage Wasantha Perera	20 14	2006 - 2011	Austr alia	26
Anderson et al.	20 15	2009 - 2011	Chin a	33.5
Seshadev Sahoo and Prabina Rajib	20 10	2002 - 2006	India	46.55
Wong et al.	20 17	2008 - 2016	Mala ysia	9.4
M. Banu Durukan	20 02	1990 - 1997	Turk ey	14.6
Sadaqat et al.	20 11	2000 - 2009	Pakis tan	42.2

### Appendix 02: Sample selection for the study

Total number of IPOs offered during the period	46
Exclusion - number of IPO companies on default	7
Remaining total number of IPOs eligible for study	39
Percentage of eligible companies in the sample for study	84.78%

### **Appendix 03: Hypotheses developed to test the Independent variables in explaining long run IPO performance**

H0: There is no association between long-run underperformance and UR

H3: There is an association between long-run underperformance and UR

H0: There is no association between long-run underperformance and OS

H4: There is an association between long-run underperformance and OS

H0: There is no association between long-run underperformance and EU

H5: There is an association between long-run underperformance and EU

H0: There is no association between long-run underperformance and TM

H6: There is an association between long-run underperformance and TM

H0: There is no association between long-run underperformance and SR

H7: There is an association between long-run underperformance and SR

H0: There is no association between long-run underperformance and AGE

H8: There is an association between long-run underperformance and AGE

H0: There is no association between long-run underperformance and LR

H9: There is an association between long-run underperformance and LR

H0: There is no association between long-run underperformance and RR

H10: There is an association between long-run underperformance and RR

H0: There is no association between long-run underperformance and GR  
H11: There is an association between long-run underperformance and GR  
H0: There is no association between long-run underperformance and EPS  
H12: There is an association between long-run underperformance and EPS  
H0: There is no association between long-run underperformance and OP  
H13: There is an association between long-run underperformance and OP  
H0: There is no association between long-run underperformance and LD  
H14: There is an association between long-run underperformance and LD  
H0: There is no association between long-run underperformance and EBIT  
H15: There is an association between long-run underperformance and EBIT

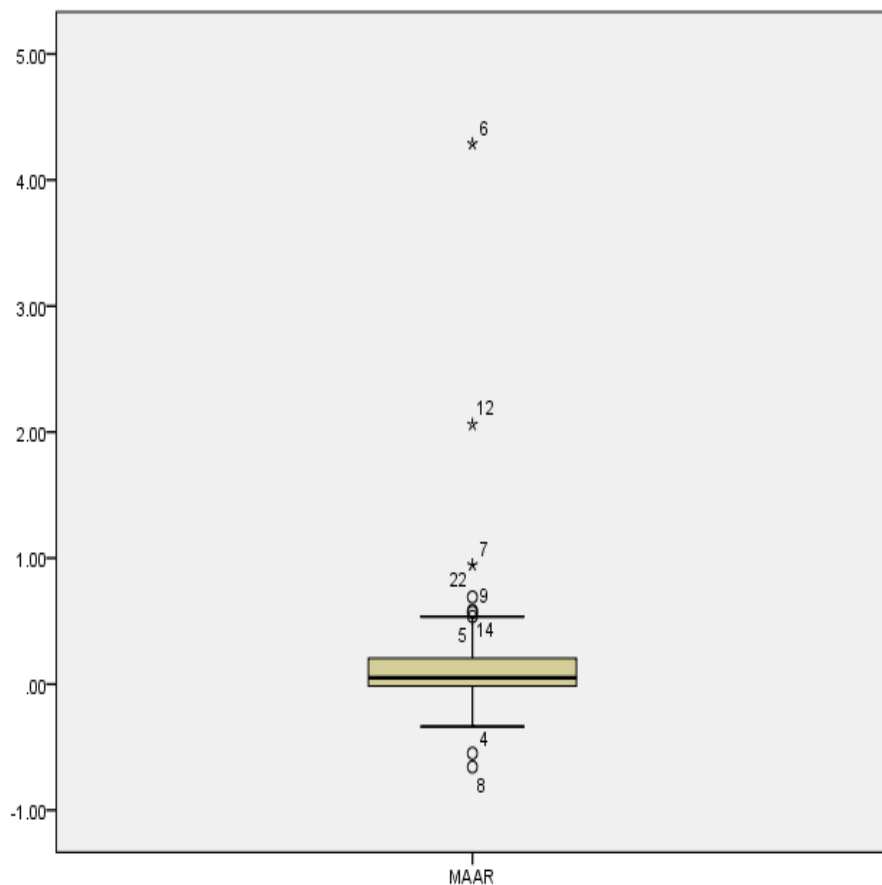
## Appendix 04: Analysis of IPO short run performance using MAAR

**Descriptives**

			Statistic	Std. Error
MAAR	Mean		.2484	.12777
	95% Confidence Interval for Mean	Lower Bound	-.0103	
		Upper Bound	.5071	
	5% Trimmed Mean		.1317	
	Median		.0503	
	Variance		.637	
	Std. Deviation		.79794	
	Minimum		-.66	
	Maximum		4.29	
	Range		4.94	
	Interquartile Range		.25	
	Skewness		3.841	.378
	Kurtosis		17.922	.741

**Extreme Values**

			Case Number	Value
MAAR	Highest	1	6	4.29
		2	12	2.06
		3	7	.95
		4	22	.69
		5	9	.58
	Lowest	1	8	-.66
		2	4	-.55
		3	17	-.34
		4	11	-.31
		5	27	-.21



**Appendix 05: Industry and Year wise analysis of MAAR in explaining short run IPO performance**

<b>Industry</b>	<b>Average MAAR (Underpricing Rate)</b>
Banks	0.1818
Capital Goods	-0.0809
Consumer Durables & Apparels	-0.0719
Consumer Services	0.0139
Diversified Financials	0.8181
Energy	0.1667
Food Beverage & Tobacco	0.2962
Healthcare Equipment & Services	-0.0189
Household & Personal Products	0.0174
Insurance	0.1158
Materials	0.0124
Real Estate	0.0735
Retailing	0.1346
Transportation	0.0503
Utilities	0.1263

2008	0.0949
2009	-0.0230
2010	0.7183
2011	0.2792
2012	0.1936
2013	-0.1175
2014	-0.0364
2015	0.0591
2016	0.0828
2017	0.0122
2018	-0.0091

<b>Year</b>	<b>Average MAAR (Underpricing Rate)</b>
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## Appendix 06: Industry and Year wise analysis of WR after 36 months of IPO

Utilities	0.7339	0.6979
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Industry	Average WR_36 compared to OP	Average WR_36 compared to LP
Banks	0.6999	0.5951
Capital Goods	0.4866	0.5581
Consumer Durables & Apparels	1.2245	1.3195
Consumer Services	0.4575	0.4437
Diversified Financials	1.0692	0.6112
Energy	1.4010	1.2008
Food Beverage & Tobacco	0.6419	0.4832
Healthcare Equipment & Services	0.7695	0.7843
Household & Personal Products	0.7808	0.7674
Insurance	2.8297	2.4777
Materials	1.3337	1.3174
Real Estate	1.1486	1.0700
Retailing	0.6963	0.6523
Transportation	0.8685	0.8269

Quoted Year	Average WR_36 compared to OP	Average WR_36 compared to LP
2008	0.5585	0.5101
2009	0.3991	0.4085
2010	1.1391	0.6665
2011	0.8000	0.7149
2012	0.5262	0.4486
2013	0.1810	0.2051
2014	0.8403	0.8503
2015	1.1930	1.1029
2016	2.6535	2.3532
2017	0.6978	0.6890
2018	0.7537	0.7605

**Appendix 07: Industry and Year wise analysis of BHAR after 36 months of IPO**

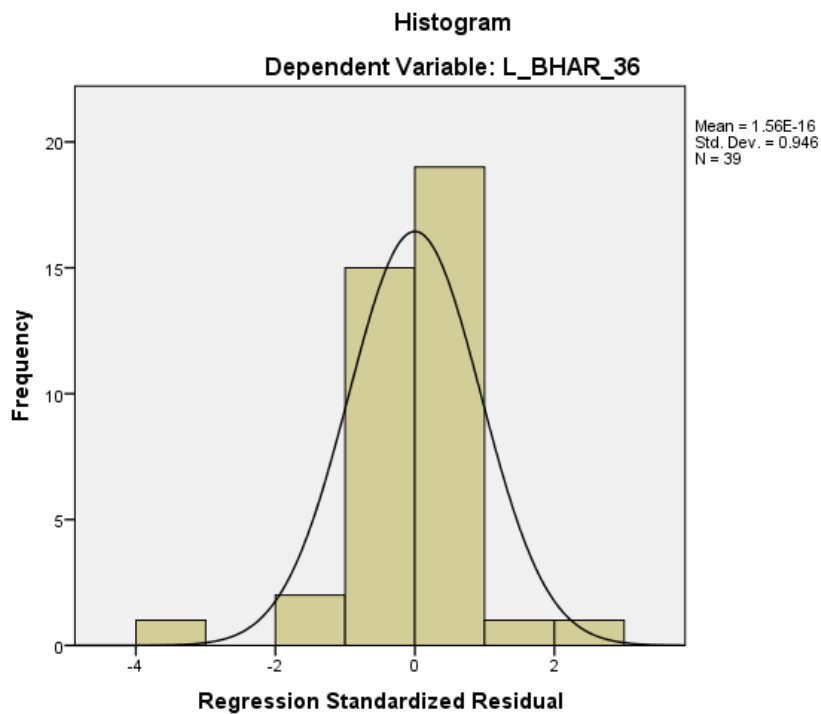
Industry	Average BHAR_36 compared to OP	Average BHAR_36 compared to LP	Quarter Year	Average BHAR_36 compared to OP	Average BHAR_36 compared to LP
Banks	-0.7142	-0.6334			
Capital Goods	-1.0350	-1.0360	2008	-2.5185	-3.4473
Consumer Durables & Apparels	-0.2555	-0.0770	2009	-33.3999	-37.4799
Consumer Services	-0.8476	-1.0497	2010	511.8275	-1.7674
Diversified Financials	493.7611	-5.4439	2011	2.0025	-0.3472
Energy	7.9970	2.9054	2012	-0.6740	-1.1453
Food Beverage & Tobacco	13.3205	-2.0281	2013	-1.0783	-1.5019
Healthcare Equipment & Services	-0.4720	-0.3776	2014	-0.4441	-0.4092
			2015	0.9676	0.1211
Household & Personal Products	-0.1833	-0.2278	2016	10.9141	3.9476
Insurance	11.7040	4.2087	2017	-0.2832	-0.2674
Materials	0.3916	0.2518			
Real Estate	0.5895	-0.0809	2018	-0.5479	-0.4743
Retailing	18.1876	-2.6499			
Transportation	-0.2557	-0.3179			
Utilities	-0.1842	-0.3222			

**Appendix 08: Correlation matrix developed for the final multiple regression model**

		LR	EBIT	LD	OP	L_BHAR_36
LR	Pearson Correlation	1	-.070	.107	-.053	-.429**
	Sig. (2-tailed)		.674	.518	.747	.006
	N	39	39	39	39	39
EBIT	Pearson Correlation	-.070	1	-.067	.277	.078
	Sig. (2-tailed)	.674		.684	.088	.638
	N	39	39	39	39	39
LD	Pearson Correlation	.107	-.067	1	.401*	-.007
	Sig. (2-tailed)	.518	.684		.011	.965
	N	39	39	39	39	39
OP	Pearson Correlation	-.053	.277	.401*	1	-.218
	Sig. (2-tailed)	.747	.088	.011		.182
	N	39	39	39	39	39
L_BHAR_36	Pearson Correlation	-.429**	.078	-.007	-.218	1
	Sig. (2-tailed)	.006	.638	.965	.182	
	N	39	39	39	39	39
**. Correlation is significant at the 0.01 level (2-tailed).						
*. Correlation is significant at the 0.05 level (2-tailed).						

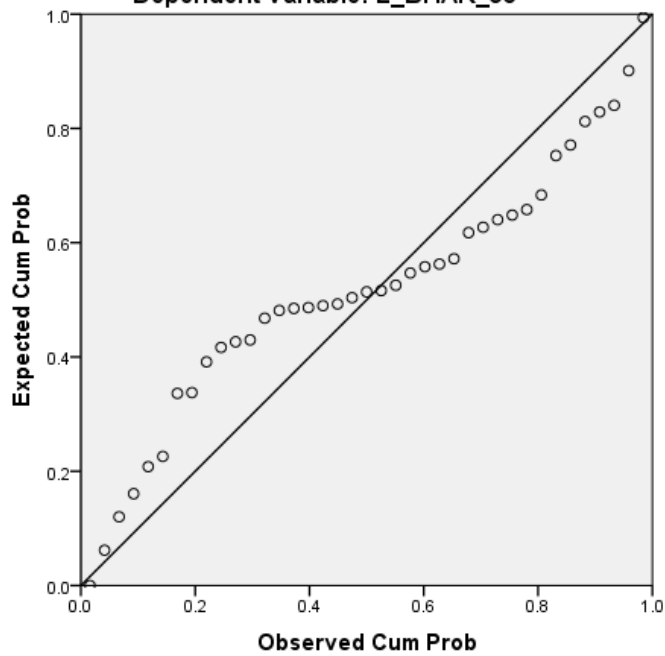
### Appendix 09: Residual Analysis results for the final model

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	-15.6576	3.6720	-1.4564	3.40721	39
Residual	-21.82231	14.24786	.00000	5.35713	39
Std. Predicted Value	-4.168	1.505	.000	1.000	39
Std. Residual	-3.853	2.516	.000	.946	39

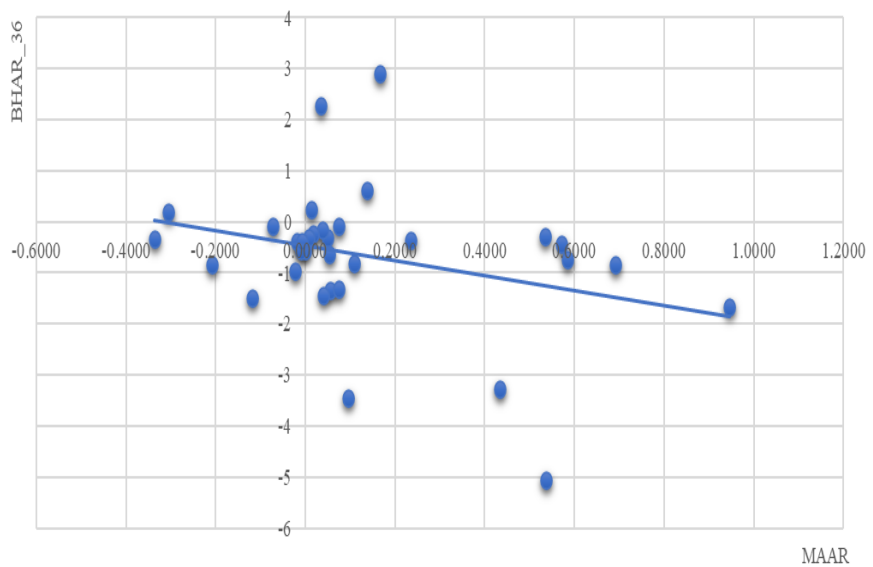


Normal P-P Plot of Regression Standardized Residual

Dependent Variable: L\_BHAR\_36



Relationship between MAAR and BHAR\_36



## Appendix 10: Relationship between short run and long run performance of IPOs

	<i>MAAR / Underprice</i>	<i>L_BHAR_36</i>
MAAR / Underprice	1	-0.296803203
L_BHAR_36	-0.296803203	1

# **The Dark Side of National Politics in Sri Lanka and the Functioning of the State Banks: An Investigation of Politicians' Direct Intervention into One of the Selected State Bank**

K.A.S.U. Gunathilaka

*University of Sri Jayewardenepura, Sri Lanka  
sahani.gunathilaka.1998@gmail.com*

## **ABSTRACT**

*The state-owned banks of Sri Lanka are said to be inherently subject to the influence of national politics. Existing literature provides evidence of two main ways national politics functions within the state institutions in Sri Lanka, namely, through politicians' direct intervention (Jayasundara-smits, 2013) and through the politicised Trade Unions established to cover the state institutional system (Biyawila, 2003; Kearney, 1968). Considering the current progressing and worsening economic, social, and political crisis in which Sri Lanka is embroiled in, it's noteworthy that, the experts on State Governance has pointed out that, the National Politics of Sri Lanka, the Political dynasties prevailed and prevailing in Sri Lanka and the mismanagement/manipulation of state institutional system including the decisions of bureaucrats, as bearers of the main responsibility of causing this crisis (Rafi & Wong, 2022; Devapriya, 2022; ). However, when referring to the existing research base on this phenomenon of political interventions into the state banks of Sri Lanka, it was evident that there has been no published research on identifying such specific politically empowered events unfolding within the state banks of Sri Lanka and on how they unfold, which would have aided more insight into the phenomenon.*

*To address the above research gap, the research questions of this study seek to answer the following two research questions, (1) what the politically empowered events are unfolding at the selected state institution in Sri Lanka due to the politicians' direct intervention, and (2) how each of the identified politically empowered events has unfolded within the selected state institution and what factors have nurtured such interventions. This study has been contextualized for a selected state bank in Sri Lanka.*

*The chosen methodology of the study is the case study methodology, which belongs to the qualitative research approach. The unit of analysis for the study are the individuals, who are currently employed at the selected state bank's head office, and/or who have retired from the service of the selected state bank's head office and whose retirement period has not exceeded two years. Accordingly, out of the*

*population of the study, who are or were permanent employees of the selected state bank's head office, a sample of eleven interviewees was selected to conduct the semi structured interviews. The purposeful, snowball sampling strategy was used in this instance. The primary data collection tools of the study were the semi structured interviews, observations made while conducting in-person interviews with the selected interviewees, and documentation review. Further, the data analysis method employed was thematic analysis.*

*The findings of the study revealed, the politicians in state power are directly intervening in the functioning of the selected state bank, (1) when appointing the top managerial positions of the bank, including the chairperson and the Board of Directors, immediately after a change in the political parties in state power, (2) when recruiting new employees into the state bank, especially with the aim of providing employment opportunities for politicians' relatives, and loyalists, etc., (3) politicians' intervention into the credit granting procedure of the bank, in requesting the bank to proceed with the loan requests of their friends, relatives and partisans, (4) intervention into the bank's employee 'transfer' procedure, on the request of the employees with the aim of obtaining the preferred transfer as quickly as possible, (5) politicians' involvement in the promotion procedure to get their partisans' and relatives' promotions done. Accordingly, these findings enable the conclusion that there is a significant level of interventions of political forces, in terms of, politicians' direct interventions into the selected state bank. And such interventions have caused politically empowered forces to manipulate the bank's functions related decisions to derive their self-serving interests, while nurturing the politically empowered harassments within the bank.*

*The main limitation of this study was caused by the COVID 19 pandemic prevailed in Sri Lanka when the study was carried out. Thus, it is compelling to develop contacts with interviewees virtually and carry out most of the interviews via online platforms or through telephone conversations, which are not fully substitutable to the in-person interviews.*

*Further, in the context of this study's research objectives, this study could be further extended by carrying out this same study as a comparative study, selecting two or more state banks, and analysing the contextual differences of the findings among the selected state banks of Sri Lanka.*

**Keywords: National Politics, Patronage politics in Sri Lanka, Politician's Direct Intervention, Politically Empowered Harassments, State Banks of Sri Lanka**

## INTRODUCTION

The State-Owned Banks of Sri Lanka are said to be inherently subject to the influence of national politics as they have been instituted by the special Acts of Parliament for serving national interests and are directly supervised by the Ministry of Finance (Central Bank of Sri Lanka [CBSL], 1989). This phenomenon of functioning of National Politics has been observed throughout the history of the state banks. For example, the Chairman and the Board of Directors are appointed by the mechanism established or recommendations made by the President elected through the Presidential Election, and every time the state power structure changes, the above appointments are subject to changes (Weerakody, 2019). Further, Kearney (1968), Thiruchelvam (1989, as cited in Jayasundara-smits, 2013), Gunasinghe (1996, as cited in Jayasundara-smits, 2013), Hoole (2001, as cited in Jayasundara-smits, 2013), Jayasundarasmit (2013) and Dhammika et al. (2014) have provided evidence confirming the functioning of national politics within the state sector institutions of Sri Lanka to which state banks belong.

Further, existing literature provides evidence of two main ways in which national politics functions within the state institutions in Sri Lanka, namely, through the politicians' direct intervention (Jayasundara-smits, 2013) and through the politicised TU system established to cover the state institutional system (Biyawila, 2003; Kearney, 1968).

Considering the current progressing and worsening economic, social, and political crisis in which Sri Lanka is embroiled in, it's noteworthy that, the experts on State Governance has pointed out, the National Politics of Sri Lanka, the Political dynasties prevailed and prevailing in Sri Lanka and the mismanagement/manipulation of state institutional system including the bureaucrats, as bearers of the main responsibility of causing this crisis (Rafi & Wong, 2022; Devapriya, 2022).

In this backdrop, and in a period where Sri Lankans are demanding a so-called system change, as researchers, it is timely to explore the current political and social arrangement of Sri Lanka, aiding to increase awareness of general public and the policy makers on the prevailing system, to enable them to identify why Sri Lanka failed as a country, and what Sri Lanka should do differently to come out of this turmoil.

Aiding further confirmation on the political forces' intervention specifically into the state banks, the interview conducted with a manager of a particular state bank of Sri Lanka, revealed that, the bank's functions are constantly

intervened by the politicians and political harassments have become a new normal within the bank, through which the bank employees have been victimized. Newspaper articles support such occurrences, by providing on the political revenge commissions established by the newly elected political party to investigate such harassments done to their loyalties within state institutions, which were committed by the outgoing political party's allies (Daily News, 2020a).

However, when referring to the existing research base on this phenomenon of political interventions into the state banks of Sri Lanka, it was evident that there has been no published research on identifying such specific politically empowered events unfolding within state banks of Sri Lanka and how they unfold.

Accordingly, to address the above research gap, the Research Questions of the study are as follows,

1. What are the politically empowered events unfolding at the selected state bank of Sri Lanka due to the politicians' direct intervention and
2. How each of the politically empowered event has unfolded within the selected state bank and what factors has nurtured such interventions?

The Research Objectives of the study are also as follows,

1. To identify the politically empowered events unfolding at the selected state bank of Sri Lanka due to the politicians' direct intervention.
2. To understand how each of the above identified politically empowered events unfold within the selected state bank and what factors has nurtured such interventions.

It should also be noted that, this study has been conducted by selecting one of the state banks of Sri Lanka, and the bank is referred to by the pseudonym, 'ABC bank'.

## **LITERATURE REVIEW**

### **Patronage Politics in the Context of Sri Lanka**

'Patronage' is based on the reciprocal relations between patrons and clients (Weingrod, 1968). Campbell (1964, as cited in Weingrod, 1968, p. 377) defined the structure of the system of patronage, as a system which is based on social relationships between clients seeking for a man with the ability and friendship connections to protect them and a patron who accepts these duties

in return for political allegiance”. Further, it’s provided that the patronage structure is to grow upwards, and through persons of influence, (i.e., Members of Parliament), thus, is linked to the legislative assembly (i.e., the Parliament, in the context of Sri Lanka) (Campbell, 1964, as cited in Weingrod, 1968). This has been the case of Sri Lanka as well (Jayasundara-smits, 2013; Ramasamy, 2020).

In Sri Lanka, this alliance between voters and the political parties or political elites is said to be increasingly subject to the exchange of material benefits<sup>100</sup> among the parties involved (Jayasundara-smits, 2013). Further, the loyalties in return for aiding politicians to get elected, have also received access to the state resources, while some of them even have been entitled to employment opportunities within the state sector (Jayasundara-smits, 2013). This has resulted malfunctioning of the state-owned enterprises, since, with the politician’s granting employment for their loyalist within state institutions it had created a playing field for national politics within state institutions (Jayasundara-smits, 2013).

Further, researchers have emphasized with examples that these highly powerful and crucial patronage relations have led to unethical and corrupt political practices within the state sector in the context of Sri Lanka (Jayasundara-smits, 2013).

Furthermore, it’s noteworthy, as per Jayasundara-smits (2013), evolution of patronage politics to obtain characteristics of fluid politics, has intensified politicians’ need for accessing state institutions to sustain their patronage network. Accordingly, the voters have adopted to rely on multiple patrons/politicians, shifting frequently and easily between multiple political parties to obtain patronage benefits (Jayasundara-smits, 2013). In this backdrop, the political elites have been forced to look for permanent avenues of financing the patronage system, to retain the clients. In consequent to this, the use, abuse and manipulate the state institutions to retain and nurture vote bases has been adopted as the most promising political strategy (Jayasundarasmits, 2013).

Thus, ‘Patronage Politics’ could be identified as a key contributing factor which nurtured politically empowered events unfolding within the Public

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100 Such as, ministerial portfolios with lucrative facilities, diplomatic postings, important positions in public sector enterprises for elites who played the broker role between the masses and political leaders, and who made money donations for election campaigns.

Sector to which the State Banks belong (Jayasundara-smits, 2013).

## **Institutionalisation of Politicisation in the Context of State**

### **Institutions**

In this backdrop, the state institutions have been politicized by the politicians by adopting several political tactics, to build and sustain the voter base via patronage politics, such as, (1) pursued authoritarianism, (e.g., the president, with the presidency power he hold, was able to influence the state decisions and had the authority to have the final saying on matters relating to state affairs), (2) Weakening democratic mechanisms through introducing state reforms, (3) use of coercion to limit oppositional forces and strengthening of trade unions, (4) co-option, whereby strategically important appointments are given to the patrons of the party in power to avoid possible oppositions that might arise with regard to the decisions made on state affairs, (Jayasundara-smits, 2013). These, in turn, have nurtured and intensified the national political interventions into the state institutions, leading to institutionalization of National Politics (Jayasundara-smits, 2013).

Further, literature reveals that, patronage relations in Sri Lanka have been coordinated and financed by these state institutions, aiming hegemony building for their political party or for their political leader (Jayasundara-smits, 2013).

### **Political Appointments into the State Institutions:**

Kopecky et al. (2008, as cited in Panizza et al., 2018), has defined ‘patronage appointments’ as, the power held by political actors to discretionally appoint individuals into (non-elective) positions within the state sector, irrespective of their purpose of making such appointments, capabilities of the appointee, and legality of the decision. Such political appointments prevail within the Sri Lankan state apparatus as well (Weerakody, 2019).

According to Jayasundara-smits (2013), President Jayewardene had been quick to allocate the positions of State institutions to his close political party members, to his friends and to political loyalists. By granting these appointments to his personal relations which had been formed through political patronage, the president and his political party ensured that they have the complete institutional mechanism in line with the conditions which is needed to ensure fulfilment of their political interests and their personal interests with minimum antagonism.

Such appointments are also observable within other political regimes as well.

Accordingly, high-level state bureaucrats who were loyalist of politicians had been appointed as, secretaries to the ministries, heads of the government departments, statutory bodies and state enterprises, and held the legitimate power and control over the workers under him/her. In this context, Moore (1997) concludes that these politically appointed state bureaucrats have the capability to influence the organisational behaviour of a large number of people/forces working under them, if they intent, in accordance with the political propagandas/ideology of the ruling regime/political patrons who appointed him/her.

Furthermore, Moore (1997) claims that, political alliance formed between politicians and bureaucrats of the state institutions has facilitated expanding networks of patronage politics within the lower-class masses.

### **Employment Opportunities for the Political Allies:**

Over the history, the ruling party, once obtained the state power, has strived, and found ways to retain their political power. One of such ways was by providing employment for the youth in the country (Jayasundara-smits, 2013). Obtaining support of the youth has been considered to provide greater advantage for their propaganda, as youth are capable of social impact (Jayasundara-smits, 2013). According to Jayasundara-smits (2013), the state institutions have become the prime focus of both politicians in state power who strived to increase their vote base and the local communities who seek upward social and economic mobility through employment.

According to De Silva (1987, as cited in Jayasundara-smits, 2013), the state enterprises has failed to achieve their expected objectives especially due to the reasons of mismanagement and political interventions of the unqualified political appointments made by the party in state power.

Furthermore, as per Asian Development Bank (2004, as cited in Jayasundara-smits, 2013), politicians have been highly leaned towards providing employment opportunities as patronage benefits for their allies than any other types of benefits. The reason for such lenience has been caused by the fact that, cost relating to state employment is being borne by the state for the rest of the life of such employees. Thereby, politicians have considered state employment as a good alternative to attract new allies to their political camp, and such recruitments had also been used to punish those who opposed their political agendas with the state institutions (Jayasundara-smits, 2013). McCourt (2007) also provides empirical evidence from post 1977 period, to

provide that, after every change in ruling regime, it had resulted in new patronage appointments to state sector by the party in power.

### **Politicisation of the Trade Union Movement:**

Politicisation of TUs established within the state sector provides for the institutionalization of politicisation of state sector to which the state banks belong. For example, President Jayewardene's regime had used TUs established in State institutions, in preventing political oppression of oppositional groups within state institutions (Jayawardhana, 1987).

Accordingly, these TUs within state enterprises had been either ruthlessly oppressed or had been strategically included in political agendas (Jayasundara-smits, 2013). Overtime, according to Jayasundara-smits (2013) and Spencer (2008), these TUs have been converted into a mere instrument in the politicians' political agenda for building hegemony.

### **The Points Noted by the Existing Literature in relation to the Political Intervention into State Institutions**

Hereby, main points noted on the political interventions into the state institutions, based on the existing literature, will be provided.

### **Cultivate Patronage Networks and Ideology Through State Sector Recruitments:**

Commenting on the skills of the state sector employees, who were mostly recruited through political interventions, Jayasundara-smits (2013) provides that, such worker is unable to perform their duties at the expected standard, as most of such recruitments are unskilled allies of the party in power. This has been due to disregarding the possession of relevant skills and knowledge (Jayasundara-smits, 2013).

Further, Jayasundara-smits (2013) has found that the aim of such recruitments has been to cultivate patronage political networks. Furthermore, Hettige (2010, as cited in Jayasundarasmits, 2013) provides, these employees were used to diffuse political unrest among state institutions and monopolize political ideologies of the political elites, which amounts to a political strategy to hegemony building.

### **Significant Number of Political Employments at the Elementary Level of the State Sector:**

In the public sector, it is found that, relatively a higher number of employees have been employed in the lower-level occupational categories (Department

of Census and Statistics,

2019). These numbers correspond with the views expressed by majority of the respondents of Jayasundara-smits's (2013) study. Accordingly, many political appointments in the state sector have taken place at the elementary level occupations and in the categories, such as, clerks, messengers, etc.

However, as per Moore (1997), the political relations have not been only limited to the elementary levels of the state sector, though most of the political recruitments were done at the lower levels. The evidence from existing literature provides that, even the public servants in the upper hierarchy of state bureaucracy are part of political patronage systems (Jayasundarasmits, 2013; Moore, 1997).

### **Employment of thousands of Political allies into the state institutions immediately after elections:**

According to LBO (Lanka Business Online), new recruitments in 2006 alone is 71,323. In 2007 this has reached 107,505 marking a 51% increase. In 2008 this reached 129,135 (LBO, 2010, as cited in Jayasundara-smits, 2013). Similarly, this increasing trend has followed over the years swelling thousands of excess employees into highly unionised state establishments (LBO, 2012). Jayasundara-smits (2013) concludes that, this trend of massive absorption of employees into the state sector is possible only due to political clientelism. According to Jayasundarasmits (2013), not only the party in state power, even the small political parties who formed coalitions with the party in power have employed thousands of their political allies within the state sector (Jayasundara-smits, 2013).

### **Practicing fluid politics by the employees of the state sector to safeguard benefits and survive in employment:**

Further, it has also observed that contrary to the stable loyalties established by use of state-led patronage system during the pre-1977 period, in the post-1977 period the nature of subordination and loyalty rendered by the political appointees in the public institutions to a particular political party or elite faction has increasingly become flexible (Dunham & Jayasuriya, 2001; Jayasundara-smits, 2013). This flexibility in terms of political loyalty has been related to several political developments in this period. First of all, it relates to the nature of overall politics that has been increasingly marked by fluid political alliances at the top level (i.e., Politicians changing their membership between political parties). Secondly, it has been associated with

the adaptive nature of the political appointees, whose primary focus have been to strategically manoeuvre their national political loyalties to survive in their employment and safeguard material entitlements (De Alwis, 2009; Jayasundara-smits, 2013).

### **Non-political recruitments in the state sector seeking patronage for the survival in their employment:**

Given the extensive and the sophisticated nature of patronage system embedded in the realm of the state, non-political appointees also have been faced with the threat of losing their employment, expectations of climbing up the career ladder, and receiving other benefits (Jayasundara-smits, 2013). In an environment, where forging patronage relations with the political elites in state power has become the determining factor to obtaining career growth, the non-political appointees have also been compelled to seek political patronage (Jayasundarasmits, 2013).

Jayasundara-smits's (2013) study has revealed that, public officials have found it difficult to perform their duties and to stay out of party and regime politics, as in some instances, officials even had faked political loyalty, in favour of the political party in power, to secure their employment (i.e., forging political loyalty to traditional major political parties, to benefit from the patronage networks maintained by political parties, to retain and attract supporters for their party, aiming the upcoming elections).

### **De-politicisation of state sector institutions has been impossible for Sri Lanka:**

In light of the findings of the studies stated above, it has been concluded that although the officially declared goals of state reforms brought by the political elites was de-politicisation, they had only contributed for more politicisation (Jayasundara-smits, 2013). De Alwis (2009), who systematically analysed the public sector reforms for the period 1950–2005, has found that impossibility of those state sector reforms to successfully de-politicize without a complete transformation of the overall political system. Jayasundara-smits (2013) and Samaratunge and Pillay (2011) have concluded that, the hegemonic alliances forged between various forces in the society (Trade Unions and Political Parties) and between political elite groups, to a larger degree, has closed the possibility for any meaningful interventions for state restructuring to dismantle the patronage system which had been already legitimised and institutionalised within the state sector. Thus, implying the continuation and sustenance of the established

functioning of National Politics within the state institutions of Sri Lanka, including the state banks.

## **Politicization in the Context of State Banks of Sri Lanka**

### **Politization of State-Owned Banks and Politicians' Direct**

#### **Intervention:**

For the purpose of this study, the 'State-Owned Banks', in which this study is located, are considered as the banks where at least fifty percent of equity is owned by the Sri Lankan government (International Monetary Fund [IMF], 2020), and which are established with the objective of supporting national economic and strategic interests (Organization for Economic Co-operation and Development [OECD], 2018a).

Further, within the context of Sri Lanka and in countries such as India, Pakistan, Chile, Slovenia and Israel, the public sector, to which the State Banks belong, is said to be inherently subject to the influence of National Politics (Fernando, 2013; OECD, 2018b).

The State Banks of Sri Lanka also can be identified as financial institutions which are inherently subject to the influence of National Politics due to being a state institution with the state having the ownership (CBSL, 1989). The phenomenon of functioning of National Politics within State Banks has been observed throughout the history of the State Banks since its inception. For example, the Chairmen and the BODs of State Banks are appointed by the mechanism established by the acts, or the ordinance passed through the Parliament. Thereby, the Minister of Finance who has been appointed by the elected President and the Prime Minister of the State, is delegated the power to appoint the Chairmen and a considerable number of BODs to the state banking system. And every time the state power changes, the above appointments are subject to change (Weerakody, 2019). Thus, affirming the politicization of state banks.

However, even with this backdrop, there has been no research study conducted to provide specifically on the politicization of state banks of Sri Lanka and had not carried out any study specifically selecting a state bank of Sri Lanka to explore how the politically empowered events unfold within the bank. This could be thereby identified as a research gap in the field of national politics functioning within state institutions. This study undertaken, accordingly, seek to address this gap, by identifying what are the politically empowered events unfold within the selected state banks and how they unfold.

### **Politization of Trade Unions of Sri Lanka:**

Existing literature reveals details on functioning of politically empowered Trade Unions, which could be identified as another major manner in which politicians intervene state institutions.

Wijewantha and Gamage (2011) define 'Trade Unions (TUs)' as, voluntary organizations of workers, formed to promote and protect their rights and interests, through collective effort.

In the Sri Lankan context, Wijewantha and Gamage (2011) and Dhammika (2015), concludes, majority of the public sector TUs in Sri Lanka are branches of main TUs, affiliated to leading political parties. Kearney (1983) further argues the choice of a union, out of different rival party-affiliated unions, by each public worker, showcase his/her political preference. Jinadasa and Opatha (1999, as cited in Dhammika, 2015) and Biyanwila (2003) further adds that, 88% of the public sector employees are active TU members, showcasing the importance of studying the phenomenon in the context of public sector.

Wijewantha and Gamage (2011) further reveal, highly politized TU activities spill-over intensified political competition and trade union rivalry across the operations of the Sri Lankan state institutions, thus creating a politicized working environment.

### **National Politics Nurture Organizational Politics**

Even though this study concerns studying the events which are nurtured by National Politics, it should be noted on the possibility of 'National Politics' functioning within State Banks nurturing 'Organizational Politics' within the state banks, as per the findings of Ullah et al. (2011). Ullah et al. (2011), in the context of an Indian state university, has identified influence of National Politics as a factor playing a key role in stimulating the use of organizational politics within the institution.

Due to the reason that this study has been conducted in the context of a State University in India, it can be considered relevant to the current study, as the phenomenon of National Politics functioning within State Institutions in India is said to be similar to the Sri Lankan context, due to both contexts commonly belonging to South Asian region (Rajesh & Manoj, 2014).

## RESEARCH METHODOLOGY

The chosen methodology of the study is the Case Study Methodology, which belong to the Qualitative Approach to research. The study has adopted the inductive approach as the research approach. This research stance 'subjectivism' research philosophy which assumes that social phenomena are created through the language, perceptions and consequent behaviour of social actors, and that, there are multiple social realities. Further, subjectivism entails 'nominalist ontology' which believes that there is no underlying reality to the social world beyond what social actors attribute to it. Further, subjectivism assumes a value-bound, reflexive axiology.

The research context of this study was a selected state bank of Sri Lanka, which is known to be a natural habitat of the phenomenon under study (i.e., National Politics functioning within State banks of Sri Lanka).

Further, existing literature has highlighted the importance of selecting an information rich case to undertake the research study when researcher is to undertake single case study. Hereby, the selection of the state bank, out of the state banking system of Sri Lanka in which the phenomenon under study could be observed, was done in a way to ensure that the selected state bank/case could provide rich descriptions and in-depth insight on the phenomenon studied.

The unit of analysis for the study are the individuals, who are currently employed at the selected state bank's head office, and who have retired from the service of the selected state bank's head office and whose retirement period has not exceeded two years. Accordingly, out of the population of the study, who are or were the permanent employees of the selected state bank's head office, a sample of eleven interviewees were selected to conduct the semi structured interviews. The sampling strategy employed was the purposeful, snowball sampling strategy, to allow in-depth insight on the studied phenomenon within the time limit of the four-month period. Details on the selected sample of interviewees are as follows.

**Table 1: Details of the Selected Sample of Interviewees**

<b>Number</b>	<b>Pseudonym of interviewee</b>	<b>Tradeunion membership</b>	<b>Divisionor Designation</b>	<b>Methodof interview</b>	<b>Employed currently</b>
<b>1</b>	Mr. Mark	Loyal Member	Credit Supplies	In-person	Yes
<b>2</b>	Mr. Jack	Loyal Member	Welfare	In-person	Yes
<b>3</b>	Mr. John	Member only	Administration	Via WhatsApp video call	Yes
<b>4</b>	Mr. Leo	Nonmember	Marketing	Via WhatsApp video call	Yes
<b>5</b>	Mr. Oliver	Union leader	Finance	Via Telephone call	Yes
<b>6</b>	Mr. James	Union Leader	Welfare	Via Telephone call	No
<b>7</b>	Mr. William	Former Union Leader	BOD	Via WhatsApp video call	No
<b>8</b>	Mr. Thomas	Nonmember	Human Resource & Administration	Via WhatsApp video call	No
<b>9</b>	Ms. Emily	Member	Human Resource	Via WhatsApp video call	Yes
<b>10</b>	Ms. Eva	Member	Credit	In-person	Yes
<b>11</b>	Ms. Alice	Member	Legal	Via Telephone call	Yes

*Source:* Author compilation

The primary data collection tools of the study are the semi structured interviews and observations made while conducting in-person interviews with the selected interviewees. Three of the planned semi structured interviews were carried out as in-person interviews, while the rest of the interviews were conducted via telephone calls and through WhatsApp video conferencing technology, due to the COVID 19 pandemic restrictions.

By choosing semi structured interviews, I secured the opportunity to hear their stories and experiences while having the flexibility to direct the interview according to the findings/politically empowered events which emerge as the interviews progress. Further, I also prepared an interview guide to elicit the conversations including the format of an opening statement, a few general questions, questions which were produced referring to the existing literature and experiences of mine, and a few additional questions designed to probe for information. Accordingly, the interview was commenced with an inquiry into interviewees' background and experiences, using the question of "Have you come across situations where National Politicians or persons who are related to them directly get involved in the decisions of the bank officials? Can you elaborate your experiences or the information you have on such incidents?", as the first question.

Furthermore, the decision was taken to conduct the interviews in the native language and the commonly used workplace language of the selected participants. Accordingly, the interviews were to be conducted in Sinhala language to build rapport and allow the interviewees to comfortably express their emotions and stories.

The data analysis method employed to analyse the data collected for the study and to present the analysis and the findings of the study to the readers, is the thematic analysis. Further, it's also noteworthy that this study was conducted while taking the ethical considerations into account.

## **DATA ANALYSIS**

### **Data Analysis Method**

Thematic analysis was used to analysis the data collected for the study. In conducting the Thematic Analysis, the step-by-step guide presented by Braun and Clarke (2006) was used. Thereby, the following six steps, namely, (1) researcher familiarising him/herself with the data gathered, (2) generating initial codes, (3) searching for themes, (4) reviewing the themes, (5) defining and naming the themes, and (6) producing the analysis and discussion chapter, was followed.

### **Organizing Themes and Codes**

After transcribing the interviews conducted, the transcripts were studied thoroughly and the findings that has relevance to the study's research questions were highlighted using different colours for clear identification. Subsequently, the initial codes were noted beside the highlighted text in the softcopies of the transcripts, based on the identified patterns and meaning of the content. After completing the initial coding, all the codes were taken on to one document and each transcript was allocated a number which also followed each code, to enable tracing back the code to that specific transcript when writing up the "Findings and Discussion" section.

Thereafter, the codes which were addressing the same issue, or a topic were categorized under a one common theme, and accordingly all the codes were allocated to a specific category. The themes were generated to capture the important aspects of the phenomenon of National Politics functioning within the selected state bank of Sri Lanka, and to answer the research questions of the study. The identified themes are discussed in detail under the "Findings and Discussion" section.

Further, the frequency of similar codes was also recorded to identify and distinguish the common perceptions on the phenomenon of the interviewees. The frequencies were also recorded to identify whether such responses came from a male or a female interviewee, and/or an active TU members or leaders, and/or a politically recruited employee or an employee recruited through the formal proceeding of selection and recruitment. These frequencies recorded was subsequently used in interpreting the data under the "Findings and Discussion" section.

The "Findings and Discussion" section was drafted mainly under a single broad theme, under which multiple levels of sub-themes were formed to provide a comprehensive insight into the phenomenon under study (i.e.,

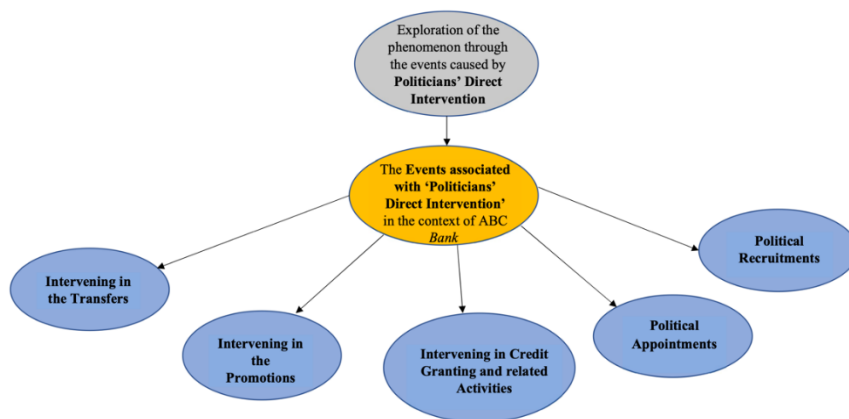
national politics functioning within the state banks of Sri Lanka). To answer the research questions, the findings were mainly categorized under the theme of, “the events associated with ‘Politicians’ Direct Intervention’ in the context of ABC Bank”.

Under this theme which discusses the politicians’ direct interventions into the ABC bank, the specific politically empowered events, namely, political appointments, political recruitments, credit granting process manipulations, interventions done to the ‘transfers’, and ‘promotions’ of the ABC employees, has been discussed.

## Thematic Map

The thematic map developed to present the research findings is depicted from Figures 1.

**Figure 1: First Level Thematic Map**



*Source:* Author compilation

## FINDINGS AND DISCUSSION

The findings of the study and their interpretations are as follows.

The events associated with ‘Politicians’ Direct Intervention’ in the context of ABC Bank ‘Political Appointments’:

All interviewees emphasized that these political appointments to the Top-level management (Chairperson and to the Board of Directors (BOD) of the ABC bank, to be another significant event where national politics intervene into the state banking system of Sri Lanka.

This argument is reflected within Mr. Jack's response, as he stated that,

*"The finance minister and his/her deputy minister has been given the decision making power over the banking sector of the state, which in turn allow them to appoint the top-managerial persons to the state bank, ultimately creating access for politicians to directly intervene the bank".*

The secondary sources confirm this position as they confirm that these appointments are immediately subject to change upon a transition of the political power of the Nation (Daily News, 2020b; Weerakody, 2019).

The above imply the extent of power and hegemony the government and the minister have over the ABC Bank, as the minister holds the power of appointing and dismissing these high-profile managerial appointments.

Mr. Mark specifically pointed out another aspect of political appointments stating that,

*"We should not neglect that the finance minister, on the other hand, is an appointment made by the President of the Government, who holds the absolute power on state affairs...who ultimately decides who should be appointed to the highest chairs of state banks. He makes such appointments through the Finance minister he appoints".*

Thus, he argued, if a state bank or banking system sparks interest in highest-tire politicians, they're capable of influencing who should be such appointees. Similarly, in the context of Sri Lanka, Jayasundara-smits (2013) provides that the past Presidents of Sri Lanka had allotted higher public posts to their close friends and family.

In contrast to interviewees providing that political appointments have been directly made by the finance minister or the President of state, the Defamation paper forwarded by Mr. Jack reveals, the present government has established an 'Expert committee' for appointment selections.

Even, in this context, it should be noted that we cannot exclude the presence of President's political power, as these committees have been appointed by the President himself and thereby, he exercises the absolute power to finalize the appointments.

Further, the findings revealed that politicians in state power in turn exert political influence over ABC bank, through their regime's appointments into the state bank. Mr. John elaborated,

*“The politicians do not directly...exert influence indirectly over the bank’s functioning. For example, they make calls, issue letters requesting the bank’s management to recruit an ally or allies of his/her, and management are bound to do so...Because they’ve been appointed by those politicians”.*

Hereby, this sensitivity of top management to politicians confirms Jayasundara-smits's (2013) argument that politicians have been successful in obtaining the control over state institutions through state reforms for achieving their political agendas.

It can be further argued that politicians in power could have undeniable, unconstrained access to ABC Bank through their appointees, based on three factors extracted from the findings. Hereby, it’s noteworthy that these findings add to the existing literature on National Politics functioning within state banks, as previous research hasn’t made such explorations.

Firstly, interviewees unanimously and voluntarily expressed that the political appointees are political allies of the political party in state power, which in turn has ensured the party in state power and associated politicians to have access to ABC bank.

Mr. Mark, concerning the above, stated,

*“Due to the pre-appointment relations these appointees have with politicians in power, those politicians have been able to get their work done through them. Top management adhere to their appointors, as these appointees are ‘eheyos’ (i.e., ‘එහෙය් යෝ’; those who do what they’ve been told without questioning back) of politicians in power... Politicians appoint (as Chairman and BODs) those who are close to them, or who did politics with them... Thus, what happens within state banks is what politicians tell their appointees to do”.*

Further, these factors which interviewees perceive as influencers of appointment decisions reflect the ‘transactional relationship’ between the appointee and the appointor. Thus, it could be argued that the politicians expect the appointee to return the favour of granting the appointee the position by adhering to his/her requests and work in favour of him/her.

Confirming the dependency relationship Jayasundara-smits (2013) described to exist between the politicians (patrons) and public bureaucrats (clients) in Sri Lankan patronage system, Mr.

Jack concluded,

*“...politicization of state banks is thus inevitable”.*

Secondly, interviewees provide that the top-tier politicians of the government in power consider and appoint only those who are loyal and adhere to their request/orders, to ensure secrecy of their interventions.

Mr. John states that,

*“Politicians, by making such appointments, intend to have people who could get their work done within the bank... Otherwise, if such appointments don't fulfil minister's orders, and if they whistle blow revealing such orders to public, government derives no use from such appointees”.*

Thirdly, interviewees were of the view that the politicians in state power holds the absolute power over these appointments, though there are mandates requiring the CBSL (Central Bank of Sri Lanka) to scrutinize and approve necessary qualifications, competencies and experience appointees should possess to function in their appointments. Interviewees undisputedly supported that such mandates have been overridden by politicization of the functioning of

CBSL. In Mr. Jack's words,

*“Every appointments nominated by the Finance Ministry to state banks, they're approved by the CBSL. Why? The CBSL also more or less subject to politicians' influence”.*

Additionally, the above findings infer, ABC bank's employees perceive that their top management has obtained their appointment through nepotism, as even unqualified, unrelated political allies are appointed by politician in power.

Interviewees further argued, such appointments to have nurtured political harassments within the bank. This could be interpreted as such appointments contributing to their patron's party to build hegemony in state banking related political issues, by oppressing the oppositions' loyalties within the bank, as provided by Jayasundara-smits (2013). In contrast, nurturing political revenge on oppositional loyalist could be interpreted to be a survival technique used by such appointees to avoid being attacked by oppositional parties on his/her misfit to the position. And thereby execute disruptive behaviour on the oppositional members to showcase his/her politically derived power to avoid possible oppositions to him/her.

Furthermore, interviewees highlighted, incompetent, thereby, vulnerable

appointees, with authority and power derived from their designation and the political relations, could nurture political harassments towards opposition, driven by the personal interests of bank's employees who approach the appointees with hidden agendas (such as, to get rid of their peers who compete with them for a promotion, etc.). This showcases, the negative impact of making inappropriate appointees who possess power (relational power derived by being allies of state power holders, and authoritative power) over functioning of banks within state banks. Hereby, the findings confirm the use of 'coalition' by some of the employees as a strategy to influence their superior in obtaining political advantages, as provided by Deluga (1988) and Kipnis et al. (1980). Thus, it enables the argument that, incompetent and vulnerable appointees might intensify the organizational politics within the ABC bank.

Further, some interviewees argued that the appointees must adhere to the requests/orders of the minister and top-tier politicians in state power for their survival, as minister holds the ultimate power to appoint and dismiss at his/her discretion. Mr. John elaborated as follows,

*"The minister can throw away the appointee (i.e., මෙම අපේක්ෂා කරන ඒ) next week, if his orders were not followed. Thus, most of the times, the chairman must comply with such orders".*

Mr. Mark further commented,

*"This is a common occurrence in the context of state banking system regardless of what regime hold state power, what political party is in power, as these appointments are controlled by the respective government's politicians, whose main objective is securing state power and increasing the voter base for their next election".*

On the contrary, some interviewees also provided that in the history there has been chairpersons who have conducted competitive examinations for selecting potential bankers for the bank, to limit the political recruitments which comes through the ministry as 'political recruitment list', thus, restricting political interventions. Accordingly, it is concludable that not every regime in state power seeks patronage through their appointees to state banks.

### **'Political Recruitments':**

In the context of this study, 'Political recruitments' can be identified as another politically empowered event occurs within the context of ABC bank. This refers to potential employees obtaining employment in the ABC bank

through the aid of political relations or relational power by associating him/herself directly or indirectly to a politician in power, provided that the management including political appointees are influenced by such interventions.

Interviewees mentioned ‘political recruitments’ as a prominent incident which depict politician’s direct intervention within the bank. This confirms the findings of Jayasundarasmita (2013) which provided for offering state patronage through state sector employment to the rural youth aiming political agendas. Further, the study’s findings add to the existing literature by providing empirical evidence on the political intervention into recruitment processes of the ABC state bank.

In the context of ABC bank, while confirming political recruitments, the following specifications on the intervention were also revealed through the study.

Thereby, Mr. Leo claimed,

*“Politicians in every government during their term, they put their children (referring to youth who are affiliated with them) as much as possible into the bank. They provide employment for their allies’ children and of their relations”.*

Furthermore, Mr. Jack pointed out, ‘Political list’ as a list which is sent by the Ministry of Finance to the ABC Bank’s HR division, mentioning the names of the applicants which they want the bank to employ. Accordingly, this list contains the names of the political allies or the relatives, children, political allies of the ministers in state power, or their political allies’ children or relatives.

Ms. Emily provided,

*“We often hear that a political list for recruitments have been sent from the ministry (i.e., via the secretary of the finance minister). Sometimes, even before we gazette or advertise recruitment notices. To include their people, they even adjust the eligible criteria for applicants. They increase the age limit, etc”.*

Mr. Mark also confirmed the above. These manipulations to the applicants’ eligibility requirements showcase those recruitments are not done solely in the interest of the bank but done to benefit the politicians in power and their allies, nurturing patronage political networks with the aid of ABC bank.

Interviewees further provided on the higher possibility of getting employed

if the applicant comes through a politician in state power, in reference to the time they joined the bank.

Adding to the above, Mr. James stated that,

*“In addition to political lists, bank also receives sacks of applications. We receive thousands and thousands of them. Owing to this competition, even if interviews are conducted, they don't always happen fairly. Everyone one of them have a degree and other qualifications...So in such a situation what ultimately happens is applicants who were recommended by the politicians are chosen”.*

This enables the argument that intensified competition among the applicants to get into the bank through the formal procedure has been a major factor which contributed to the political intervention into the selection process of the recruitments. These findings add to the existing literature, as there were no specifications were explored in relation to this phenomenon within state banks.

Additionally, Mr. Thomas revealed that political recruitments happen at specific categories of employment within the bank (such as, clerical type employment, staff officers, and executive officers, etc).

He, referring to recruitments for lower grades, stated that,

*“The lower grade recruitments, clerical level staff, peons, bank assistants, such recruitments are usually done through political lists. Only once in my lifetime, they were recruited by publishing in the newspapers and after conducting a competitive examination...”.*

Thus, it is evident that lower grade recruitments (i.e., clerical staff) are often intervened by politicians and recruited through political lists comparatively to other grades' recruitments. Further, similar to this interviewees' claims, Jayasundara-smits's (2013) study also have cited statistical data proving that a large number of political appointments in the state sector are taking place mostly at the elementary level occupations and in the categories such as clerks, messengers (i.e., peons).

Furthermore, as Mr. Thomas argued, the political appointees seem to be middlemen in political interventions into bank's recruitment process. This argument was also supported by other interviewees' responses. Thereby, according to Mr. Oliver,

*“They (i.e., politicians) influence the chairman or a director to recruit their people... For example, if the bank is recruiting under*

*their formal procedure for a specific grade, and recruitments are made from the outside applicants, they get hold of an official from the top management and say, 'I have a relative, he is in the list, look into him'".*

Thus, this affirms that the management, especially the political appointees, are targeted by the politicians to get their relatives employment opportunities in the ABC Bank. The reasons which compelled political appointees to adhere to politicians' requests might be due to, (1) politicians having dismissal power over the appointees and (2) being a client of the deeply rooted patronage politics within Sri Lankan society (Jayasundara-smits, 2013; McCourt, 2007) which might persuade appointees to perceive that if he/she act accordingly those politicians might return the favour when he/she is in need in the future.

Furthermore, interviewees also commented that such recruitments don't even possess minimum qualifications they must possess. This confirms findings of De Silva (1987, as cited in Jayasundara-smits, 2013) which provided on lower-level political recruitments being incompetent and of less quality than the recruitments done via the formal procedure (De Silva, 1987, as cited in Jayasundara-smits, 2013).

Furthermore, some political recruited revealed how they took support of the politicians to get into the list. Mr. James thereby stated,

*"I had a representative (i.e., මා මෙකෙනෙ ) whom I helped for his campaign activities. Through him I was able to get into the list...he called a political leader at that time who held state power (i.e., ආප මෙම මෙල මෙක ට) to get it done".*

Mr. Mark also briefed his pre-employment political relations as follows,

*"...I worked at SS Headquarters (i.e., a prominent political party's headquarters) before joining the Bank. Due to the low salary there, I applied for the bank's job...back then the leader of our party (i.e., නායක මා), Mr. A helped me to join the bank".*

This allows me to conclude that some employees who were recruited through political lists have capitalized their pre-employment political connections to be employed in the bank.

Further, he revealed that these pre-employment relations have led him to be an active member of the TU associated with the party to which he was loyal, and thereby, serve his political party.

In Mr. Mark's words,

*"I've been working with the TU associated with the SS political party since then (since appointment). ... When there are meeting at the SS headquarters, I still attend them and I go for political meeting organized for upcoming presidential or parliamentary election, when I find time".*

Further, when I raised the question as to why he still continues to be active, even though he left his duties, he replied,

*"I'm not doing this considering it as a duty. I worked there. It was my first job. So, I actively participated in those functions out of gratitude and because I still have relationships with the colleagues whom I worked with".*

This behaviour of Mr. Mark affirms the typical behaviour of a 'client' of the political patronage networks of Sri Lanka, where political connections are used to derive special privileges including employment opportunities within the state sector and in return the client actively contributing to the patron's political agendas (Jayasundara-smits, 2013).

Additionally, most interviewees who identified themselves as politically empowered TU's active members have also been recruited through political intervention, capitalizing their preemployment relations. This showcases the possibility of such political recruitments maintaining their pre-employment political relations even after obtaining employment in the bank. This is evident through them being active members of their respective party's TU.

Furthermore, interviewees also revealed, some politically recruited employees, even after obtaining employment, they get politicians involved to influence the management to get their things done, depriving the independent functioning of ABC bank. This adds to the existing literature, as the studies have only provided on the political recruitments and haven't made any observations on politicians' intervention into other areas of HR administration.

It should also be noted that, according to Jayasundara-smits (2013), not only the politically recruited employees, but even non-politically recruited employees seek political associations to survive in the state institutions, as a result of the learning they gain through their experience and thus, adopting to the environment by they also seeking political patronage (De Alwis, 2009). Though these researchers have not specified how such employees use politicians' support to survive within state institutions, the interviewees of

the present study, Mr. Emily, Ms. Eva, and Mr. James reveal, similar to political recruited, the non-politically recruited employees also seek support to obtain transfers and promotions.

According to Ms. Emily and Mr. Oliver, the politicians' intervention into bank's recruitment has been continued since inception of the bank, even with different efforts made to limit political interventions. For example, management (including the chairmen) gradually introducing policies and mechanisms, such as independent interview panels and related policies, recruitment boards, etc., to minimize the political interventions. However, as per some interviewees' narrations, these mechanisms and policies seem to have failed to eliminate political interventions completely.

Intervening 'Credit granting' process of the ABC Bank:

Loan approval and granting process could be identified as another function which give rise to politically empowered events, as most of the interviewees highlighted 'Credit granting' as a function which subject to politicians' intervention.

It is noteworthy that there is a body of literature that has been conducted in foreign and global contexts which found that, lending behaviour of state banks around the world, specifically the banks in less developed or developing countries, are subject to political interventions (Dinc, 2005; Sapienza, 2004). Accordingly, Dinc (2005) has observed a significant increase in state bank's lending in elections years, while emphasizing that this is very likely to be an underestimate of the political influences on government-owned banks. With this global context, findings of this study revealed more inside details on how manipulations occur within the lending procedure of the ABC bank.

Accordingly, Mr. William stated,

*"...Politicians don't come to the bank. From a telephone call, they contact the chairman or a BOD, and say, there is a person I know, he is coming to take a loan. Can you look into it and get it done?"*

This depicts that politicians exercise their political power, which some of the officers of ABC bank seem to perceive as superior to their authoritative power, to influence the officers to get their political allies', friends', and relatives' loans processed. This adds to the existing literature as politicians' intervention into credit granting function of state banks of Sri-Lanka on behalf of their allies haven't been observed before.

Further, Mr. Jack emphasized that,

*“...Most of the politicians intervene mainly because of the hectic procedure the loan applicants should go through to obtain a loan from our bank (i.e., ABC Bank). ... If a politician calls, it is most likely, that your loan application will be processed quickly”.*

Hereby, adding to the existing literature, Mr. Jack claims, bank's time consuming, inflexible, and complex mandates and approval process of lending as a factor which nurtured politicians' intervention within the bank's credit granting process.

Accordingly, Mr. Leo, who worked closely to the top management, argued, political intervention and resulted non-adherence to bank's internal policies and procedures, dependent on the power of CEO/GM of the ABC bank. Hereby, it's noteworthy, the term power goes beyond the authoritative power of the CEO/GM, which are to derive from a combination of authority, competence to perform on the job and the personality. Thus, Mr. Leo identifies the critical role of CEO/GM plays in minimizing the political interventions intensified by the political appointees to the ABC bank. And further Mr. Leo argued, having a powerful GM/CEO will allow the employees to have a superior to rely on to whistle-blow against such unethical, illegal demands of political appointees and politicians.

Confirming Mr. Jack's claim on political influence to grant ineligible loans, Ms. Eva in detailed provided her experiences on the loan process and politicians' influence. Thereby, she revealed,

*“...there have been some instances, even if the credit committee doesn't approve, the loans are granted”.*

Further, when she was raised the question whether they are unable to make a complaint against such political intervention and pressurizing the staff to deviate from the policies, she responded,

*“Firstly, we're unable to prove there is a political intervention. Secondly, even if we are to complaint, we are unaware who are the management involve in this, and how they relate to each other. If we complaint to the wrong person, it might backfire us, causing more harm to our career. And the next reason is, those superiors are the ones who know what's really happening and they are the ones who should take the responsibility of whistleblowing. But sadly no one is doing it, because they all want to survive and get their next promotion. So, it's safe to turn a blind eye”.*

This reveals how Ms. Eva's attitude towards such political interventions and

whistleblowing have been shaped through the incident. Thereby, this incident showcases, Ms. Eva perceives such interventions as a 'dilemma', which she has no solution for. Thus, it makes it evident that politicians' intervention could lead to make the officers' job challenging and unsatisfactory (i.e., negatively impacting her attitude towards her job), as it'd made her feel powerless and adopt a strategy of ignoring until someone which is not her brings a solution.

When Mr. Leo was raised the exact question of why such political interventions cannot be stopped, he stated,

*"Who will take the initiative to make a complaint and do it? No one will come forward. What you have to interfere concerns the affairs of politicians from above. So, no one will want to awake the beast".*

This provides for the perceived procedural injustice of the procedure which has been put in place for whistleblowing by ABC employees, as both Ms. Eva and Mr. Leo claimed on the possibility of such whistleblowing backfiring on their career progression, if the superior to whom it was addressed has interest in the case. That is, the employees perceive that the management are also accomplices of the incident, which ultimately has led the employees to give-up on whistleblowing.

These responses reveal the circumstances which led employees to avoid taking a stand against the political intervention. Accordingly, (1) the secrecy politicians maintain by using a loyal and secretive chain of command to get their work done, which involve officials who are part of the patronage networks of the politicians. Hereby, the management and politicians said to derive mutual benefits through their relationships (Jayasundara-smits, 2013). (2) the political power vested and exercised by the politicians, which perceived to be superior to the authoritative power vested to the bank's management. This is evident from the experiences employees had, where some management members have led their subordinates to get the requests of politicians done going beyond the established credit procedures and policies. And (3) the management and officers seem to be seeking political patronage to get their promotions done or to avoid deprivation of promotions by being whistle-blowers. These reasons seem to have resulted political intervention into the bank's credit granting function.

Further, Ms. Eva highlighted, even the credit recovery is subjected to political interventions, as she stated,

*"When the repayment period comes for such applicants...even at*

*that time, few of such applicants, again request the management for a grace period, through their political connections...Sometime, such loans never get repaid back to us, not even the capital amount...the bank will have to bear the losses from bad loans”.*

This showcases that some politicians who intervene credit recovery function, thereby, without any knowledge, have created financial losses for the bank, by compelling officers to deviate from established credit procedures and policies. It is noteworthy that the incidence of losses incurred from lending procedures triggered by the political interventions, is not unique only to the ABC bank, as the existing studies conducted in foreign contexts also confirms this (e.g., Repko, 2019, as cited in IMF, 2020; Economist, 1994, as cited in Shleifer & Vishny, 1994).

Intervening ‘Transfers’ of the ABC Bank’s employees:

All interviewees identified ‘employee transfers’ as another instance which generates politically empowered event.

According to Mr. Thomas,

*“...when employees are transferred, they (i.e., the politicians) intervene.”*

Further, Mr. Leo generalised political intervention involving employee transfers as a common phenomenon to the state banking management.

As per the findings of this study, transfers are granted and processed can be categorised under three categories, in relevance to the phenomenon under study, (1) the transfer requests which were initiated and requested by the employees and which were communicated to the management through a politician they associate themselves with, (2) the transfers initiated and requested by the employees which were communicated to the management through the politically empowered TU, in which they hold the membership, (3) the transfers which were initiated by the management and/or TU members as a way of seeking ‘political revenge’ from an oppositional politically active TU member.

It's noteworthy that this categorization adds to the existing literature, as previous studies haven't identified such categorization of transfers, considering transfers as politically empowered event occur within state banks of Sri Lanka.

Accordingly, Mr. Mark provided a justification on what compelled ABC employees to resort to politicians’ support in getting their transfer,

*“To get their transfer done quickly, our employees seek the support*

*of the ministers. They get their involvement to process their preferred transfer quickly and easily. They can get it done faster comparatively to the formal procedure established for transfers”.*

Thus, the ability to get their transfers done quickly seem to have motivated employees to seek politician’s intervention, thus, seem to be perceived positively by the interviewees. Same opinion was supported by Mr. James.

Further, Mr. James added,

*“If they know a minister or MP from the prevailing government, and if they can get the politician to make a call to a BOD member or the Chairman, it is enough.... ‘Can you look into this transfer of this so and so, and quickly get it finalized?’ These words from a politician are enough to get it done”.*

This showcases the ease of getting things done through a call by politicians than getting it done through the formal procedure, as it involves filling forms or waiting for a vacancy at the preferred division or branch, he/she prefer to get the transfer, as stated by Mr. James. It is also noteworthy, that this might be an exaggeration, as not all such politicians who make a call might’ve the power to convince the management, as some managerial member might refuse to fulfil the request due to his/her attitudes toward such political intervention or due to specific circumstances.

Further, Mr. Oliver, revealed that, ABC employees have gotten the involvement of top-tier political leaders to obtain their preferred transfer to their hometown, due to intensified competition for limited vacancies.

Hereby, it is noteworthy that no similar findings have been reported in the context of state banking of Sri Lanka, thus, the political intervention into transfer decisions of the ABC state bank’s employees will be an addition to the literature concerning functioning of national politics functioning within the state banks.

Intervening ‘Promotions’ of the ABC Bank’s employees:

As Mr. Oliver claimed, ABC bank’s employees are subject to political interventions from recruitment to their retirement. And all the interviewees identified ‘Promotions’ as a HR related activity which subjects to politicians’ intervention, especially if relatives and political allies of the politicians in power are expecting a promotion.

*Ms. Emily stated,*

*“I’ve heard that politicians intervene when giving promotions, by*

*changing mark sheets...by manipulating those interview marks, they (politicians) get their friends, relatives the promotions they need. And we've heard, people suitable for the promotions have been deprived of the promotion, instead they had been given to the minister's allies...".*

According to interviewees, the politicians have intervened personally in getting their allies' their promotions, by either giving a telephone call to the political appointees their regime appointed or issuing a letter to the superior under which their ally provide service.

Further, Mr. Leo emphasized, that there is no succession plan properly prepared for the state banks, especially in the case of ABC bank. He stated,

*"Our bank makes a (succession) plan, but it is prepared without care. Our bank only prepares it because it is a mandatory document which should be submitted to CBSL. Succession to a certain extent dependent on the political intervention and other circumstantial factors ...".*

Thus, it's concludable that at ABC state bank, to a certain extent, political interference is a deciding factor which could affect an employee's career path.

Mr. Oliver also claims,

*"They (politicians) intervene to the exam procedure (which were conducted for deciding the appropriate employees for the promotion). They pressure management to give this employee his/her promotion".*

The findings revealed that two interviewees, Mr. John and Ms. Alice had been deprived of their rightful promotions due to politicians directly intervening in the promotion granting procedure of the ABC bank, especially for the purpose of ensuring their relative or the ally get the opportunity in obtaining the promotion.

This further confirms the BOD or the political appointees' involvement in manipulating the bank's functions to get the politician's requests done, especially of the politicians who have influence over the political appointees.

Ms. Alice has also encountered an incident involving deprivation of her promotion by a politician's intervention. She elaborated,

*"Recently, a lady...she is four grades lower than me, came. A prominent politician has sent a letter saying to appoint this lady as*

*the AGM...But anyway, that letter didn't work. The management refused to execute it. Then she didn't stop there. She has brought a letter from a secretary to the president. But at last, it didn't happen...".*

This provides another prime example of politicians and the officials working under the politicians in power intervening in the promotion procedure. However, in this context, the politician had failed to influence the management to execute his/her request or order. The failure of the politician to influence the management can be assumed to be caused by the factors, such as, (1) the management being a non-ally of that specific politician or (2) management having no incentive to get the request done as this request doesn't take a transactional nature (i.e., the management do not receive any favour in return for getting the politician's request done) or (3) the management member who received the letter value his/her autonomy over selecting the suitable employee for the position or (4) the knowledge of the other management on receiving such letter by this particular management member might have also that particular management member to reject the politician's request, even if adherence to the politician's request might bear him/her future benefits, as if the letter was executed, he/she might receive negative criticisms for being a political puppet, etc. Thus, this once again confirms, to influence the management using political power certain conditions should be fulfilled which doesn't captured under the scope of this study and thereby, this will be an area for which further research is needed in the context of state banks.

Ms. Alice further justified the ground which might have led the management to take the decision to reject such external political influence, which might be otherwise accepted in the normal context of a state bank, as follows.

*"XXX division mostly consist of professionals. We are a profession who stand against the unfairness. Our seniors seem to be people who stand by such values...".*

Thus, this showcase, as Ms Alice perceives, the profession might also impact how the management react and respond to political interventions.

Additionally, Mr. Leo and Mr. William hold a different point of view contrasting the incident Ms. Alice experienced regarding issuance of a letter requesting to appoint a certain person or his ally to a designation. Mr. Leo states,

*"Most of the time, they (politicians) use telephone calls, because if*

*they use a letter, they have to mention their name. So, they don't do it frequently".*

Thus, due to issuance of letter creates trace/evidence on his/her intervention which could be used by the opposition of the politician to harm his/her reputation, these interviewees had argued that most of the time, the politicians use telephone calls as it leaves no evidence.

Mr. William further added,

*"...if the politician has a political ally or his relative who requested his support in getting the promotion, the politician will not directly get involved. If he/she has a close connection to the Chairman or a BOD member, he/she will contact that person...and tell, there is a person of mine...look into it..."*

This depicts the involvement of management in leading the request made by the politician, and thereby, manipulating promotion lists to favour the political ally or relative.

Further, interviewees also argued, lack of transparency in the procedure and non-operation of information act had encouraged politicians to intervene in promotions without fearing being exposed by their opposition and being involved in a scandal which garner them negative public eye.

Furthermore, findings of the study revealed on the use of non-sanctioned political tactics (i.e., turning colleagues against each other (Vigoda-Gadot, 2002; Zanzi & O'Neill, 2001)) as a consequences of such promotions being granted on political interventions, thus, resulting noncompetent officers to hold critical positions at ABC. Ms. Eva who had worked in the XXX division, thereby, shared her experience on her superior's behaviour to cover up her incapability to hold the position which she said to have been obtained through political support. According to her, her superior had been creating hostility between her and her colleague who are competing for the same promotion, to get her job done by creating a competitive environment.

The political intervention into promotion procedures of the ABC state bank's employees will be an addition to the literature.

## CONCLUSION

### Conclusion of the Study

Addressing the research questions of the study, which involved identification of events unfold within the ABC bank triggered by the politicians' direct intervention, and exploration of how they unfold, the following were discovered. The interviewees described, 'political appointment' of the ABC bank's top-level management, immediately after a change in the ruling regime of the state, as a major event whereby national politics and politicians intervened into the state bank. It was found that most of these appointees have connections to the ruling parties' leaders and the ruling party leaders appoint their allies who they perceive as loyal and obedient to them. It was further revealed that some of the appointees who were appointed didn't even possess the minimum qualifications to hold the position and such appointees had instigated political harassment against the employees who were loyalists of the opposition political party, while serving their party's loyalists. Further, the interviewees claimed, these political appointees have been used by the politicians to get things done within the state bank. Additionally, these findings affirmed the important role played by state bureaucrats (i.e., appointees) in nurturing the political patronage networks deeply rooted in Sri Lankan society, by allowing the politicians to access the state bank and its resources for executing their political agendas, as explored by De Alwis (2009) and Jayasundara-smits (2013).

Political recruitments to the ABC bank were also found to be another incident whereby the politicians intervened into the bank. It was revealed that, most of the times, when a vacancy is advertised for entry level posts, a political recruitment list has been sent by the Ministry of Finance through Ministry's secretary. In the context of ABC bank, the interviewees claimed, most of such political recruitments were done at the clerical level, and most of such recruits didn't possess the competencies needed. These affirm the continuation of the patterns explored by Jayasundara-Smits (2013) on state sector political recruitments. Some of the interviewees further claimed that most of such recruitments have continued to rely on their political connections throughout their service period within the bank (e.g., in getting a transfer, promotion, they get the involvement of the politician).

The politicians' intervention into the credit granting procedure of the ABC bank was also identified as another area where politically empowered events occur. Accordingly, interviewees claimed politicians intervene in requesting the bank to proceed with the loan requests of their friends, relatives and

partisans who seek their help in getting their unqualified loan approved against the procedures and policies of the ABC bank or in getting it proceeded quickly. The interviewees also claimed that rescheduling of repayments of loans are intervened, where most of such rescheduled loans end up as bad loans.

Another event which was identified is the intervention into bank's 'transfer' procedure. Accordingly, the interviewees claimed, if an employee is able to get a powerful politician involved, they could get their preferred transfer done as quickly as possible.

The politicians' intervention in the promotion procedure was also discovered through the study. Thereby, some of the interviewees claimed that they were deprived of their rightful promotion due to politicians getting involved in the promotion procedure to get their partisan's, relative's promotion done. Further, it was also revealed how workplace politics have intensified by such politically promoted, non-competent employees' behaviour in ensuring their survival in the position.

### **Managerial Implications of the Study**

Accordingly, findings of the study revealed that, there is a significant level of interventions of political forces, in terms of, politicians' direct interventions into the bank. The findings revealed evidence on most functions of the bank being subjected to the influence of politicians who are affiliated to major political parties of the country. Thereby, the human resource functions (promotions, transfers, appointments, and recruitments), lending functions, and the overall management of the ABC bank have been intervened by politically empowered forces, in manipulating these functions related decision to derive their self-serving interests. And most of such interventions seem to have significant negative impact on the bank's goodwill and on the bank's operational risks. And if these claims of the interviewees could be proved with credible evidence, it may even impact the stability of the bank and the banking system of Sri Lanka, as this being a prominent state bank which manages a significant portion of funds of the financial system of Sri Lanka. Thus, it can be argued that, these findings of the study demand immediate, progressing actions, policy formulations, and legal frameworks from the management of the ABC bank and the policy makers, including the politicians who holds power over the state banking system. So that, such measures will restrict such affective political forces' functioning and thereby, minimizing the occurrence of politically empowered events.

## Limitations of the Study

The main limitation of this study was imposed by the COVID 19 pandemic situation, thus, restricting close contact with the interviewees in collecting data. Further, the lower percentage of females in the sample selected for the study, is another major limitation. This was caused by female employees' refusal to participate in the interviews. Additionally, it should be noted that this study's scope is limited to the head office of the ABC bank, owing to the time constraint. Further, it's noteworthy that these findings are context specific to the selected ABC bank.

## Areas for Future Research

Future studies could conduct a comparative study selecting two or more state banks, in analysing the contextual differences of the findings among the selected state banks of Sri Lanka and find reasons for the differences.

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# Logistic Service Quality and its Impact on Customer Satisfaction in Omnichannel Purchasing: Empirical Evidence from Sri Lanka

R. A. D. R. P. Ranasinghe.<sup>1\*</sup>, K. D. S. L. Karunathilake<sup>2</sup>, Y.U. Manimelwadu<sup>3</sup>, Devindi D. H<sup>4</sup>, M.Weligodapola<sup>5</sup>

<sup>1\*</sup> ranrividi2012@gmail.com

<sup>2</sup> savithri.kdk@gmail.com

<sup>3</sup> yameesha.udari97@gmail.com

<sup>4</sup> devindimaneesha@gmail.com

<sup>5</sup> mano.w@slit.lk

## ABSTRACT

*With the rapid spread of COVID-19, consumers around the world experienced a significant adjustment in their purchasing behavior which eventually made the retailers adapt their old business performances to the new retailing era. Online sales generated from active customers augmented because of the limitations enacted by the Sri Lankan government to contain the outbreak, which presented a challenge for retailers to enhance customer satisfaction through logistic services. And omnichannel retailing being a new trend within the business world, where customers can achieve the market through multiple touchpoints makes it easier and time-saving for customers. This study's major objective is to generate a modern-day interference that emphasizes customer satisfaction in two key omnichannel purchasing scenarios which are Buy in Store Ship Direct (BSSD) and Buy Online Pick in Store (BOPS). To identify this, the proprietary data collection is done with the help of the customers through a questionnaire thereby the research will be conducted in quantitative approach. Likert five scale measurement is used to recognize the buying behavior of customers impacted by factors of Logistic Service Quality (LSQ) in Omni-channel retailing. The questionnaire comprising of customer experiences as to timeliness, condition, availability, information quality, and order accuracy which are utilized to assess LSQ, was distributed among the Sri Lankan customers, thereby picking customers who engage in omnichannel retailing purchasing scenarios. The questionnaire was distributed to three hundred and eighty-four omnichannel customers in the Western province of Sri Lanka, which is the sample of the study. Validity and the reliability of the questionnaire were tested, and the collected data were statistically assessed by correlation and regression models to give a momentous conclusion. Moreover, demographic factors such as gender, age, and education level were collected through the questionnaire.*

*The study exemplifies the drivers manipulating the decision-making of how customer satisfaction varies in Omni-channel retailing because of LSQ.*

**Keywords—** Omni-channel retailing, Customer satisfaction, Logistic Service Quality

## INTRODUCTION

The study offers the findings of quantitative research on the subject of logistic service quality and its impact on customer satisfaction in omni-channel purchasing. With the development of technology, customers began transferring from conventional retail to new techniques of shopping. Customers started to move from traditional retailing to new ways of shopping.

Multichannel retailing was introduced which enabled the customers to shop from a physical store as well as an online store. But physical and online stores were not interconnected. (Piotrowicz and Cuthbertson, 2022). Therefore, customers didn't have the capacity to move flawlessly among the channels, which raised as the main disadvantage of multichannel retailing. Captivating this into debate Omni-channel retailing was proposed. Analogous to Piotrowicz and Cuthbertson's (2014) innovation of multichannel is acknowledged as Omni-channel retailing. A substantial assistance in shifting from traditional retailing to a currently emerging market named omni channel retailing was given by the vast development in technology (Piotrowicz and Cuthbertson, 2022). BOPS and BSSD are two scenarios in Omni-channel retailing (Murfield et al., 2017). As this saves time and energy in today's busy world many customers are moving towards Omni-channel retailing. The inadequate utility of LSQ can trigger an effect on Omni-channel retailers as their objective is to fulfill the needs of their customer base, hence, to make profits retailers should focus on improving LSQ factors. In view of past literature, research done to assess customer satisfaction in B2B can be seen, whereas there is a smaller amount of research done on customer satisfaction in B2C industries. Furthermore, Cotarelo et al. (2021) express that Omni-channel retailing is still in the initial phases and that academic research is an emerging type. Moreover, research done for LSQ and customer satisfaction intersecting with Omni-channel retail environment is considerable (Murfield et al., 2017). Because of this reason, it is necessary to fill up this recognized research gap by investigating the LSQ components which are influencing customer satisfaction in Omni-channel retailing. Considering the above inadequacies, the current study addresses the following research questions. (1). What is the impact of factors of Logistic Service Quality on Customer

Satisfaction in BOPS Omni-channel purchasing scenario? (2). What is the impact of factors of Logistic Service Quality on Customer Satisfaction in BSSD Omni-channel purchasing scenario?

### **Omni Channel Retailing**

When looking back at the evolution of retailing and e-commerce there are three milestones that appeared due to vast development in technology and the advancement of the relationship between the retailer and the customer. The first era was up until smartphones became famous among customers. During this time physical stores were exceptionally trendy whereas few retailers had online stores, but they weren't connected to each other. Hence in the second wave customers began inquiring about seamless incorporation via both physical and online stores. Consequently, from around 2015 up until today, it is the third wave where retailers are rapidly moving from multichannel to omnichannel retailing to satisfy their customer base and majority had to remodel their business to suit this new trend (Gerea et al., 2021). A channel where customers can seamlessly move between the online and physical store is known as Omni-channel retailing. Since multi-channel acts as a stand-alone physical store and an online store, the flawless movement across channels has made Omni-channel retailing more desirable to customers. And this is evidently the gap between traditional retailing and omni-channel retailing. The traditional retail store with no various categories of channels to manage consumer behavior remained battling while retailers with Omni-channel competencies were clever to triumph in the market. Furthermore, by Bendoly (2005) it was identified that to upsurge the trustworthiness of the customers, the retailers that practice online and offline platforms must make unquestionable that the incorporation is all-in-one and clear.

During COVID-19, U.S. retailer Target's digital sales encountered an outgrowth in sales of 24.3% and 195% respectively (Cordon, 2022). Moreover, found that Omni-channel consumers are enthusiastic 10-times beyond digital-only consumers and 4-times of physical store customer. These surveys helped other retailers to identify the importance of moving to omni channel retailing. In omni channel retailing there are two main scenarios as Buy Online Pickup in Store (BOPS) and Buy in Store Ship Direct (BSSD) (Bell et al., 2014).

### **BOPS and BSSD**

Both purchasing scenarios have been identified as emerging trends that support omni-channel retailing since it combines online and offline methods for interacting with clients. A smooth shopping experience is provided to

customers via the BOPS model, which allows customers to place their orders online and pick them up in-store (MacCarthy et al., 2019). Despite its popularity, businesses still face several difficulties in fulfilling orders from both walk-in and online customers when using traditional retail storefronts. However, in the BOPS scenario of omni-channel retailing, buyers can choose from a broad selection of products, and the cost of shipping is lower when they use an online channel. Additionally, this promotes channel synergy and increases consumer attention (Lin et al., 2021). This concept lessens the bother of shopping by helping customers pick up their purchases and moving them to the checkout stations. From the authors' vantage point, utilizing an excellent logistic service further promotes the consumer appeal to BOPS.

According to Cotarelo et al. (2021), the "ship-direct" business model also allows for product returns, which can be seen as another facet of LSQ where clients emphasize after-sale services as they are dissatisfied with their purchases. In contrast to the previous study, this study emphasizes the significance of preserving the LSQ components in addition to the BSSD methods and after-sale services in order to increase customer satisfaction and loyalty. When addressing the customer happiness gained through the BSSD model, the relationship between current customer loyalty is taken into consideration heavily. This may be viewed as the key component of customer pleasure that motivates customers to return to the retailer's store.

### **Logistic Service Quality**

A set of execution elements determined or evaluated by the extent to which it will assist to deliver manufactured goods corresponding the customer's requirements is LSQ (Yang et al., 2010). Along with the quick implementation of e-Business solutions to retail shops, the logistics of the retail store have turned out to be a crucial sector in the management of the supply chain that is contributing to the effective movement of commodities, data, information, and finances. Henceforth, logistics services facilitate to evaluate the retailer and customer interactions by manipulating the strengthening of customer loyalty & market segment. Along with these explanations, it is said that LSQ is not only an area for cost improvements but also an area that performs a significant part in customer satisfaction as well. Timeliness, availability, information quality, condition and order accuracy are five qualities recognized to determine the LSQ in an omni channel retailing environment.

### **Timeliness**

The time length needed to set the order up until the customer receives the

acknowledgement of the order received is meant by Timeliness. Furthermore, Mentzer et al. (2001) have explained timeliness as to whether orders are being delivered at the customer site as mentioned by the customer in the course of order placement. From the authors' point of view time needed to move the commodities from one location to another etc. will be factors that are affecting the said time duration. However, Lee et al. (2002) have acknowledged that timeliness is the extent to which the information is presented for a customer to carry out a specific task. Hence, timeliness is an extremely significant factor that affects logistic services, due to this reason following hypotheses were developed,

*Hypothesis 1a: Timeliness has a significant impact on customer satisfaction in the BSSD omni channel purchasing scenario.*

*Hypothesis 1b: Timeliness has a significant impact on customer satisfaction in the BOPS omni channel purchasing scenario.*

### **Availability**

From a consumer perspective, operations that are carried out in-store have a great contribution to the supply chain. Thus, as Garcia-Arca et al. (2020) stated, a wide range of factors for example comfort, assortment, ease of buying and returning, and product choice which generally focus on one factor, which is On Shelf Availability (OSA) has a direct impact for customer satisfaction. If an organization can confirm the OSA within their supply chain, such organizations can be identified as well running businesses that can avoid OOS situations. Therefore, the implementation of efficient stock management and product availability appears to be very important since this is not only related to the organization but also the other industries for instance manufacturing, retailing, wholesaling, and any others that meet in the supply chain. According to Trautrimis et al. (2009) stated, if the product is not available to the customer when they want it, the consumer will take a decision from either shifting to an alternative from the same brand or an entirely different brand, changing to a different store, postponing the purchase, or give up buying the product at all due to the dissatisfaction arising from the product non-availability. Hence, from the authors' point of view, it is crucial to implement a well-developed system to maintain uninterrupted availability of products to the buyers at the right time, in the right quantity at the right place and the following hypotheses were developed,

*Hypothesis 2a: Availability has a significant impact on customer satisfaction in the BSSD omni channel purchasing scenario.*

*Hypothesis 2b: Availability has a significant impact on customer satisfaction in the BOPS omni channel purchasing scenario.*

### **Condition**

One of the key elements that contribute to maintaining both client loyalty and customer pleasure is condition (Murfield et al. 2017). Customers consistently have faith in their merchants when they choose their goods via an online platform in BOPS. The BSSD scenario places this factor lower than the BOPS scenario. Because of the BSSD, the customer will have the opportunity to visit the business before placing their order and will have the specific item(s) delivered to their door. Customers maintain high expectations for the product(s) they order throughout the BOPS purchasing scenario. Customers can now enter the store virtually because of the epidemic, and once they acquire their product(s) in their hands, they should have the same experience as before. The condition of that goods or those products lays the fundamental cornerstone for customer loyalty as it gives the customer a cause to return to the store without experiencing any post-purchase dissonance. Hence to test the degree to which condition affects customer satisfaction in omni-channel purchasing scenarios below hypotheses were developed,

*Hypothesis 3a: Condition has a significant impact on customer satisfaction in the BSSD omni channel purchasing scenario.*

*Hypothesis 3b: Condition has a significant impact on customer satisfaction in the BOPS omni channel purchasing scenario.*

### **Order Accuracy**

Banomyong and Supatn (2011) have stated before that order accuracy ensues when the shipment contains the right product or without any substitute products for the ordered item with the right amount. Among some factors that lead LSQ such as timeliness, order condition, order discrepancy handling, order accuracy is a main factor since buyers like when items which are delivered to them are the same in the quantity and quality that they ordered. And that will lead to the minimize the additional cost occurring due to the replacement and losing the buyers who are frustrated with the wrong item conveyed (Akil and Ungan, 2022). Like Krauth et al. (2005) an executive of United Parcel Service (UPS) a multinational delivery & freight and supply chain management firm in America also has stated that one of the key essentials for UPS logistics is order accuracy.

Therefore, according to past literature, order accuracy can be listed as one of the major factors that decide the buyers' repetitious purchases and the

reduction of cost associated with the replacement of incorrect shipments that are totally not necessary. However, there is a deficient number of research performed on the subject of the order accuracy in Omni-channel retail environment based on the Sri Lankan context. Hence, the current study is carrying out to fill that gap by developing hypotheses 4a and 4b,

*Hypothesis 4a: Order accuracy has a significant impact on customer satisfaction in the BSSD omni channel purchasing scenario.*

*Hypothesis 4b: Order accuracy has a significant impact on customer satisfaction in the BOPS omni channel purchasing scenario.*

### **Information Quality**

Information quality can be mentioned as another factor that could be utilized to gauge the caliber of a logistics service. The consumer should have access to acceptable information under information quality. Utilizing inter-organizational information systems during logistical procedures enables the company to communicate with its clients (Mentzer et al., 1989). As a result, the information being used must be of a high caliber (Rafiq & Jaafar 2007). According to Rao et al. (2011), high quality information should be transmitted from the point of origin to the point of consumption. If the customer is unable to obtain proper information, it causes them to make poor decisions, which results in clientele loss and harms the retailer's reputation (Wang and Hu 2016). The quality of the information should thus be improved, according to store owners. Additionally, it is claimed that the level of symmetry between the two sides of supply and demand for logistical services would be impacted by the quality of the information. Customers decide the quality of the product/s according to the information included by the retailer. The first impression regarding the product/s or service will always create with the information they receive about the product/service. Therefore, the below hypotheses were developed,

*Hypothesis 5a: Information Quality has a significant impact on customer satisfaction in the BSSD omni channel purchasing scenario*

*Hypothesis 5b: Information Quality has a significant impact on customer satisfaction in the BOPS omni channel purchasing scenario.*

### **Customer Satisfaction**

According to DAM and DAM (2021), customer satisfaction is the customer's feeling or viewpoint after consuming the product or service. It can be further explained as when the customer gets the service or the performance that goes

beyond the customer expectations then it will lead to customer satisfaction and if not, it will result in customer dissatisfaction. Therefore, customer satisfaction is one of the most significant factors that organizations should concentrate on as it will lead the organization towards a competitive advantage by satisfying the customers than the competitors or rival businesses.

The main goal of the omni channel retailer is stabilizing a well-structured customer experience in any location, through every channel available at any moment to the customers. In order to achieve good customer satisfaction channel integration can be used as the main strategy by giving the customers a respectable shopping impression. Customer satisfaction is very important for businesses as it plays a major role in organizational growth and survival in the industry. Hence identifying the factors that affect customer satisfaction is critical for each company. Moreover, a very limited number of studies has been conducted regarding customer satisfaction in omni channel retail environment especially in the Sri Lankan context. Therefore, through this study it addresses on bridging the gap identified.

### **Logistics Service Quality Outcome**

According to Leuschner et al. (2013), the evaluation of the overall quality of the service was described as the difference between the customer's anticipations of the overall quality before the transaction and the customer's opinion of a specific post-consumer service quality. Furthermore, as Limbourg et al. (2016) stated, from the perspective of the logistics service providers, the effectiveness of the logistics services is gauged by the capacity to fulfill the client's order, which makes the customer satisfied with the business. Therefore, from the authors' point of view, LSQ may be evaluated by comparing consumer expectations and experiences before and after an order is placed, taking into account the methods of LSQ evaluation that have been developed.

As Burity (2021) stated, external consumers are vital to every business since they give a source of revenue, make recurring purchases, and advocate your items to others. Since it takes time, effort, and money to discover and conduct business with new customers, satisfied consumers are less price sensitive and ready to pay more for the services they receive than either unsatisfied or new customers, which will increase sales and reduce costs, and has been a long-term success route by developing customer loyalty which finally led the organization to profitability. Furthermore, Leuschner et al. (2013) have explained that businesses may leverage customer service in logistics as a

differentiator to stand out in the market.

Similar to Burity (2021), Nugroho et al. (2020) also emphasized that when a company provides high-quality logistics services, it satisfies its consumers by boosting customer retention and the likelihood that the customer will make further purchases in the future. It also encourages customers to suggest the company to their friends and family, which is a sign of referral behavior, as it deters them from promoting pricing given by rival companies. Higher customer retention will also lower the high costs involved with bringing new consumers to the business through promotional efforts such as advertising tactics, promotional campaigns, and so on, thus increasing the firm profit.

Therefore, according to the authors' observations, the performance of the LSQ has a significant influence on the business in order to survive in the industry and achieve organizational success through customer behavior. However, it is undefined what the implications of excellent LSQ can have in the Sri Lankan and Asian context because there have been few studies conducted in the Omni-channel setting from both Sri Lankan and Asian viewpoint.

### **Logistics Service Quality and Customer Satisfaction**

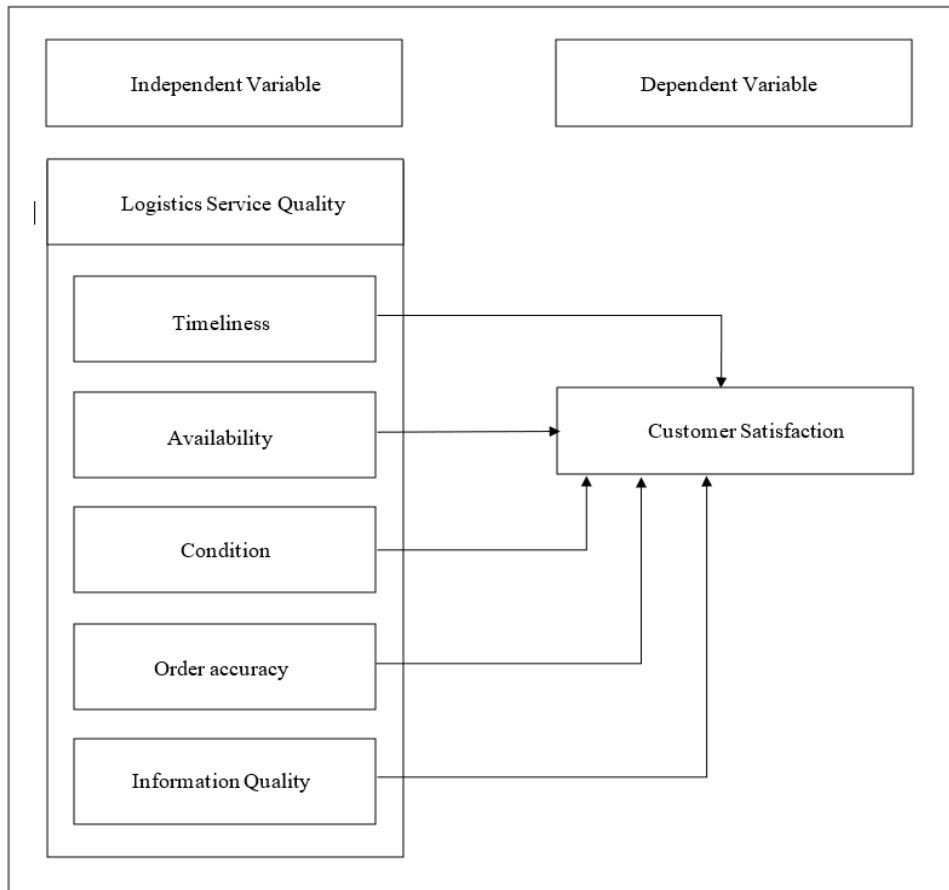
Customer satisfaction ensues as a valuation between the service expected and the organization's experienced service. In short customer satisfaction arises when the service providers make it possible to provide a service that meets or exceeds the customers' expectations (Fernandes et al., 2018).

The disparity between the expected service and the organization's experienced service implies service quality. Therefore, LSQ has been recognized as the service quality upgrading variable in order to quantify customer satisfaction (Nugroho et al., 2020).

There is a significant impact of the quality of the services for logistics operations on customer satisfaction in attracting and retaining customers with the organization (Bouzaabia et al., 2013) while leading to customer loyalty (Burity, 2021) and increasing the competitive advantage in the market (Uvet, 2020). As Hua and Jing (2015) stated, not only in a normal physical retail environment, but also in an online retail environment, LSQ has a significant effect on customer satisfaction. Therefore, LSQ can be taken as one of the key factors which can make a major influence on customer satisfaction looking the views of the existing studies. However, as there is insufficient research done on Omni-channel based on the Sri Lankan context it is unclear whether there is a connection between LSQ and customer satisfaction in

Omni-channel retailing environment. Hence, the current study reports on bridging the gap identified.

**Figure 1: Conceptual Framework**



*Source:* Authors' compilation

The conceptual framework illustrates how the variables are applied to reach the objectives of the study. According to the conceptual framework LSQ is the independent variable of the study while customer satisfaction is the dependent variable. The independent variable comprises of five elements which are timeliness, condition, availability, order accuracy, and information quality.

## RESEARCH METHOD

This study offers the findings of quantitative research on the subject of "How logistic service quality impacts customer satisfaction in omnichannel

purchasing scenario" which targets to decide how customer satisfaction in Omni channel retailing affects LSQ in the Western province of Sri Lanka. A positivism philosophy was chosen as the findings of the research are quantifiable. Moreover, a deductive research approach was implemented to improve hypotheses centered on prevailing philosophies with the intention to assess the hypothesis. The unit of analysis for this study is customers of omni-channel retailing and a survey research design was adopted. A web-based survey was employed to collect the data as the collection was controlled in the course of the COVID-19 outbreak lockdown controls. Hence, the researchers opted a contactless data collection method.

The population concerning to this study comprised of consumers in Western Province who engaged in Omni-channel commerce. Data was collected based on the two scenarios of Omni-Channel retailing. An efficient mechanism was devised to gauge the sample size of an empirical study. According to the Krejci and Morgan table, the sample size can be determined as 384 for the aforementioned population. Following the guidelines, we formed a questionnaire with a five-point Likert scale to observe the relationship that was forecast to be present in the study. By assuring the interviewers' voluntary participation in a confidential outline, the questionnaire was sent to residents of the western province. A sum of 425 survey questionnaires were circulated and 384 survey questionnaires were reverted (response rate of approximately 90.4 percent). computer software tools such as IBM SPSS, Correlation and Multiple regression analysis have been employed to investigate the data. As there was only a quantitative data gathering method and subsequent quantitative analysis techniques were employed to solve the research questions the research choice was the mono method. Additionally, secondary data was gathered utilizing highly regarded journals, books, articles, and newspapers. To guarantee the reliability of the study Cronbach alpha coefficient was used.

## **FINDINGS AND DISCUSSION**

The study focuses on investigating how LSQ impacts customer satisfaction in BOPS and BSSD omnichannel purchasing scenarios. The impact of LSQ is measured by the variables such as timeliness, condition, availability, order accuracy, and information quality. The key findings of the current study are summarized in this section with the aid of sequence of tables.

The research was conducted for a sample size of 384 omnichannel customers in the Western province of Sri Lanka. Out of the total responders, 188 were

obtained as males, and 196 were females. An amount of 206 responders engaged in the BOPS purchasing scenario while 178 responders were in the BSSD purchasing scenario. Most of the customers who have engaged in Omnichannel purchasing were in the age category 26-40 while the least have engaged from the age category above 60. The majority of the responders were Graduates while the least were those who completed secondary education.

### **Reliability and Validity Tests**

The reliability of the questionnaire was confirmed by using Cronbach alpha coefficient. Cronbach alpha coefficient values can vary from 0 to 1. When the Cronbach alpha coefficient is greater than 0.7 it implies that the reliability of the scale is acceptable (Zikmund,2010). The values obtained for Cronbach alpha coefficient in the current study are depicted below.

***Table 1: Reliability of the Variables***

<b>Variable</b>	<b>Cronbach's alpha BSSD</b>	<b>Cronbach's alpha BOPS</b>
<b>Timeliness</b>	0.853	0.816
<b>Availability</b>	0.849	0.756
<b>Condition</b>	0.821	0.701
<b>Order Accuracy</b>	0.803	0.786
<b>Information Quality</b>	0.870	0.786
<b>Customer Satisfaction</b>	0.891	0.801

*Source:* SPSS Output Data (2022)

Appropriately, Cronbach's alpha coefficient values were obtained for the variables in both BOPS and BSSD Omnichannel purchasing scenarios. The results obtained were greater than 0.6, thus the measures of the study are obtained in the acceptable range in accordance with the reliability and consistency of the questionnaire. Moreover, the KMO value obtained was greater than 0.65, implying that all the items of the questionnaire were valid.

## Correlation Analysis

Correlation analysis is used to determine the relationship between timeliness, availability, condition, order accuracy and information quality with customer satisfaction in both BOPS and BSSD omnichannel purchasing scenarios. The results obtained for the study illustrate that all the variables in the BSSD purchasing scenario have significant relationships with customer satisfaction, while in the BOPS scenario all variables except information quality show a significant relationship with customer satisfaction.

**Table 2: Correlation Analysis**

		<b>Customer Satisfaction BSSD</b>	<b>Customer Satisfaction BOPS</b>
<b>Timeliness</b>	Pearson	.753**	.583**
	Correlation		
	Sig. (2-tailed)	.000	.000
<b>Availability</b>	N	178	206
	Pearson	.766**	.585**
	Correlation		
<b>Condition</b>	Sig. (2-tailed)	.000	.000
	N	178	206
	Pearson	.727**	.567**
<b>Order Accuracy</b>	Correlation		
	Sig. (2-tailed)	.000	.000
	N	178	206
<b>Information Quality</b>	Pearson	.712**	-.029
	Correlation		
	Sig. (2-tailed)	.000	.680
	N	178	206

*Source:* SPSS Output Data (2022)

The summary of the correlation analysis shows the relationship between the independent and dependent variables at 95% confidence level. According to the results obtained there is a positive relationship between the factors of LSQ which are timeliness ( $r=0.753$ ), condition ( $r=0.727$ ), availability ( $r=0.766$ ), order accuracy ( $r=0.642$ ) and information quality ( $r=0.712$ ) with customer satisfaction in the BSSD purchasing scenario. Additionally, all the relationships observed in the BSSD purchasing scenario are statistically significant at 0.05 level. Similarly in the BOPS omnichannel purchasing scenario the relationship of customer satisfaction with the factors of LSQ

except information quality is positive. The relationship of information quality ( $r = -0.029$ ) with customer satisfaction in the BOPS purchasing scenario is negative, while it is statistically not significant at 0.05 significance level ( $p = 0.680, > 0.05$ ). The positive relationship indicates that both variables are moving in the same direction and the negative relationship indicates variables are moving in opposite directions.

## Regression Analysis

Further a regression analysis was carried out to evaluate the relationship and the impact of LSQ on customer satisfaction in BSSD and BOPS omnichannel purchasing scenarios where this was accomplished by performing multiple linear regression analysis. Before carrying out this model of regression, first the assumptions of linearity, homoscedasticity, normality, and autocorrelation were confirmed. Subsequently, the multiple linear regression model was tested on the variables to find out the strength, direction, and impact of the variables in both scenarios. The results obtained in regression analysis can be summarized as below.

**Table 3: Model Summary**

		BSSD	BOPS
<b>R</b>		.813 <sup>a</sup>	.752 <sup>b</sup>
<b>R Square</b>		.661	.565
<b>Adjusted R Square</b>		.651	.555
<b>Std. Error of the Estimate</b>		.408	.472
<b>Change Statistics</b>	R Square Change	.661	.565
	F Change	67.096	52.048
	df1	5	5
	df2	172	200
	Sig. F Change	.000	.000
a. Predictors: (Constant), Information Quality, Order Accuracy, Condition, Timeliness, Availability			
b. Dependent Variable: Customer Satisfaction			

Source: SPSS Output Data (2022)

As depicted above, regression analysis was performed with timeliness, availability, condition, order accuracy and information quality against

customer satisfaction for both omni channel scenarios. For the BSSD purchasing scenario, the adjusted R square value of 0.651 illustrates that 65.1% variance in customer satisfaction in the BSSD omni channel purchasing scenario can be predicted from the variables timeliness, availability, condition, order accuracy, and information quality. Likewise, 75.2% variance of customer satisfaction in the BOPS purchasing scenario can be predicted from the variables of LSQ.

**Table 4: Regression coefficient-BSSD**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
<b>1 (Constant)</b>	.524	.204		2.568	.011
<b>Timeliness</b>	.265	.096	.250	2.751	.007
<b>Availability</b>	.347	.093	.327	3.730	.000
<b>Condition</b>	.064	.098	.064	.655	.513
<b>Order Accuracy</b>	.024	.071	.026	.341	.734
<b>Information Quality</b>	.210	.071	.223	2.969	.003

*Source:* SPSS Output Data (2022)

Individual predictors of the regression model can be achieved through the Beta coefficient values of the study. The coefficient value for timeliness in the BSSD purchasing scenario is obtained as 0.265 and it is considered statistically significant at 0.05 significance level ( $P=0.011, <0.05$ ). Furthermore, the value can be illustrated as, when all other factors are kept constant, one unit increase of timeliness has the ability of overall increase in customer satisfaction in the BSSD purchasing scenario by 0.265. Likewise, it accounts the same for availability and information quality with regression coefficient values of 0.347 and 0.210 respectively where the values are statistically significant at 95% confidence level. Hence, there is a positive impact which is significant from timeliness, availability, and information quality towards customer satisfaction. When considering the Beta coefficient values for condition and order accuracy, they are considered statistically not significant as the P values are greater than 0.05. Thereby the study shows that

the impact of order accuracy and condition is considered insignificant to customer satisfaction in the BSSD omni channel purchasing scenario.

**Table 5: Regression Coefficient-BOPS**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
<b>1 (Constant)</b>	.862	.300		2.869	.005
<b>Timeliness</b>	.263	.068	.234	3.864	.000
<b>Availability</b>	.146	.064	.149	2.278	.024
<b>Condition</b>	.071	.067	.071	1.057	.292
<b>Order Accuracy</b>	.409	.064	.432	6.409	.000
<b>Information Quality</b>	- .089	.050	-.083	- 1.776	.077

*Source:* SPSS Output Data (2022)

In the BOPS omni channel purchasing scenario, the Beta coefficients obtained for timeliness, availability and order accuracy are considered statistically significant as the P value is equal to or greater than 0.05. When considering the coefficient value of timeliness which is 0.263, it implies that when all other factors are kept constant, one unit increase in timeliness has the ability of overall increase in customer satisfaction in the BOPS purchasing scenario by 0.263. And for availability and order accuracy the result can be implied likewise with their relevant coefficient values. Hence, the impact on customer satisfaction by the variables timeliness, availability, and order accuracy can be illustrated as positive in the BOPS omni channel purchasing scenario. When considering the coefficient values of the variables' condition and information quality, they are considered not statistically significant due to its P value obtained ( $p > 0.05$ ). Therefore, the study affirms that there is no significant impact from the condition and information quality on customer satisfaction in the BOPS omni channel purchasing scenario.

## DISCUSSION

The study's key focus is to identify the impact of LSQ on customer satisfaction omni channel purchasing scenarios in the Sri Lankan context. LSQ is measured in terms of timeliness, availability, condition, order accuracy, and information quality. The findings of the current study imply that timeliness and availability impact on customer satisfaction in both the discussed scenarios. Furthermore, the variable information quality impacts customer satisfaction in BSSD purchasing scenario, while in BOPS purchasing scenario it is order accuracy. The outcomes obtained from the study argue and agree with the findings of the extant literature. According to Murfield et al. (2017), in BOPS purchasing scenario only timeliness and condition show a strong positive relationship with customer satisfaction, while in this study researchers have identified through correlation analysis that availability, condition, timeliness, and order accuracy show strong positive relationships with customer satisfaction. And customer satisfaction is positively influenced by the variables of timeliness, availability and order accuracy. According to the results obtained from correlation analysis, in BSSD purchasing scenario, all the factors of Logistic service Quality show a strong positive relationship with customer satisfaction. However, according to Murfield et al. (2017), only timeliness has a strong positive relationship with customer satisfaction, while in this study the researchers have identified timeliness, availability, condition, Information Quality, and order accuracy show a strong positive relationship with customer satisfaction. Moreover, Murfield et al. (2017) state that availability has no significant impact on customer satisfaction in BSSD purchasing scenario, whereas in the Sri Lankan context, availability impacts customer satisfaction in both BOPS and BSSD purchasing scenarios. As Cotarelo et al. (2021) state timeliness is the most significant factor in omnichannel retailing. The researchers agree with the statement as the study indicates that timeliness has a significant impact on customer satisfaction in both purchasing scenarios. Furthermore, the dependent variable is positively impacted by timeliness, availability, and information quality in this scenario. Thereby the present study bridges the gap identified between LSQ on customer satisfaction and furthermore, the study has given novel outcomes in relation to the association of order accuracy and information quality with customer satisfaction in omni channel purchasing scenarios, as they have not been addressed so far in the literature. Moreover, the study contributes to fulfill the gap identified due to lesser studies done in the specific subject area, especially in the Asian context in relation to LSQ and customer satisfaction in omnichannel retailing (Peiris et

al., 2021). Therefore, according to the findings achieved in the current study omni channel retailers should focus more on improving the desired qualities as output by the study in accordance with the purchasing scenario they work with. Furthermore, the study shows that it increases and retain customers more in such practices.

## CONCLUSION

The objective of this research is to measure the impact of the factors of the LSQ which are timeliness, availability, condition, information quality and order accuracy on customer satisfaction in both BOPS and BSSD omni channel purchasing scenarios. For that in this study we have tested both the relationship and the impact of the factors that affect the LSQ.

As the results of the study, it is significant that there is a positive relationship between timeliness, availability, condition, information quality, and order accuracy which are LSQ factors with customer satisfaction in both BOPS and BSSD omni channel purchasing scenarios. Therefore, from the author's point of view it is crucial for all omni channel retailers to take necessary steps to improve and initiate those factors within their organization to increase customer satisfaction which will cause in increase the profitability and survival in the market through attracting and retaining customers.

Despite the fact that the authors of this study had to confront hindrances while performing the study they have identified that even though there are numerous studies conducted on omni channel retail environment from business to business, there are very limited number of studies that has conducted the same from customers perspective especially in Sri Lankan context. Furthermore, the target population is also limited only to the Western province of Sri Lanka which is another limitation of this study. In addition to that due to the Covid 19 pandemic researchers could not go for interviews to collect data instead they used an online questionnaire that contains a five-point Likert scale which may result in low accuracy and difficulty in getting responses from the customers. Moreover, in this study authors have only considered two omni channel purchasing scenarios out of many other scenarios. Furthermore, the authors used only five dimensions to evaluate the independent variable which is LSQ that resulted in another limitation of the research.

In the future it is important to conduct a study that covers all the provinces within the country to take the most accurate results from the greatest

distribution of data. In addition to the researcher should follow a mixed methodology to increase the reliability and accuracy of the research. Furthermore, researchers can conduct a study to investigate whether there are more variables that affect the LSQ on customer satisfaction in order to fill one of the limitations of this study. Likewise future researchers also can conduct a study on the impact of LSQ factors on customer satisfaction in other omni channel purchasing scenario which has become another imitation of this study.

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# **Factors Affecting the Adoption of Industry 4.0 in Companies with Supply Chain Management in Sri Lanka**

L.K. Doluweera

*The American College of Higher Education, Sri Lanka,  
The International Center of Broward College, Florida,  
USA*

*doluweera.lalkumarasiri@gmail.com*

## **ABSTRACT**

*In the midst of globalization challenges, embedding best-of-breed technologies such as industry 4.0 in supply chains- supply chain 4.0, results in intelligent digital enterprises with flowless sustainable supply chains with enhanced productivity. Companies have innovatively invested extensively in exceptional disruptive technologies- Internet of Things, Cyber Physical Space, Human Robot Collaboration, and Augmented Reality, etc. resulting network-linked intelligent systems, self-regulating production: people, machines, equipment, and products will communicate with one another, enabling knowledge-based decision making and unique customer value creation through personalized products.*

*Global research in this direction and the efforts in defining standardized industry 4.0 readiness and the maturity models are in their embryonic and sporadic. Even though some countries have embraced more advanced Industry 5.0 -digital twins -deep synchronization and dynamic interactions of the physical and virtual worlds and Collaborative Robots- Cobots resulting more efficient supply chain planning, the factors affecting the degree of adoption of Industry 4.0 in Sri Lankan companies is an unknown research territory.*

*Hence the main objective of this research is to empirically investigate the degree of adoption of Industry 4.0, and to discover managerial and organizational factors affecting the adoption of Industry 4.0 by utilizing the Technology Acceptance Model and the Unified Theory of Acceptance and Use of Technology as the theoretical lenses. In this regard, the present researcher conducted an empirical survey - a purposive sample of logisticians, followed by a questionnaire and statistical analysis and*

*triangulated with in-depth face to face interview findings.*

*Surprisingly, findings revealed that Adoption of Industry 4.0 is still in its infancy in Sri Lankan companies, due to unawareness of the perceived usefulness, clueless implementation guidance, and realizing IT productivity paradox and status quo. Moreover, the Attitudes (ATT) and Personal Innovativeness (PI) of logisticians prominently affect the Behavioral Intention to Adopt Industry 4.0 and in turn Behavioral Intention has a positive influence on actual utilization of (IN) Industry 4.0. Industry 4.0 related Information Communication Technology (ICT) directly influences the actual use of Industry 4.0. Finally, Companies practicing the Learning Organizations concept better implement Industry 4.0 through Meta Noia-fundamental - sift of mind encouraging shared vision, creative thinking, and lifelong learning. Keywords: Adoption, Industry 4.0, Supply Chain 4.0, Learning Organizations, Sri Lanka,*

## **INTRODUCTION**

### **The Emergence of Industry 4.0 Smart Manufacturing**

Hofmann and Rüsch (2017) state that Industry 4.0, is currently a much-debated topic that supposedly has the potential to affect entire industries by transforming the way goods are designed, manufactured, delivered, and paid; and further referred to as the “Fourth Industrial Revolution”, and is also known as “integrated industry”, “industrial internet” or, “smart manufacturing”. Xuan Truong NGUYEN, Quang Khai LUU (2019) mention that the rigorous development and innovation of technology of the 4th Industrial Revolution- industry 4.0, which refers to the link between independent and autonomous devices, capable of communicating in real-time and possibly the ability to collaborate in a smart environment with other smart devices, thereby making decisions and implementing actions based on the timely accurate information gathered, has profoundly changed the industry, as well as the global economy, in the past few years. Naseem, M.H.; Yang, J. (2021) state that the vision of the future production system which focuses on enabling automation and integrating all systems of manufacturing industries to achieve sustainability is properly described by Industry 4.0.

The main objective of Industry 4.0 is the integration of innovative information and communication technologies through fostering the intelligent networking of products and processes along the value chain, making the organizational processes more efficient and leading to the

production of goods and services that improve customer benefit through enhanced customization by offering them novel, individualized products and services, ensuring the development of the industrial sector ( Barreto L. A. Amarala, T. Pereira, 2017). Aisulu Moldabekova et.al. (2021) have shown that in the 21st century, globalization and advanced information technologies fueled by some exceptional and disruptive technological achievements such as blockchain, Internet of Things (IOT), and Augmented Reality etc. create both reality and opportunities for enterprises during the last decade, by digitization of manufacturing processes in terms of Industry 4.0 ensuring a superior value creation in the midst of increasing global competition and faster changing customer needs. Moreover, Wang, S., Wan, J., Li, D., & Zhang, C. (2016) state that Industry 4.0 can be classified based on the principles of integration into vertical, horizontal, and end-to-end integration. enabling connectivity between people and people, people and machines, and machines and machines resulting in improved productivity, the efficiency of business operations as well as the quality of human life through nine core elements of Industry 4.0, such as big data and analytics, collaborative robots, machine-to-machine, cybersecurity, virtual reality, cloud computing, CPS, , Internet of Things cybersecurity, and simulation

While the unmanned aerial delivery or drone delivery, ensures last-mile delivery in the supply chain process, Automatic guided vehicles work independently embedded with Artificial Intelligence based decision enhance performance levels, lowering the risk of injury, and improving the safety of a smart factory: so-called digital factory, which is a future-oriented intelligent factory with a completely integrated manufacturing system without human involvement by emerging the concept of a smart factory called a “digital factory” - a future-oriented intelligent factory produce goods without human intervention by integrated manufacturing system which information and data to perform tasks can be shared, interpreted, and processed between each function of production

Naseem, M.H.; Yang, J.(2021) have mentioned that, even though companies can prosper through Industry 4.0, this smart factory concept is not widely accepted by businesses, since companies failed to find the best-integrated system that can provide them with a higher return.

## **Industry 4.0 Embedded Supply Chains- Supply Chain 4.0 for Sustainability**

Abdellah Sassi et al. (2021) depict that, Supply Chain 4.0 is the reform from a linear and static Supply Chain Model of “Supplier, Production, Distribution and Consumer” to a more integrated, dynamic model by the deployment of Industry 4.0 technologies like the RFID -Radio-Frequency identification, IoT- Internet of Things, BDA -Big Data Analytics, CPSs -Cyber Physical Systems, etc. in the traditional Supply Chain, in order to achieve strategic goals, gain competitive advantage, and enhance firms’ performance.

Kumar Mangla (2018 ) has stated that Industry 4.0 based sustainability-oriented supply chain management concept helps industrial managers not only to incorporate environmental protection and control measures but also to amalgamate process safety, and employee and community welfare measures.

When considering Supply Chain Management -SCM, Aabid A Majeed et. al (2017) mention that, while some companies have shut down their businesses due to poor integration of global supply chain management practices, facing massive financial losses, a few industries are taking a quantum leap. Therefore, it is vital for other companies to adapt to the changing nature of the digital supply chains by embracing industry 4.0, leveraging Internet of Things (IoT) which provide solutions through integrated information communication technologies, hardware, and software for end-to-end supply chain information and communications.

### **The impact of Supply Chain 4.0 on productivity**

Sharad Rajbhandari et al. (2022) have stated that Improved productivity is integral to every industrialization. Industry 4.0 can create versatile social and economic advantages through the tremendous potential, the structural changes in organizations and market models and manufacturing technologies by cyber and mobile combinations via cyber-physical system CPS technology creating a vast amount of opportunities through the new manufacturing architecture for optimum efficiency and productivity.

### **Industry 5.0 for mostly demanded personalized products with human craftsmanship**

Banu OZKESER (2018) stated that Industry 5.0, empowers people to realize the basic human urge to have personalized products and services with the human touch through collaboration of man and machine, since the customers always demand products created by unique human craftsmanship, which can

only be made through human engagement. As a result, Industry 5.0 is a digital transformation of the current era in which people crave the personal touch of designers and craftsmen, despite the acceptance of sophisticated automation technological processes

### **Adoption of Industry 4.0 Sri Lanka**

G.D.E. Lakmali et. al. (2020) describe that Industry 4.0 provides real-time visibility for smooth production flow for companies to improve their capabilities. However, Navodika Karunaratna et. al. (2019) argue that although Industry 4.0 concepts have been globally accepted, in Sri Lankan businesses, it is still in its infancy even though the labor-shortage issue would be a potential challenge in the labor-intensive warehousing operations in the near future. Exploring the opportunities of logistics 4.0 implementation in the warehousing industry is highly demanding through logistics 4.0 would be an effective strategy to minimize human intervention in warehousing operations and to enhance the productivity. In discovering the influencing factors of employee readiness to Adopt Advanced Manufacturing Technology (AMT) on Apparel industry in Sri Lanka Susitha S.D.E(2021) proved empirically that five factors- perceived usefulness, attitude, perceived ease of use, perceived management support, and techno-optimism affect the adoption of AMT and stated that further study on smart factories and industry 4.0 is a must as technology compared to other industries

Even though industry 4.0 can be applied in the entire supply chain and different areas in procurement in achieving optimization, by developing model which acts as a roadmap to procurement optimization incorporating industry 4.0 technologies and best practices, Therefore, the present researcher has had an inspirational motivation and a justifiable reason to empirically investigate the factors influencing the adoption of Industry 4.0 in companies with robust integrated logistics management in Sri Lanka.

**Weaker Global acceptance of Industry 4.0 due to its complexity even though, some countries have taken initiatives to adopt even industry 5.0-human collaborative robots (Cobots) :** -Aisulu Moldabekova Et. Al. (2021) have shown that the companies started to invest extensively in innovative data-enabled technologies, since recent years. This trend is also fueled by some exceptional and disruptive technological achievements such as blockchain, Internet of Things (IOT) Augmented Reality etc. for digitization of manufacturing processes in the midst of increasing global competition and faster changing customer needs in order to ensure a superior value creation

However, according to Surajit Bag and Arnesh Telukdarie (2018), even

though, Industry 4.0 ensures the ability to build dynamic capabilities in an organization and beat market competition, the utilization of Industry 4.0 tool application is complex and requires additional knowledge and special skill sets, resulting the reduction of the enthusiasm of companies to adopt Industry 4.0. furthermore, when considering the supply chains, Frederico, G.F, et. al. (2019), stated that clear understanding of the evolution of Supply Chain 4.0 is ever essential, since application of Industry 4.0 in supply chain 4.0 is inherently an evolutionary revolution and the maturity propositions for Industry 4.0 are still embryony and entirely missing in the context of Supply Chain

Moreover, Surajit Bag and Arnesh Telukdarie (2018) have concluded that the gloom of Industry 4.0 is replacing human labors with robots in the shop floor causing huge job losses both at the supplier and customer side. Lack of Industry 4.0 knowledge among suppliers in the network, low morale of employees, lack of funding for technological up-gradation, lack of specialized suppliers suitable for Industry 4.0 projects, and lack of IT security standards and policies prevent the adoption of Industry 4.0 in supply chain networks.

**Sri Lankan logisticians are laid back in adoption of Industry 4.0:** - Navodika Karunaratna et al (2019) stated that since adoption of industry 4.0 in Sri Lankan business context it is still in its infancy in Sri Lanka, Exploring the opportunities of logistics 4.0 implementation in warehousing industry is highly demanding since the digitization would be an effective strategy to minimize human intervention in warehousing operations and to enhance the productivity of the existing labor force. Sachini Chandrasekara et al. (2020) have stated that Industry 4.0 is not very popular in the Sri Lankan manufacturing and service sectors. This is mainly due to the lack of infrastructural facilities and knowledge base. Therefore, industry 4.0 can be applied in the entire supply chain and different areas in procurement in achieving optimization by developing a model which acts as a roadmap to procurement optimization incorporating industry 4.0 technologies

Susitha S.D.E (2021) stated that further study on smart factories and industry 4.0 on the apparel shop floor is a must as the apparel shop floor is very much behind technology compared to other industries. G.D.E. Lakmali, et. al. (2020) has shown that not only Industry 4.0 readiness and maturity models are not only very comprehensive and do not contain a detailed view but also the focus on enterprise-wide dimensions is on top management's level such as Technology, Corporate Culture, Strategy, Human Resources and Leadership. Therefore, industry 4.0 assessment models provide no solutions

for manufacturing enterprise architecture holistically or the specifics of small and medium enterprises.

Finally, it is justified that while some countries have taken initiatives to adopt even industry 5.0 which enables production of ample personalized individualized products, some countries are in its infancy to adopt industry 4.0 in Sri Lankan companies

### **The Problem Statement**

However, Erik Hofmann et al. (2019), stated that considering the industry 4.0, analysis of the potential overreliance on big data and machine learning insights that could prevent innovation and collaboration efforts in the supply chain are unexplained territories in Supply chain arena yet. Even though companies can prosper through Industry 4.0 finally Naseem, M.H.; Yang, J.(2021) have shown that this smart factory concept is not widely accepted by businesses, because companies failed to identify the best-integrated system that can result in a higher return. Sri Lanka has no exception. Navodika Karunarathna et al(2019) stated that although Industry 4.0 concepts have been widely spread around the world, in Sri Lankan business context it is still in its infancy even though the labor shortage issue would be a potential challenge in the labor intensive warehousing operations in the near future. Exploring the opportunities of logistics 4.0 implementation in Sri Lankan warehousing industry is highly demanding since the digitization would be an effective strategy to minimize human intervention in warehousing operations and to enhance the productivity of the existing labor force.

Therefore, the degree of adoption of Industry 4.0 in Sri Lankan companies is in question since it has rarely been empirically investigated. The factors affecting the adoption of Industrial 4.0 digitalization an unknown research territory in Sri Lanka and should be empirically investigated

### **Main Objective**

To empirically investigate the degree of adoption of Industry 4.0 in Sri Lankan companies which has rarely been empirically investigated, to discover the factors affecting the adoption of Industry 4.0 in Sri Lankan Companies and to inquire whether they are ready or not to embark on to Industry 4.0, since all are rarely investigated unknown research territories.

## **Research Questions**

What is the degree of adoption of Industry 4.0 in Sri Lankan companies with supply chain management?

What are the specific factors affecting the adoption of industry 4.0 in Sri Lankan companies with supply chain management?

## **LITERATURE REVIEW**

### **Proactive industry wide strategy for implementation of Industry 4.0 is a crucial success factor in any businesses**

Surajit Bag and Arnesh Telukdarie (2018) has shown that Industry 4.0 is well adopted by firms such as Volkswagen, Daimler and BMW. Recently, introduction of the “Made in China 2025” by the Chinese Government which concentrated on improving manufacturing expedited the digitalization in China and the industry 4.0 initiatives have also been undertaken by the US, French, UK, Japanese and Singaporean Government as well. Borowski, P.F.(2021) has shown the use of Industry 4.0 solutions will improve operational efficiency, change the organization of work, and enable the implementation of new operating standards and mechanisms for proper monitoring of the environment and quickly reacting to changes that occur, through accelerated decision making and analytical and reporting processes. However, Erik Hofmann (2019) has stated that the industry 4.0 will change how supply chains are designed and operated, yet research on impacts of Industry 4.0 on supply chain management (SCM) is still scarce.

Digital transformation is rather an imperative for the manufacturers in today’s dynamic business environment for the survival through gaining enhanced productivity. operational optimization and value chain optimization through integration of core technologies. Therefore, successful accomplishment of smart factory tasks requires right selection of Industry 4.0 tools and proper application in the business environment.

Finally, Naseem, M.H.; Yang, J.(2021) have shown that through many different disruptive technologies, Industry 4.0 has a significant impact on the sustainability of the supply chain network and logistics in businesses. Industry 4.0 or the smart factory or the digital factory which is a future-oriented intelligent factory embedded with a fully integrated manufacturing system without human intervention can produce goods through shared information and data interpreted, and processed between each function of

production. However, this smart factory concept is not widely accepted by businesses, because companies failed to find the best-integrated system that can provide them with a higher return.

**Current status of Industry 4.0 in Sri Lankan Warehousing:-**Navodika Karunarathna, et al. (2019) stated that Horenberg (2017) has shown autonomous vehicles and robots based Warehousing and Distribution operations, Transportation efficiencies, truck platooning and drones, Freight brokerage trends enabled by electronic marketplace platforms, Near shoring, 3D Printing applications and safe and trustful sharing of information throughout all processes due to Blockchain technologies make logistics 4.0 applications more effective.

### **Core Technologies in Industry 4.0**

Since the adoption of Industry 4.0 is a major strategic decision and before taking such an important decision organization has to assess the readiness for implementing Industry 4.0 (Schumacher et al., 2016). One of the key objectives of Industry 4.0 is to combine two principles that are opposites, production line manufacturing and custom manufacturing in a smart environment referred to as smart factory. Jayatilake H.S.B and Withanaarachchi (2016) have shown “smart factory” generates Industry 4.0 idea in which the Internet of Things (IoT) plays a prominent role. Interactions between objects by transforming physical systems into cyber-physical systems (CPS) generating “Process Knowledge Automation” which solves the problem of work processes that do not have the technical capabilities to communicate.

In assessing the applicability of industrial 4.0 in Sri Lankan Apparel industry G.D.E. Lakmali, et al. (2020) have shown a vast spectrum of possible applications in Apparel Industry

**Additive Miniaturizing:-** 3D visualization has changed the way of product designing and production, resulting in more and more virtual design and fitting processes. 3D printing belongs to the additive manufacturing processes by the creation of by sequential layering of the object

**Artificial Intelligence:-** Reza Toorajipour (2021) has shown Ai applications - an AI forecasting mechanism modelled using ANNs(Artificial Neural Networks), adaptive network based fuzzy inference system techniques to manage the fuzzy demand with incomplete information, ABSs-Agent Based Systems and MASs-an approach for product life-cycle management (PLM) with multi-agent systems (MASs)are effectively utilized

in supply chain management.

**Autonomous Robots:** - Autonomous robots can perform tasks and operations with a higher degree of autonomy, with a minimum level of human interaction without or with minimum external environment influence, and ideally for accurate quality control without human subjective touch through collect production-related data regularly.

**Big Data:-** Xu et al. (2018) define Big Data, is an enormous amount of data. Babiceanu and Seker (2016) state that the analysis of big data makes valuable conclusions for line balancing, trend analysis, customer behavior analysis, planning, forecasting and Predictive maintenance of machinery failures by converting the data into information, through a variety of data analytics and statistical techniques to uncover hidden patterns and capture relationships among devices. otherwise could not be exposed using fewer data and traditional methods

**Cyber-Physical Systems (CPS)** :- According to Erik Hofmann, Marco Rüsç (2017) Industry 4.0 consists of a holistic connection via the internet and so-called CPS, that bring the physical and the virtual world together. The information related to the physical shop floor and the virtual computational space are highly synchronized through sensors, actuators, and processors through e intelligent electronic systems with internet connectivity in the manufacturing context. They can make self-optimizing decisions by anticipating errors and quality issues occur at the production floor (Gökalp et al., 2018).

**Internet of Things (IoT):-** According to G.D.E. Lakmali et al.(2020), The IoT allows, RFID, sensors, actuators, mobile phones, through unique addressing schemas to interact with each other and cooperate with their neighboring smart components. Jayatilake H.S.B and Withanaarachchi (2016) state that not only IoT enables real-time data analytics to tackle issues like product authentication, brand protection and improving supply chain transparency and efficiency but also IoT enables producers to make their products more personalized, interactive, informative for their customers and suppliers to get the optimal quantities of raw materials at required time (Gökalp et al., 2018).

**Simulation:-** During product design and verification, industrial organizations can employ Simulation to the next stage of their value chain by the study and predict future the behavior of manufacturing processes and systems in order to yield enormous benefits; identification of manufacturing bottlenecks to increase throughput, identification of cost saving opportunities

**Augmented Reality (AR):-** Augmented Reality (AR) is not only a global leading technologies of the 21st century, but also a strong pillar of Industry 4.0 international program. Augmented Reality is a well-blended computer graphic technique in industrial operations research applications. (G.M.; Ceruti, A.; Liverani, A.; Osti, F.,2021)

**Augmented Virtuality (AV), and Virtual Reality (VR):** - Virtual reality is based upon the merging of real objects in a virtual environment through the fully digitalized world, where the observer stands in a completely virtual environment populated by digital objects and scenes. Augmented virtuality defined as the integration of virtual objects in real life thanks to see-through head-mounted devices which allows for the interaction between two worlds combining- real and what is not, by giving a more detailed perception of reality.

#### **Supply Chain 4.0 and the distinctive characteristics**

Industry 4.0 establishes not only the connection between human, machines and object to formed self-actualizing real time system, but also crates cross company value chain which impact on the entire supply chain (Devendra A. Patil, 2020)

**Industry 4.0 components embedded SCM 4.0 characteristics:** Supply Chain 4.0 is a transformational and holistic approach for supply chain management by utilizing Industry 4.0 disruptive technologies to streamline supply chain processes, activities and relationships in order to generate significant strategic benefits for all supply chain stakeholders (Frederico, G.F.et. al. 2019),

**Prominent Characteristics of Supply Chain 4.0:** - 1. Customer-centric: design, produce and sell individualized products via omni-channel approach by means of innovative manufacturing technologies such as additive manufacturing.2. Interconnected: Logistics service providers and customer communicate and collaborate real-time based on shared and standardized data via net worked 3. Automated: increase efficiency achieved based on flexible automation of physical processes through robotics. 4. Transparent: the visibility of diverse aspects of the supply chain through GPS and CPS such as bottlenecks, delays 5. traceability of products - location of materials and proof of provenance 4. Proactive decision through analytics, machine learning and AI.

**Block Chain Technology on Supply chain :-**According to Joon-Seok Kim and Nina Shin (2019), secured by cryptography and governed by the

participants involved in supply chain and real time data that are updated by the system participants, Block Chain is an electronic database system that records and distributes transactional data, resulting information transparency, information immutability, supporting connectivity and reliability, which are critical to Supply Chain collaborations.

**Industry 4.0 based Self-Steering Supply Chains:** - Cost pressurizes Automation in inter-organizational operations embrace the idea of self-steering supply chains because non-standardized processes such as goods handling and delivery are still mainly done manually. These non-standardized processes can be semi-automated by providing employees with supportive technologies or fully automated robotic solutions.

**The global emergence of Industry 5.0 is still in an embryonic.**

Guilherme F. Frederico (2021) has shown that Industry 5.0 is still in an embryonic. As shown by Praveen Kumar Reddy Maddikunta et. al. (2021) since the exact definition of Industry 5.0 has yet to be evolved. Moreover, Industry 5.0. brings the human labor back to the factory, through paired human and machine in order to increase the process efficiency by the usage of the human brainpower and creativity through the integration of workflows by means of intelligent systems based Smart Additive Manufacturing-SAM, additive manufacturing, predictive maintenance and the hyper customization or hyper personalization resulting maximized accuracy and minimized cost through the collaboration between manpower and robots along with cognitive systems.

**The newly emerged Industry 5.0 consists of cloud manufacturing, Edge Computing and Digital Twins**

**Application of Industry 5.0 in Supply Chain Management:** - Praveen Kumar Reddy Maddikunta (2021) have shown in industry 5.0 which consists of the Disruptive technologies like Digital Twins , Cobots, Edge Computing, 5G and beyond, Machine Learning , IoT, etc. amalgamated with the smart innovation of humans enables the industries to meet the demand and deliver the personalized and customized products faster

**Edge Computing (EC) in Industry 5.0:** - The rapid spread of the IoT and the cloud services have introduced a new conceptualization, EC- which enables data processing at the network edge. EC can offer significant value, not only in the future Industry 5.0 but also in the transition to Industry 4.0. EC effectively meets the expectations related to latency costs, battery life constraints, response time requirements, data protection and privacy. EC

minimizes communication overhead and guarantees that applications are productive in remote areas.

Since without passing data to the public cloud, EC is capable of processing data, EC minimizes security issues for the critical events in Industry 5.0. EC can effectively execute some critical operations such as data processing, cache coherency, computing offloading, transferring and delivering requests. Therefore, in all the network operations, the edge must be designed efficiently to ensure security, reliability and privacy. Finally, in Industry 5.0 applications, EC ensures low latency, data security and privacy, and deliver efficient services to the end users

**Digital Twins :- Jose Antonio Marmolejo-Saucedo (2020)** has shown that Digital Twin – DT is a digital replication of a physical system or an object by creating virtual replicas of objects or processes that simulate the behaviour of their real counterparts, in order to analyse its effectiveness or behaviour in certain cases to improve its effectiveness. The digital twin model can reveal information from the past, optimize the present and predict the future performance of the different areas analysed. In supply chains, digital twins change the businesses, providing a range of options to facilitate data-based decision making and collaborative environments making the business processes more robust.

**Cobots -Collaborative Robots: robots synchronized with human brains:-** Cobots can offer significant value in Industry 5.0 by performing with men to achieve their intended goal, thereby helping to deliver mass customized and personalized products to customers with high speed and accuracy. to improve business performance and the potential to reduce rising labor costs in highly competitive markets by relieving the expertise of the humans for more complex jobs in the SCM life cycle. Hence, cobots streamline all the processes in SCM reducing the total cost of ownership.

### **Industry 5.0 embedded supply chains -Supply Chain 5.0**

According to **Soltysik-Piorunkiewicz, A.; Zdonek, I. (2021)**, while Industry 4.0 is more concerned with the application of disruptive technologies, Industry 5.0 is focused on allowing a Society 5.0, with a sustainable human-centered society. Aabid A Majeed M, Thashika D Rupasinghe (2017) have stated that this new trend defends a conciliating perspective of human–robot collaborative work. Parallel to Industry 5.0 concept, an approach proposed by Japan called **Society 5.0** or **Super Smart Society** has emerged .

## **Industry 4.0 Readiness and Maturity Models**

**Industry 4.0 Readiness Models:** - Andreas Schumacher, Selim Erolb , Wilfried Sihn (2016) have attempted to develop a maturity model for assessing the Industry 4.0 maturity of manufacturing enterprises by using a multimethodological approach -a systematic literature review, conceptual modelling and qualitative and quantitative methods for empirical validation. The difference between the term “readiness” and “maturity” is that readiness assessment occurs before engaging in the maturing process whereas maturity assessment aims for capturing the degree of maturing process (Schumacher et al., 2016).

**However, Industry4WRD (2016)** stated that the readiness assessment uses a pre-determined set of indicators to understand their present capabilities and gaps, which will enable firms to prepare feasible strategies and plans to move towards Industry 4.0 such as Global Competitiveness Index -GCI, (Schwab, 2018), OECD scoreboard (OECD, 2017) and Industry 4.0 Readiness Index ,(Berger, 2015) etc.

### **Adoption of Industry 4.0 Many developing countries are in Embryony :-**

Aleksei V. Bogoviz et al (2019) have revealed that Industry 4.0 formation are at the initial state in developed countries, and in developing countries it is in the preparation stage. Therefore, determining the whole specter of specific features that will be peculiar for the process of Industry 4.0 formation in developed and developing countries are restricted by this condition in active practical implementation. Furthermore, Elena G. Popkova et.al.(2018) have shown that potential social risks of development of Industry 4.0 can be minimized despite the high unemployment level justified, since companies will need highly-qualified and innovations-active specialists for servicing automated production systems.

Since Sri Lankan companies have no exemption of such risk, the present researcher has a justifiable reason to assess the degree of adoption of Industry 4.0 in Sri Lankan companies therefore H1 hypothesis is formulated

*H1. The degree of adoption of industry 4.0 in logistics of Sri Lankan logistics companies is low*

*low*

### **Dimension of the degree of adoption of Industry 4.0**

According to the researchers the dimension of Disruptive Technologies are IoT, Cyber-Security, Automation, Big Data Analytics, Cloud Technologies,

RFID, Smart Machines and Artificial Intelligence, Nanotechnology, Omni Channel, Augmented Reality, ERP, Mobile-Apps, 3D-Printing, Business Intelligence, Optimization Systems, Robotics, Digitization, Sensors Technologies, Smart Products. Lastly, dimensions are fitted to the expected outcomes from the Supply Chain 4.0 strategy. They are: Cost Reduction and Profitability, Supplier Focus, Customer Focus and Strategic Impacts

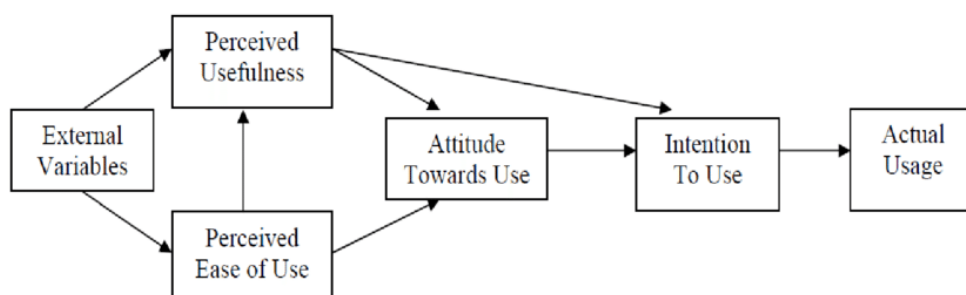
## THEORETICAL FOUNDATION

### The overarching theoretical approach behind the hypothesized model

**Technology Acceptance Model TAM: - Sharad Rajbhandari et. al.(2022)** have shown that Several theories like the theory of technological paradigm, theory of disruptive innovation, diffusion of innovation, and technology framework environment (TOE) clarifies the behavior for technology adaptation which are influenced by several organizational and cultural dimensions

Regina Eka Riantini et al.(2018) stated that Davis (1989) introduced the TAM model by synthesizing Theory Reason Action (TRA) and Theory Plan Behavior (TPB) justifying that Behavior Intention has a positive and significant effect on Actual Use, and Perceived Usefulness has a positive and significant effect on Behavior Intention

**Figure 1**



According to Shumaila Y. Yousafzai et. al. (2007), Davis (1989) conducted numerous experiments to validate TAM and he found that PU was significantly correlated with both self-reported current usage and self-predicted future usage. PEOU was also significantly correlated with current

usage and future usage

**TAM Meta analysis: - Several researchers have examined the validity of TAM for adoption of various ICT applications through meta-analysis**

Shumaila Y. Yousafzai et. al. (2007) have shown that originally developed TAM to test the acceptance of word processor technology (Davis et al., 1989), has since been expanded to the acceptance e-mail, voice mail, graphics

Moreover **Tomaz Cater et. al.(2021)** have utilized the TAM, the unified theory of the acceptance and use of technology UTAUT (Venkatesh et al., 2003) and the resource capability based view, in order to develop a robust theoretical framework in Industry 4.0 technologies usage

**Justification for utilizing the TAM in this present research : - Jesper Ahrén & Emil Winberg (2018)** suggest that since organizations can risk making undue efforts and investments in technologies that will ultimately be negatively perceived by its intended users, organizations should ensure that such technologies are accepted by the intended users

### **Factors affecting the Adoption of Industry 4.0**

**Impact of Learning Organizations on the adoption of Industry 4.0 – employees are individual learning entities- Learning Organizations: -** Ortenblad (2004) examines the characteristics of a bonafide Learning Organizations (LO) and showed that the organizations with an “organizational mind” and a learning climate provide better manage the shock wave effects of continual change and create innovative products. There is a positive relationship between learning organization behaviours and business performance, (David, D. et al.,2008).

Shahbaz Khan et. al., (2022) have state that effective knowledge Transfer through the continuous learning and training environment in the organization is a critical success factor which results in easy knowledge transfer to motivate the organization to adopt logistics 4.0. In this regard, “The Fifth Discipline: The Art and Practice of the Learning Organization” (LO), Senge,1990) can play a crucial role any business organization.

“Meta Noia” – fundamental shift of the mind -in Greek –the fundamental shift or change or more literary transcendence ( “Meta” –above or beyond as in “meta physics”) of mind ( “noia” –from the root “nous” of the mind) , the fifth discipline – the frame work of the concept of LO –a body of knowledge or tools that make the full pattern of the world clearer by concentrating on systems archetypes that enable businesses and employees to cope efficiently with dynamic complexities and changes, personal mastery –an essential

corner stone of LO-lifelong learning of employees clarifying and deepening the personal vision focusing energies and seeing reality objectively, team learning –that starts with dialogue resulting the capacity of the employees of a team to suspend assumption and enter into a genuine synergetic “ thinking together” (in Greek free flowing of meaning through a group) specifically through continuous improvements-discovering and creating new innovations, knowledge and procedures and embedded systems- efforts to establish necessary systems that capture and share learning that are created and integrated with other work and all above through the establishment of **shared vision** which binds employees together around a common identity and a sense of destiny that develop skills to unearth the shared picture of the future, that foster genuine commitment, shall enable to bridge the gap between the current reality of the business and the expected visionary status of the business, (Senge, 1990). Hence, LO is the idea of tomorrow in any organization since it is an effective answer to rapid and violent change faced by the global world.

As shown by Malgorzata Rozkwitalska (2017), Learning and Industry 4.0 in management theory, concerning the organizational perspective on learning theory reflected in, Learning Organization- LO, revealed how challenges imposed by Industry 4.0 may impact on these concepts of learning. The level of education and skills of nations, companies and individuals is a crucial parameter of competition in the global markets and knowledge society that affects the quality of people’s interactions in an organization, which triggers an organizational change.

Finally Malgorzata Rozkwitalska & Jan Slavik (2017) have shown that Learning is a vital component in Industry 4.0.

Therefore, the present researcher triangulates these literature findings with the in-depth structured interviews findings with industry experts of the companies innovatively for the first time and emphatically investigated whether LO has an impact on the adoption of Industry 4.0 in Sri Lankan companies. Hence the hypothesis H2.a and H2.b are postulated

*H2.a there is a correlation between Learning Organizations (LO) and the Behavioral Intention(BI) to the adoption of Industry 4.0*

*H2.b there is a correlation between Learning Organizations (LO) and the adoption of Industry 4.0(Y2)*

**The perceived usefulness:** - Davis (1989) defines perceived usefulness as “The degree to which a person believes that using a specific system would

increase his or her job performance”. (Davis, 1989). Jesper Ahrén & Emil Winberg (2018), showed the perceived usefulness, explains how likely technology will be used by the workers depending on the belief that using the technology will help enhanced job performance

Therefore, the hypothesis H3 is formulated

*H3.a: there is a correlation between the Perceived Usefulness(PU) and the Behavioral Intention of the logisticians to adopt Industry 4.0*

*H3.b: there is a correlation between the Perceived Usefulness (PU) and the adoption of Industry 4.0*

**Perceived Ease of Use :-** Davis (1989) defines Perceived Ease Of Use (PEOU) as “The degree to which a person believes that using a specific system would be free of effort”. . Dyah Sugandini et al.(2018) have proved that Technology adoption of elderly craftsmen in Micro Small Medium Enterprises who are resistant to new technology, is affected by uncertainty, Perceived Ease of Use, and Perceived Usefulness. Moreover, Compatibility and Perceived Ease of Use are affected on perceived of usefulness.

the present researcher investigates whether Perceived Usefulness and Perceived Ease Of Use (PEOU) of logisticians affect the adoption of Industry 4.0 and the Davis (1989) validated questionnaire was utilized with appropriate modification to empirical test

**By considering the above discussion Hypothesis H4 is postulated**

*H4.a there is a correlation between the Perceived Ease Of Use (PEOU) and the behavioral intention (BI) to adoption of Industry 4.0*

*H4.b there is a correlation between the Perceived Ease Of Use (PEOU) and the adoption of Industry 4.0(Y2)*

**The impact of Attitude of logisticians on the adoption on industry 4.0: -** Tomomi Hamada (2019) has shown that firms’ willingness to adapt to Industry 4.0 and revealing decision-makers’ attitudes toward Industry 4.0 adoption, that firms require fostering the positive attitude of decision-makers toward adopting Industry 4.0, because the attitudes enhance decision-makers’ acquisition of knowledge, and reducing lack of resources such as skilled workers. Sayed Abdul Wahab et al. (2020), stated that since Industry 4.0 is a leading-edge technology in all industries, attitudes, subjective norm (SN) have positive effects on intention to adopt Industry 4.0 technologies.

Hence it is justifiable for the present researcher to postulate the hypothesis H5

*H5.a : There is a correlation between the Attitudes of logisticians and the Behavioral Intention(BI) adoption of Industry 4.0*

*H5.b : There is a correlation between the Attitudes of logisticians and the adoption of Industry 4.0(Y2)*

**Impact of Personal Innovativeness on adoption of industry 4.0: -**  
According to Slade

Slade, E. L., Dwivedi, et. al. (2015), innovativeness reflects a person's desire to seek out the new and different. Therefore, the extent to which someone is open to experience, and ready to experiment with new technologies is an expression of their innovativeness and novelty seeking. .

Patil PP et al.(2018) have stated that many studies have argued that consumers' innovativeness may have significant influence on consumer intention towards Digital Payment

Analogically, the present researcher postulates the hypothesis H6.a and H6.b

*H6.a: Personal innovativeness of logisticians have a correlation with behavioral Intention of the logisticians*

*H6.b: Personal innovativeness of logisticians have a correlation with adoption of Industry 4.0*

**Impact of ICT Education of logisticians on adoption of Industry 4.0 :-**

Tan Owee Kowang et al.(2020) have shown that essential Competencies in individual aspect is a set of behavior, abilities, analytical skills, decision making skills information transmission to carry out his or her duties in profession effectively. In addition, personal skills competencies results in a consistent adequate or high level of performance in a specific job function. In relation to organization competencies in learning environment, are exploration of acquired experience, constant learning, skill development ,continuous creation of knowledge, exchange of information and knowledge and rapid learning. In relation to Industry 4.0 lecturing,. Higher Learning Institution are foundation of the development of Industry 4.0 competencies.

On the contrary, Andrew Paul Otieno (2015), in his investigation of factors influencing ICT adoption and usage by small and medium sized enterprises revealed that ICT knowledge and skills have no significant effect on the adoption and use of ICT by SMEs indicating that Kenyan SMEs.

Hence analogically the present researcher has a justifiable reason to develop

the hypotheses

*H7.a: the ICT education of Logisticians (ICT) have a correlation with the Behavioral Intention (BI) to adoption of Industry 4.0*

*H7.b: the ICT education of Logisticians have a correlation with the adoption of Industry 4.0(Y2)*

**Behavioral Intention - Intention to Use (BI) :-** Tomaz Cater et. al (2021), further stated that Both the TAM and UTAUT provide strong theoretical support for the study of Adoption of Industry 4.0 by clearly distinguishing the intention to use from the actual use of technology. Intentions to use new technology explain its real usage measured in a subsequent period (Davis et al., 1989), therefore providing theoretical support for studying the relationship between the intended and actual use of I4 technologies.

Tomaz Cater et. al. (2021) in their investigation of, Industry 4.0 technologies usage: motives and enablers, have discussed the Intention to use vs actual use by utilizing UTAUT and the TAM

Hence analogically the present researcher has a justifiable reason to develop the hypotheses

*H7.a: the ICT education of Logisticians (ICT) have a correlation with the Behavioral Intention (BI) to adoption of Industry 4.0*

*H7.b: the ICT education of Logisticians have a correlation with the adoption of Industry 4.0(Y2)*

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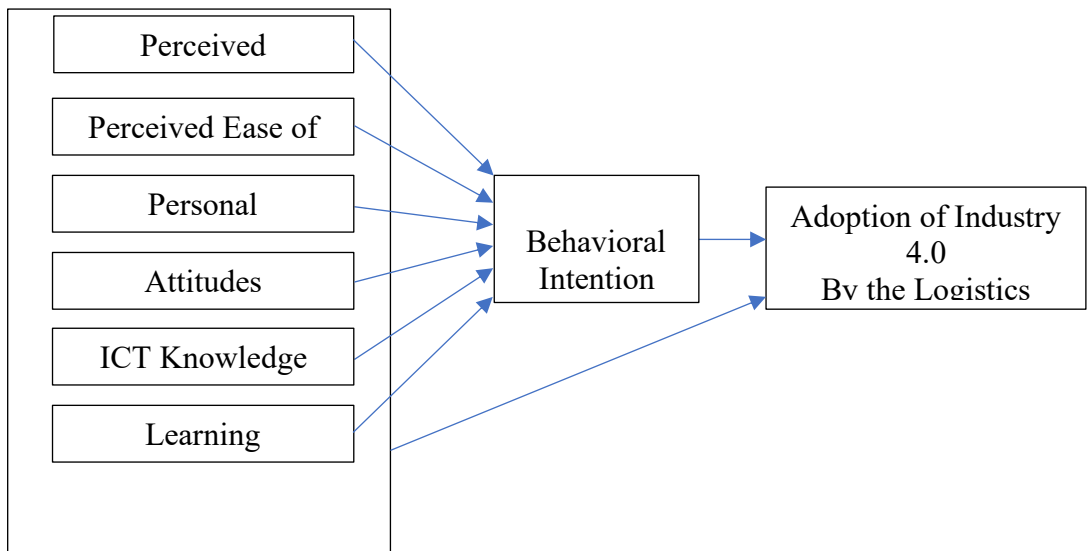
Tomaz Cater et. al. (2021) in their investigation of, Industry 4.0 technologies usage: motives and enablers, have discussed the Intention to use vs actual use.

**The Positive Link between the Intention To Use And Actual Use :-** finally, Tomaz Cater (2021), have shown that in the context of new technology usage, the positive link between the intention to use and actual use has mostly been argued by the advocates of the TAM and UTAUT models. Accordingly, vast empirical research in the context of new

technologies usage confirms this causal link as positive.

*H8. The intention to use Industry 4.0 technologies is positively related to the actual use of Industry 4.0 technologies.*

**Figure 2 research framework**



### **Research Methodology in Brief**

*This empirical research was designed deductively by utilizing the mixed method (Bryman et al, 2012, Creswell, J.W,2003) triangulation of qualitative in-depth finding which revealed inner experiences, feelings of prospects in Relation to Industry 4.0 adoption, and with the interview finding of university professors who are experts in in supply chain management in Sri Lankan state universities and with the quantitative analysis by offsetting inherent disadvantages of quantitative and qualitative methodologies.*

A purposive sample of 30 companies with effective integrated logistics chains were selected from the companies registered in the National Chamber of Commerce in Sri Lanka and 27 effective structured face to face interviews were conducted with 27 logistics officers (3 companies refused interviews due to rigid covid restrictions) during this empirical survey in order to gain deep insight on the research problems and to get the advantages of qualitative research methodology followed by a questionnaire filling derived from comprehensive literature review.

## FINDINGS OF THE STATISTICAL ANALYSIS AND THE DISCUSSION

**Table 1: Validity and The Reliability Tests Results**

	KMO	Bartlette	AVE	CR
PU	0.086	0.000	0.874	0.976
PEOU	0.075	0.000	0.698	0.915
PER_INNO	0.741	0.000	0.875	0.954
ATTI	0.858	0.000	0.747	0.956
ICT	0.632	0.000	0.606	0.885
LO	0.807	0.000	0.588	0.957
BI	0.852	0.000	0.791	0.962
Y2(Adoption of Industry 4.0)	0.658	0.000	0.681	0.816

**Adoption of Industry 40 in Sri Lankan companies are in its infancy**

**Table 2 One-Sample Statistics**

	N	Mean	Std. Deviation	Std. Error Mean
Y2	27	2.2481	.57479	.11062

### One-Sample Test

Test Value = 3

	t	Df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Y2	-6.797	26	.000	-.75185	-.9792	-.5245

Since the significant value is less than 0.05 under 5% significant level the Adoption of industry 4.0 (Y2) is not equal to 3.5. Hence there is a bellow average adoption of Industry 4.0 in Sri Lankan Companies One of the reasons the present researcher found out from in depth interviews that Sri Lankan

Companies mentioned that the profits and productivity related to the Industry 4.0 are opaque to them. This is in congruence with the IT Productivity Paradox "There is no relation between spending for computers, profits and productivity." Macdonald Stuart (2001)

**Global Development of Industry 4.0 is still in a developmental stage : -**

This finding is similar to the findings of Ebru Gökalp, Umut Şener, P. Erhan Eren (2017) which stated that even though Industry 4.0 is considered as a disruptive technological development that brings a new business model innovation, it is still in the initial stage of development. Furthermore, Frederico, G.F., et al (2019) who have defined Supply Chain 4.0 maturity model in strategic path have stated that even in supply chain 4.0, there is no clear definition of the constructs presented in the Industry 4.0 maturity frameworks, and there is neither clear constructs nor unified implementation and maturity assessment models. For these reasons Sri Lankan companies with supply chains are not ready to run the risk of embracing a novel unfamiliar technology – industry 4.0.

Samsudeen Sabraz Nawaz et al (2019) stated that. Industry 4.0 leads to potential deep changes and impacts categorized into six main areas: industry, products and services, business models and market, economy, work environment and skills development. transforming jobs and required skills almost challenging to avoid technological unemployment,. The future work vision will demand new competencies and create opportunities through high-quality training and facilities, since Industry 4.0 will lead to increased automation of tasks.

**Hidden deeply engraved reasons of Sri Lankan companies for reluctance to Adopt disruptive technology – Industry 4.0 : -**

In-depth interviews with the company logisticians revealed that most of them are to a great extent satisfied with the existing software such as ERP solutions since 1994 (Jinasena infortec), ERP ABAS, Locally made software with a higher efficiency to trace CARGO freight forwarding, Finished goods transfer by Sea/Air and, Warehousing , Tally ERP 9 sales invoicing Financing, Salesforce.com, Customer Relationship Management, Foxpro for manufacturing, Planograms for promotional Supermarket planning, ORELGO embedded with AI, Vehicle selection point of routes analysis, Lot size rating, ORELBUY embedded with AI, Digital Viollet, SCADA - powerful control system designed to collect, analyze, and visualize data from

industrial equipment in which engineers can observe critical measurements like temperature, vibration, power usage, and levels across the machinery for operational decisions, Dialog Vehicle Monitoring System, Monitoring mobility, speed, fuel efficiency and breakdowns Dialog Vehicle Monitoring System, Monitoring mobility, speed, fuel efficiency and breakdowns, SIMATIC Win CC V7, The scalable and open SCADA system for maximum plant transparency and productivity and Warehouse Management Systems, Inhouse Development and LOGIX Value Addition and Operational Visibility

This is a real practically observed Barrier for embracing industry 4.0 is that most of the entrepreneurs have no confidence of the risky leap in to novel industry 4.0 technologies. This is due to the lack of awareness of the benefits of such migration and augmented reality, human robot collaboration and Cyber Physical Space which are far from their reality.

**The sheer necessity of a standard Readiness and Maturity Model for the Sri Lankan entrepreneurs :** - The qualitative interview findings, revealed that most of the pioneering companies which use a best of the breed Warehouse Management System for the operations which gives them the speed and the operational flow, stated that when considering the readiness models, the readiness to adopt Industry 4.0, is very poor in Sri Lankan companies since they do not have the technology drive, the research and development process and continuous improvements against the changes of the global business world. The findings are in line with Rahamaddulla, S.R.B et. al. (2021), who stated that in Nepal Kathmandu industrial areas, while the existing model is aimed for Multinational Enterprises (MNEs) assuring substantial number of MNEs have already embarked industry 4.0 based Smart Manufacturing, Small and Medium Enterprises (SME) are still lacking on the resources such as dedicated automated machines, IT experts, or even IT departments lack of skilled manpower that has led to the difficulties of implementation of the Smart Manufacturing concept since the complexity is a main reason in many manufacturing industries.

Therefore, it is justified that H1 is true

*H1. The degree of adoption of industry 4.0 in logistics of Sri Lankan logistics companies is low*

**Table 3: Factors PU PEOU, ATTI . ICT PER\_NO LO Multiple Regression with BI Results**

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.922 <sup>a</sup>	.850	.805	.29077

a. Predictors: (Constant), LO MEAN, PER\_INNO MEAN, ATTITUDE MEAN, PEOU MEAN , PU MEAN, ICT MEAN

ANOVA <sup>a</sup>						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	9.570	6	1.595	18.866	.000 <sup>b</sup>
	Residual	1.691	20	.085		
	Total	11.261	26			

a. Dependent Variable: BEHAVIORAL INTENTION (BI)

b. Predictors: (Constant), LO, PER\_INNO MEAN, ATTITUDE MEAN, PEOU MEAN, PU MEAN, ICT MEAN

The multiple regression analysis proved that Personal innovativeness PER\_INNO MEAN Attitudes of Logisticians ATTITUDE MEAN affect the BEHAVIORAL INTENTION- BI

**The results can be justified** since Jesper Ahrén & Emil Winberg (2018), have stated that the top-management support, changing culture and attitudes of the logisticians to realize that Industry 4.0 is essential to achieve strategic business goals as well as the survival

**Table 4 : Unstandardized Coefficients**

		<b>Coefficients<sup>a</sup></b>				
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-1.205	.453		-2.660	.015
	PU MEAN	.014	.178	.013	.078	.939
	PEOU MEAN	.101	.219	.077	.459	.651
	PER_INNO MEAN	.390	.145	.344	2.699	.014
	ATTI MEAN	.323	.131	.320	2.460	.023
	ICT MEAN	.368	.211	.306	1.744	.097
	LO	.023	.157	.021	.148	.076

a. Dependent Variable: BEHAVIORAL INTENTION (BI)

$$\text{BI} = -1.205 + 0.390 \text{ PRE\_INN MEAN} + 0.323 \text{ ATTITUDE MEAN}$$

**The Relationship between the Behavioral Intention and the Adoption of Industry 4.0**

**Table 5: Model Summary of the Relationship between the Behavioral Intention and the Adoption of Industry 4.0**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.514 <sup>a</sup>	.264	.235	.50290

a. Predictors: (Constant), BEHAVIORAL INTENTION

Coefficients <sup>a</sup>					
Model		Unstandardized Coefficients		Standardized Coefficients	Sig.
		B	Std. Error	Beta	
1	(Constant)	.764	.505		.143
	BEHAVIORAL INTENTION	.449	.150	.514	.006

a. Dependent Variable: Y2 (Adoption of Industry 4.0 INO

Regression2:  $Y2 = 0.449 BI$  therefore H8 is true

### **THE BEHAVIRAL INTENTION of adoption of Industry 4.0**

Then the Hypothesis H8 is proved to be true

***H8.** The intention to use Industry 4.0 technologies is positively related to the adoption of Industry*

*4.0 technologies.*

### **The direct correlations between the factors affecting the adoption of Industry 4.0 and the adoption of Industry 4.0**

There is a direct correlation between Perceived Usefulness (PU), Perceived Ease Of Use, (PEOU), Personal Innovativeness (PER\_INNO), Attitude (ATTI) ICT Education (ICT) and Learning Organizations and the Adoption of Industry 4.0 Therefore **the bellow mentioned hypotheses are true**

*H2.b there is a correlation between Learning Organizations (LO) and the adoption of Industry 4.0(Y2)  $Y2 = 0.711 LO\_Mean$*

*H3.b: there is a correlation between the Perceived Usefulness (PU) and the adoption of Industry 4.0(Y2)       $Y2 = 0.755$  PU mean*

*H4.b there is a correlation between the Perceived Ease Of Use (PEOU) and the adoption of Industry 4.0(Y2)       $Y2 = 0.882$  PEOU Mean -1.337*

*H5.b : There is a correlation between the Attitudes (ATTI Mean) of logisticians and the adoption of Industry 4.0(Y2)       $Y2 = 0.503$  ATTI\_Mean*

*H6.b: Personal Innovativeness of logisticians have a correlation with adoption of Industry 4.0 (Y2)       $Y2 = 0.464$  PER\_INNO Mean*

*H7.b: the ICT education of Logisticians have a correlation with the adoption of Industry 4.0(Y2)       $Y2 = 0.816$  ICT\_Mean-1.295*

**Table 6: Summary of the Statistical Analysis**

<b>Variable</b>	<b>R</b>	<b>R Square</b>	<b>Adjusted R Square</b>	<b>Std. Error of the Estimate</b>
<b>PU Mean</b>	.755	.570	.552	.42203
<b>PEOU Mean</b>	.708	.502	.482	.45405
<b>PER_INNO Mean</b>	.426	.182	.149	.58189
<b>Attitude Mean</b>	.520	.270	.241	.54950
<b>ICT</b>	.708	.501	.482	.45422
<b>LO</b>	.655	.429	.406	.48613

<b>Variable</b>	<b>F</b>	<b>Sig</b>
<b>PU Mean</b>	33.092	.000
<b>PEOU Mean</b>	25.187	.000
<b>PER_INNO Mean</b>	5.557	.027
<b>ATTI_ Mean</b>	9.267	.005
<b>ICT_ Mean</b>	25.149	.000
<b>LO_ Mean</b>	18.781	.000

<b>Variable</b>	<b>B</b>	<b>t</b>	<b>Sig</b>
<b>PU Mean</b>	-.924	-1.954	.062
	.755	5.753	.000
<b>PEOU Mean</b>	-1.337	-2.148	.042
	.882	5.019	.000
<b>PER_INNO Mean</b>	.123	.175	.862
	.464	2.357	.027
<b>ATTI_ Mean</b>	-.167	-.261	.796
	.503	3.044	.005
<b>ICT_ Mean</b>	-1.395	-2.200	.037

	.816	5.015	.000
<b>LO_ Mean</b>	-.861	-1.409	.171
	.711	4.334	.000

## CONCLUSION AND RECOMMENDATIONS

**The positive attitude and the personal innovativeness of logisticians are critical influencing factors in adopting industry 4.0 in Sri Lankan Companies.**

The research findings revealed that Logisticians with positive attitude together with positive personal innovativeness in companies who adopt innovative technologies take the challenge of implementing the Industry 4.0 in their organizations. However, Implementation of Logistics 4.0 in Sri Lankan companies is in a rudimentary stage because of the employers like the status quo rather than risky investment in unknown technology. Hence the finding of this research will encourage managers and policymakers to enhance the company's industry 4.0 readiness level to seek the optimum benefits of Industry 4.0. The present researcher neither could utilize effective Industry 4.0 maturity model nor Readiness Model of Industry 4.0 in Sri Lankan companies visited since majority of the companies were in their infancy in implementing the Industry 4.0 while developed countries have embarked on Industry 5.0 with collaborated robots -Cobots

Moreover, In-depth face to face interviews with the most of Entrepreneurs in Sri Lanka revealed that the key reason that they feel they should not embrace Industry 4.0 is the unawareness of benefits of such implementation, which is similar to findings of Rahamaddulla, S.R.B et. al. (2021) who have shown that, some business owners are not clear on the current trend of industrial digitalization, and are clueless on how to implement it. Another key reason is the profits and productivity related to the industry 4.0 are opaque to Sri Lankan employers. This is in congruence with the IT Productivity Paradox "There is no relation between spending for computers, profits and productivity (Macdonald Stuart, 2001). Therefore, defining Industry 4.0 specific performance measures are ever essential. Finally, State statutory body for ICT policy design in Sri Lanka - Sri Lanka Information Communication Technology Agency (ICTA) and the State and non-state universities should take immediate steps to carry out awareness programs to introduce Industry 4.0 in order to boost Sri Lankan Economy.

## **Research findings revealed that Sri Lankan Companies which embrace Learning Organizations do better embrace Industry 4.0 eradicating Status quo**

Regina Lenart-Gansinieć (2019), stated that currently organizations face strong competitive pressure and struggle to improve efficiency and meet the escalating market demand for personalized and innovative products. In this regard a learning organization whose organizational leadership is properly implemented ensures contribution to the added value when leaders are able to constructively cooperate with each other and with their employees, deals with sustainable development of employees and positively influences the lifelong learning of the organizations will better adopt industry 4.0 than not.

Moreover, measuring the Industry 4.0 readiness in Sri Lankan logistics companies by utilizing a well-defined maturity model shown by Çınar, Z.M.; Zeeshan, Q.; Korhan, O., (2021) is **a sine qua non**, since the creation of an intelligent, interconnected factory through completion of Industry 4.0 integration in traditional production allows for distributed and fully automated operations, auto guided systems through production, and real-time monitoring product operations in Sri Lankan companies in the near future.

## **Future Research Avenues**

### **Challenges of Industry 4.0 technologies**

Many Sri Lankan companies are skeptical about the Security of data sharing since it may be vulnerable for competitor attacks. They are reluctant to reveal their existing computerized automations. Only three major companies have implemented block chain, since others thoroughly consider that it's an unwanted investment for their invoicing and ordering. Yanxing Song et al. (2021) have shown that Data Privacy in the logistics process is a great challenge, since it contains a lot of personal information, product information, and enterprise information, which is communicated and exchanged over the Internet. When applying IoT technologies to achieve intelligent logistics, Data Security is a greater risk since the information needs to cross multiple administrative boundaries even for multiple unknown purposes as the growing number and variety of devices are interconnected. Therefore, preserving data privacy is a sensitive subject and becomes an important research direction for future researchers. This is in line with the findings of Martins, F. C et al. (2020).

## **Limitation**

Due to rigid covid restrictions most of the companies, the present researcher limited his attention to a restricted sample size. Furthermore, since this a cross-sectional one-time observation of the companies, longitudinal empirical observations will strengthen the findings further

When considering the theoretical Foundation, Surajit Bag and Arnesh Telukdarie (2018) used the theoretical lens as the integrated Industry 4.0 Technology Acceptance Model (TAM) and Task-Technology Fit (TTF) model to understand the mechanism of industry 4.0 and assess the current maturity level. However, there are hardly any unified models in existing literature on the technology maturity level of Industry 4.0 tool.

## **Research Significance**

The uniqueness of this research is that the present researcher has empirically shown for the first time that among the factors affecting the adoption of Industry 4.0, Sri Lankan companies enriched with learning organizations concept where the employees have a shared vision, freedom for dialog and inquiry of free mental flow of thoughts and continuous learning of employees resulting lifelong learning can better adopt industry 4.0

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# **Central Bank's Policy Actions to Defend Economic Downturn from Covid-19 Pandemic: Evidence from United States, China, and Bangladesh**

M.M. Islam

*Doctoral Candidate in Regional Economics School of Economics, HUST, China. &*

*Joint Director Bangladesh Bank, Head Office Dhaka, Bangladesh.*

*mmistatcu@gmail.com*

## **ABSTRACT**

*This study has been conducted by aiming the objective of assessing the central bank's policy actions to rescue the economy from the Covid-19 economic blow in the United States, China, and Bangladesh. Parallel with this aim, this paper has also attempted to detect the impact of the pandemic on the policy trilemma in these three countries along with investigating the impact of quantitative easing in the US on the international foreign exchange markets. Considering the information reviewed from the various recently published reports on these matters, the findings of the study reveal that all three central banks have taken quick and well-responsive actions to defend their economies from the severity of the Covid-19 crisis. The huge liquidity support to the economy makes the mitigation process has been remarkable in response to the short-term requirements to recover the economy. The analysis of the study indicates that the impact of Covid-19 on the impossible trinity in the US and China shows those central banks have tried to achieve goals of monetary policy independence and free capital mobility by giving up the fixed exchange rate, whereas in Bangladesh it has been found a mixed result as its exchange rate is managed floating and its capital mobility is not fully opened. This study also implies that the unlimited quantitative easing policy in the US is supportive in order to mitigate the Dollar shortage during the Covid-19 pandemic. Finally, this study suggests the recommendation that all three central banks would keep their policy support continue in the long term in proper coordination with the government of each country as the economic crisis has been created from both demand side and supply side shocks by the Covid-19 epidemic.*

**Keywords:** Central Bank, Monetary Policy, Policy Trilemma, Quantitative Easing, and Covid-19 Pandemic

## **INTRODUCTION**

The whole world has been deeply infected by a severe epidemic virus known as Covid-19 that was found in China in December 2019 and was rapidly outspread throughout the globe in early 2020. Covid-19 has heavily

destructured not only human life but also the world economy, whereas the economic supply chain was disrupted because of taking strict health rules as the remedial measures for restricting the Covid-19 outbreak that mainly hampered the entire production process. The World Bank has already predicted in their published report in June 2020 that the world might have entered into a slow recession caused by Covid-19 in 2020. In particular, the developed countries will be passed through a contraction of 7 percent and on the other hand, the developing or emerging market economies will be experienced a contraction of 2.5 percent and that kind of contraction had not been observed in the overall world economy over the last sixty years. The globe has already started to observe a sharp downward growth projection in its different indicators since the 1990s. Shutdown or lockdown has been introduced by the government of different countries to rescue human lives from severe fatality due to the Covid-19 outbreak. Restriction in people's movement or staying at home is only the way to discontinue the transmission of the pandemic. The worldwide implementation of the shutdown process temporarily damaged the economic activities of each nation, although to save lives there was no alternative way. Developed nations to developing countries like the United States (US), China, and Bangladesh, have been facing a tremendous economic downturn from the beginning of the pandemic outbreak. Especially, US has experienced the highest number of infected persons and highest number of death cases by Covid-19 and moreover, it is supposed that China was the origin of Covid-19 but it has somehow controlled the severity of the pandemic by imposing strict rules across the nation. Whereas a country like Bangladesh has suffered a lot due to its heavily relied economy on worker remittances and ready-made garment (RMG) export as almost each and every part of the world has gone through a contraction of economic activities.

From the start of the pandemic outbreak, the US has been undergoing several hardship situations either in human lives or in economic activities. The efforts to mitigate the severity of the pandemic outbreak put the US economy on the road to a turmoil condition that was observed for the first time since the Great Depression. The annual GDP growth rate declined by about 30 percent in the June quarter of 2020. After the first two months of the pandemic outbreak, over 22 million jobs were left out of the market. The unemployment rate jumped to 15 percent in April 2020 from 3.5 percent in February 2020. The declining aggregate demand has diminished the consumer price level and discontinued economic activities have substantially tightened the financial conditions and thus limited the regular credit flow to businesses and

households. The financial and economic policies either in fiscal policy or in monetary policy were somewhat accumulative in response to support the economy. From the first quarter of 2020 to the first quarter of 2021, a total of nearly USD 6 trillion in fiscal support has been provided to the US economy which accounts for nearly 28 percent of the GDP in the US.

In China, the government initiated the social distancing policy publicly for limiting infection and saving lives creating an obstacle in the production of firms and lessening the consumption of consumers, both of these pushed the economy into the supply side recession and demand side recession respectively. As a result, those policy interventions flattered the frequency of infection but steepened the recession graph. In February 2020, the real industrial production and nominal business activities (retail sales) deteriorated by around 14 percent and around 21 percent surprisingly compared to January 2020. The nominal investment also showed a decline of 16.1 percent in the first three months of 2020. All the business indices such as purchasing manager index (PMI) and the OECD business confidence index recorded the bottom level since the global financial crisis in 2008. The seasonally adjusted Container Throughput Index fell to the monthly lowest decline ever recorded. Export performances recorded a declining trend in March 2020 but somewhat improved compared to the last two months. The real output growth rate for the early quarter of 2020 was observed a diminish by about 7 percent which was the worst performance after the officially published quarterly GDP started in 1992.

Like many other countries across the world, the most recent shock that has affected the country's economy severely is the one brought on by the Covid-19 outbreak. For controlling the mass spread of Coronavirus, the government took counteractive measures of country-wide general holidays (around two months) from late March 2020 to late May 2020. During this period, the government-imposed restrictions on citizens' movements, where attendance in workplaces, including mass gatherings was limited and other activities were put under a smaller-scale operation on an emergency basis. Since the external, as well as domestic demand for goods and services, has been declining local production has also diminished tremendously. The ready-made garments (RMGs) export has decreased, though the volume of workers' remittance inflows was surprising. A significant number of workers have lost their jobs both at home and abroad. The domestic supply chains were disrupted due to the unofficial lockdown and the consumption behavior for livelihood expenses has also changed significantly. The Bangladesh economy had suffered a substantial economic loss that was reflected in its

real GDP growth was recorded lowering to 5.24 percent, but the target was 8.15 percent for the fiscal year 2019-2020. The real GDP growth has also been revised by lowering from 7.40 to 6.10 percent for the fiscal year 2020-2021. In April 2021, the overall inflation rate was recorded at 5.6 percent, whereas the projected rate of inflation was expected at 5.4 percent for the fiscal year 2020-2021. However, more than BDT 1284.4 billion in fiscal support has been announced which is 4.59 percent of GDP to support the economy in for fighting against the Covid-19 pandemic.

### **Objective of the Study**

Central banks around the world tried to protect the economy through their decisive roles in providing short-term policy support in order to overcome the sudden shock caused by the Covid-19 outbreak. In line with the role of the central bank across the world, the Federal Reserve, the People's Bank of China, and Bangladesh Bank have taken several measures to provide liquidity support for providing credit facilities to households and businesses to mitigate the economic downturn that originated from the Covid-19 pandemic. A comprehensive study is required to assess the measures taken by the central bank of the US, China, and Bangladesh in order to protect their respective economies during the outspread of covid-19. Along with these issues, other issues like the management of the foreign exchange markets of all these three countries and the movement of foreign exchange markets in terms of the quantitative easing by the Federal Reserve will also be studied in this paper.

This study is entirely based on the following three broad objectives.

1. To identify the monetary authority's policy measures to protect the economy from the downturn caused by Covid-19 in the US, China, and Bangladesh.
2. To scrutinize the impact of the Covid-19 blow on the impossible trinity in the US, China, and Bangladesh.
3. To examine the influence of unlimited quantitative easing in the US on international foreign exchange markets.

This paper is mainly organized into several sections. Section 2 consists of a literature review, section 3 incorporates the methodology of this study, section 4 discusses the supportive measures from the central bank, section 5 presents the impact of Covid-19 on the impossible trinity, section 6 shows the influence of unlimited quantitative easing on the foreign exchange

markets, section 7 indicates some policy recommendations and finally section 8 places the concluding remarks.

## **LITERATURE REVIEW**

Several recently published papers have been reviewed for understanding the specific policy actions that have been taken by the central banks of these countries which could be useful for getting the required information in achieving the objectives of the study.

Lin et al. (2018) carried out the study to examine the impact analysis of US quantitative easing policy on emerging markets. The findings of the study give evidence that the quantitative easing policy has a significant influence on the foreign exchange markets of the considered economies in the study.

Islam (2019) analyzed the implications of the impossible trinity in the Bangladesh economy. This study reveals that the possible implication of policy trilemma is found in the economy and also points out that with the help of intervention to the foreign exchange market, the country can be able to manage a moderate combination of the trilemma policy, whereas comparatively a larger volume of foreign exchange reserve might be useful to liberalize the capital account.

Funke and Tsang (2020) assessed the People's Bank of China's various defensive measures to mitigate the impact of Covid-19 on Chinese economy. They reveal that the monetary policy of China has shown its strong stance and which was very much supportive to recover the economy. This paper also indicates that the central bank has taken concrete policy measures for the commercial banks to ensure liquidity availability and credit provision during the Covid-19 pandemic.

Siddiquee and Faruk (2020) investigated the impact of Covid-19 on Bangladesh economy and they found that all of the economic and financial indicators have been affected by the pandemic situation. This paper recommends that bank credit would be an important measure to support the ongoing and upcoming recovery process.

Clarida et al. (2021) examined the Federal Reserve policy supports to recover the economy from the downturn caused by Covid-19

pandemic. This paper concludes that the FED has taken crucial roles to support the economic recovery process.

Li et al. (2021) studied to identify the impact of Covid-19 on exchange rate movement in China and US respectively. The findings of this study indicate that the exchange rate shows a negative movement by the Covid-19 health risks and the effect of a pandemic would disrupt the economy not only in the short term but also in the long term.

Younus et al. (2021) conducted a study to explore the policy responses and their impact to the Covid-19 pandemic in Bangladesh. This study stated that the Government of Bangladesh has initiated and implemented a series of stimulus packages successively through the proactive participation of the Bangladesh Bank. So far, such measures have significant influence to overcome the adverse impact on the economy.

After briefly reviewing the different studies regarding the central bank's measures in response to the recovery process of the economy from the Covid-19 downturn, it is essential to evaluate the effectiveness of the central bank's actions in order to mitigate the economic disruption around the world. This study expresses a modest attempt to comprehensively assess the central bank's emergency strategies to overcome economic disruption due to the Covid-19 pandemic in the perspectives of developed countries like the US, in an emerging country like China, and in developing countries like Bangladesh.

## **METHODOLOGY**

This study has been carried out by using the secondary information that has been taken from the different published papers, reports and articles relating to this issue and covered only those countries' information that has been included in our study economies. The analytical part of this paper will be based on the descriptive features compiled from published information on different secondary sources by which the assessment or evaluation would be conducted through the performance comparison process. The assessment would mainly rely

on the ways in which policy measures have been taken and whether these policy measures have been competent enough to support the economic recovery process from the Covid-19 crisis or not. The findings of this study would be drawn heavily relied on the purpose-based approach of the recent aspects.

### **Supportive Measures from the Central Bank to Defend the Economy in US, China And Bangladesh**

#### **Federal Reserve's Actions to Defend the US Economy**

The Federal Reserve's (FED) key initiatives are listed below.

#### **Monetary Policy Operations:**

1. Federal Open Market Committee (FOMC) has reduced the federal funds rate target range (FFTR) by a total of 1.5 percentage points to support FED goals of achieving maximum employment and price stability.
2. Federal Open Market Committee (FOMC) has increased treasury and agency mortgage-backed securities by at least USD 500 and USD 200 respectively to ensure the smooth functioning of markets for Treasury securities and agency mortgage-backed securities.
3. The FED has introduced a second daily overnight repurchase agreement (repo) operation and the amount offered in each to USD 500 billion to enhance the supply of reserve at a sufficient level and to mitigate the risk of money market pressures which could adversely affect policy implementation.

#### **Liquidity Operation:**

4. The primary credit rate has been reduced by 150 basis points to 0.25 percent and the term loan of up to 90 days has been introduced in the discount window. The reserve requirements have been reduced to 0 percent from March 26, 2020. Both of the cut has been announced to meet the unexpected funding need for depository corporation and it will help the institutes to ensure demands for credit from households and businesses.
5. Federal Open Market Committee (FOMC) has managed to stand U.S. liquidity swap lines with the Bank of Japan, Bank of England, Bank of Canada, the Swiss National Bank and the European Central Bank to lessen stress in global Dollar funding markets.
6. Also the commercial paper funding facility has been announced to foster

the flow of credit to households and businesses.

### **Direct Support for Providing Credit Operation:**

7. Moreover, the term loan (asset-backed securities) facility has been announced to mobilize the flow of credit to consumers and businesses as well.

### **Banking Operation:**

8. The Federal Reserve Board has encouraged banks to utilize their capital and liquidity buffers for lending to households and businesses that are mainly affected by the pandemic, this initiative has been released essentially to ensure the flow of credit to households and businesses.

The fund rate was cut with the aim of a sufficient supply of reserves and supporting the functioning of the critical fund markets. Moreover, the FED also initiated strategies to expand the supply of short-term funding to the primary dealers. At the beginning of the pandemic, a sharp demand for cash and other liquid asset increased in many other business activities and it is required an urgent basis to supply the flow of credit to businesses for smoothing their business operations. The FED has used its most conventional liquidity tools in encouraging the depository institutions to support and to meet the demand for credit from households and businesses. No doubt about it as the pandemic disrupted the economy severely where the cost of borrowing has been raised sharply from all types of markets including the corporate bond market, the municipal debt market, and the asset-backed securities market. The covid-19 shock created huge restrictions and quizzed the bond market significantly. Moreover, small and medium-sized firms heavily rely on bank-based funding that firms have faced huge funding pressure for the epidemic outbreak in some cases those firms were about to cut back operations. The FED has taken a number of strategies to stimulate the sufficient flow of credit to households and businesses including other local entities so that they can keep their operations continue.

During the Covid-19 outbreak, the FED has proactively played its incredible role by deploying all the possible tools of conventional monetary policy. Particularly, a series of emergency funding facilities to timely support the flow of credit to households and businesses have been initiated in order to keep normal and stable economic activities in support of the smooth recovery process. The Federal Reserve has implemented its policy actions in order to support the economic recovery process by taking four broad way of initiatives. Firstly, the interest cut policy has been taken for achieving price

stability; second, providing excess liquidity support has been provided for the money market to keep well-functioning; thirdly, launching consecutive facilities to keep uninterrupted the flow of credit to households, businesses, and local entities, and finally, initiating some regulatory and supervisory practices simultaneously to encourage the bank to provide a timely flow of credit to their households and business customers.

### **The Actions of the People's Bank of China to Defend the Chinese Economy**

Key initiatives are listed below the People's Bank of China (PBoC).

#### **Monetary and Liquidity Operations:**

1. PBoC has injected a huge amount of liquidity at different steps in the banking sector through reverse repo operations to provide sufficient liquidity to the market for strengthening financial support to the economy during the pandemic outbreak.
2. PBoC has announced plans for the issuance of bonds by financial institutions to support the banking industries for proper epidemic prevention and control.
3. PBoC has also injected 1-year liquidity lending through medium-term lending facility (MLF) operations.
4. PBoC has planned to create RMB 300 billion in re-lending funds from the central bank to provide low-cost funding facilities for bank lending in supporting epidemic prevention and control.
5. The prime rate for the 1-year loan and the 5-year loan has been lowered at different times during the pandemic period to facilitate sufficient credit to businesses.
6. The required reserve ratio (RRR) of the small and medium banks or SMEs loans has been reduced. PBoC also announced to reduce interest rates in excess deposit reserves of financial institutions in the central bank.

A series of unprecedented actions have been unveiled by the central bank to support the country's banking system to manage liquidity and credit provision in the economy during the time of pandemic outbreak. The stated measures are taken by the central bank not only the monetary policy operations but also the credibility to a successive action of easing policy. The large sequence of open market operations has been injected extra liquidity, which required for the economy caused by Covid-19 crisis, although some of them was regular policy actions. During the time of high epidemic period,

i.e., February-March 2020, a total of RMB 3.6 trillion excess liquidity has been pushed into the economy by all operations of the central bank. The ultimate aim of all defending measures initiated by the central bank is to safeguard financial stability where the prevention of liquidity shortages and market disruption that has been amplified by the Covid-19 shock. The large firms and state-owned enterprises have been facilitated by continuous credit access throughout the crisis period, while the small and medium-sized firms also enjoyed the required credit access facility from the commercial banks through the central policy to roll over the debt contingencies.

To mitigate the Covid-19 shocks, China's central bank has played a highly interventionist role with its integrated expansionary monetary policy tools that made softened the reaction of covid-19 blow. During the epidemic time, the recursive liquidity injections played a major role that concentrated on the composite monetary policy stance revealed by step-by-step approaches from the central bank since the beginning of the covid-19 pandemic. The Chinese economy has been facing a short recession from the rapid pandemic outbreak initially, but the recovery process was surprising as quicker recovery measures triggered by the comprehensive monetary policy stance have returned the economy to a normal position in the second half of 2020 and which is still being continued.

### **Bangladesh Bank's Actions to Defend the Bangladesh Economy**

Bangladesh Bank's key initiatives are listed below.

#### **Monetary and Liquidity Measures:**

From the beginning of the pandemic, Bangladesh Bank has taken various initiatives to support the economy by providing huge liquidity and sufficient credit flow to businesses.

1. Cash Reserve Ratio (CRR) requirement has been decreased from 5.5% to 4.0%.
2. Repo interest rate has been cut from 6.0% to 4.75%.
3. Reverse Repo rate has been reduced from 4.75% to 4.0%.
4. Bank rate has been lowered from 5.0% to 4.0%.
5. The advance deposit ratio has been increased from 85% to 87.0%.
6. The investment deposit ratio has been extended from 90.0% to 92.0%.

7. The loan limit from the export development fund has been extended from USD 25 million to USD 30 million which means banks may borrow a maximum of USD 30 million.

As the monetary authority of the country, Bangladesh Bank made its quick response through monetary easing, adequate liquidity safeguarding, and supplying sufficient fund flow into the financial system for a faster and inclusive recovery process when such a pandemic had pushed the economy into turmoil condition. The composition of various monetary, liquidity and banking-related initiatives has created a composite policy that triggered the economy in the proper way but not to deepen into the financial crisis. Moreover, Bangladesh Bank has used the fintech channels to smoothly run cash flow to the economic activities. The central bank has aggressively supported all kinds of bank-based stimulus packages directed by the Bangladesh Government through relaxing different policy and managing low-cost refinances line of credit. Bangladesh Bank has announced an expansionary monetary policy to accommodate the growth needed for economic recovery without considering any commitment to the targeted inflation because it tried to intervene to the market through its aggressive policy tools to enhance economic activities smoothly. Bangladesh Bank has sincerely applied all its policy actions through coordination with the government and intervention in the financial markets in order to make the faster economic recovery process and in end, it has shown its monetary policy stance actively.

The several policy initiatives implemented by the central bank have to some extent saved the economy against the adverse shock caused by Covid-19 pandemic. With composite policy intervention by the central bank's actions along with resuming normal economic activities in the domestic market has focused on the economic recovery process is going on properly. As the Bangladesh economy heavily relied on RMG exports and worker remittances, when the RMG export earnings and remittance inflows started into high growth, then the economic recovery process becomes more accelerate because of the low cost of import payments also lead to heighten foreign exchange reserves.

### **Impact of Covid-19 Outbreak on Impossible Trinity In US, China and Bangladesh**

The economic theory provided by Mundell and Fleming in 1963 suggested that the policymakers or the central bank of any country cannot choose three

strategies at a time, such as fixed exchange rate management, independent monetary policy operation, and free capital mobility or capital openness, they can choose any two out of these three policies only. This policy intuition is widely known as policy trilemma or impossible trinity. The economic blow of Covid-19 has created a huge disruption in the world financial system. The central banks around the world have initiated continuous efforts to support the economy in order to mitigate the crisis and central banks are also responsible for managing the policy trilemma with their actions for their respective countries. The policy actions that have been taken by the major central banks to defend the economy from the crisis, those central banks have to think about managing the trilemma within these frameworks also because Covid-19 pandemic has a huge impact on the policy trilemma. In the following part, this paper will discuss the impact of the Covid-19 pandemic on the policy trilemma in the US, China, and Bangladesh.

### **Case of the US**

During the Covid-19 crisis, the Federal Reserve has taken a significant number of policy measures, including unlimited quantitative easing to provide liquidity support to the economy. In the US, the FED always tries to manage the two policy tools in the policy trilemma which are monetary policy independence and free capital mobility where it does not follow the fixed exchange rate. The successive liquidity support in the US economy has created the appreciation of the US Dollar with other major trading currencies. Another reason for US Dollar appreciation is the shortage of Dollar holdings in the major countries due to the Covid-19 crisis.

The injections of excess liquidity to the market and supplying the Dollar in the foreign exchange market could be the cause of capital outflows from the US market because of the interest rate that already approached zero and US investors would expect higher returns from the investment. If the capital outflows would start that could be the reason for the depreciation of the US currency which was exactly happening during the global financial crisis in 2008. Therefore, the impact of Covid-19 pandemic on the policy trilemma would be stated that where the US authority tried to manage the two options such as monetary policy independence and full capital mobility by giving up the fixed exchange rate which the FED has already practiced through its policy actions.

### **Case of China**

The Chinese economy has heavily been disrupted by the Covid-19 pandemic as it was the origin of the epidemic outbreak, but at the beginning of the

shock, the central bank has started to supply the excess liquidity to the economy by its composite policy tools in response to the aim of recovery the economy from the crisis with the well and smooth functioning of economic activities. China managed the impossible trinity by providing a money supply to the economy for keeping the interest rate low where the exchange rate was somewhat more free-floating that mainly led to significant capital outflows.

To mitigate the economic blow of Covid-19, China has injected excess liquidity into the economy, it was also the reason why the interest rate was kept low, which might be out flowed capital from the country by depreciating its currency as the exchange rate was not fixed and to some extent, it was more freely floating. Hence, it may be indicated that in China, the impact of Covid-19 crisis on the policy trilemma is mainly by capital outflows with the exchange rate depreciation which means it has managed the monetary policy independence with capital mobility by keeping the floating exchange rate system.

### **Case of Bangladesh**

Like many other developing countries, the trilemma policy in Bangladesh has mainly been used to manage the exchange rate stable and to keep consistent macroeconomic performance as its capital account is not fully open and its financial system has been integrated with the world financial system successively. In the Covid-19 outbreak, the central bank has announced the comprehensive policy packages to protect the economy by providing sufficient liquidity for normalizing the people's economic activities because the citizens' movement was restricted due to the control measure for limiting the pandemic spread-out across the country.

Since, in Bangladesh, the central bank tried to keep the exchange rate stable through its intervention in the foreign exchange market. With this mechanism, the central bank is capable to manage the exchange rate of the domestic currency against the US Dollar within a little fluctuating range, which is normally termed as managed floating, those systems are neither fixed regime nor floating regime. The supply of excess liquidity by expanding money supply from the central bank in the market is not competent enough to keep interest rate low due to its questionable independence of monetary policy framework. Conversely, higher interest rate cannot attract the foreign investor for getting higher returns due to several others factors that means the capital inflows have not been increased, moreover, in the pandemic time, to mitigate the risk; the foreign capital has out flowed by the investors.

Since, the lower import payments and increasing worker remittance inflows along with RMG exports have accumulated the foreign exchange reserve in a recorded high position that has been helpful to keep the exchange rate stable and the economy has not been faced the foreign currency crisis. In the pandemic period, the higher foreign exchange reserves kept the country in the middle ground position in order to manage the impossible trinity as the country is trying to open up its capital account through its foreign exchange reserves. Therefore, the impact of Covid-19 outbreak on the policy trilemma in the Bangladesh economy could be explained in terms of mixed results where the central bank is not followed any particular policies exclusively out of these three because of its exchange rates were somewhat managed, monetary policy was also somewhat managed and the capital mobility was not fully open.

### **Impact Of Quantitative Easing (Qe) In Us On International Foreign Exchange Markets**

Since at the beginning of global financial crisis in 2008, many central banks of both developed countries or developing countries across the world has started to practice of unconventional monetary policy operation through quantitative easing that mainly the expansion of the central bank's balance sheet. In 2008, the Federal Reserve had taken the measure of unlimited quantitative easing by purchasing long-term government bonds and mortgage securities for providing huge liquidity support to strengthen the market liquidity in mitigating the economic blow during the period of the financial crisis. In the Covid-19 pandemic crisis, it was not exception of the policy to that were in 2008, the US central bank has announced again to start the program of unlimited purchase of securities for providing the extra liquidity in the market to boost up private consumption and domestic corporate lending. Initially, the FED announced a purchase of USD700 billion of US treasuries and mortgage-backed securities in March 2020 and after that it has announced unlimited purchase of the government securities to support the corporate sector.

The FED's quantitative easing policy was found to be significant impact on the market where the Treasury yields rose after the interventions. During the global financial crisis period, the FED's unlimited quantitative easing policy shown a somewhat mixed effect, although it does not mean that it was not effective. In the foreign exchange markets, the Dollar is considered as the main trading currency, such unconventional measures appreciated the Dollar value compare to other dominating currencies because of the shortage of

Dollar in the developed and some emerging market countries. To mitigate the crisis of the Dollar, FED enhanced Dollar liquidity to the respective countries through enacting the swap lines. The FED tried to supply the Dollar in the market by its intervention to protect the international financial markets as Dollar always plays a crucial role in the international financial system. As the purchasing of government bonds through quantitative easing reduced the term premium on treasuries and ultimately reduced the long-term interest rates. The FED's quantitative easing should depreciate the Dollar value as it has no risk premium for the foreign investors. Since in the global financial crisis, the Dollar value appreciated and it is required to depreciate the value of the US Dollar by the intervention through QE. In the Covid-19 pandemic, the Dollar value has also appreciated after the intervention by the FED due to Dollar shortage shock and the FED initiated to mitigate the Dollar crisis through the various channels.

In the global financial crisis in 2008, the US QE policy had to some extent increased the huge capital flows to the emerging market economies for getting the higher return of investment by the investors and it accumulated the larger foreign exchange reserves of the emerging market countries that appreciated the value of their local currencies and degrade their foreign trade situations at the end. In the Covid-19 crisis, as the pandemic is on board now, QE policy from FED tried to mitigate the Dollar crisis in the international foreign exchange markets and kept its intervention policy to supply the sufficient amount of Dollar in order to fulfill the Dollar shortage into global financial market. In the global crisis of Covid-19 epidemic, the FED QE policy should be aimed in depreciating the Dollar value to lead the foreign exchange markets well-functioning operation. If the FED policy intervention through QE could not be able to limit the appreciation of the US Dollar, it could be matter of severe financial imbalance in the global financial order during this period of the Covid-19 pandemic.

## **Policy Recommendation**

So far, the Covid-19 pandemic has created a disastrous situation in healths and economic activities around the globe. The central banks of the stated countries have taken a series of policy measure that can fight against the economic blow created by the epidemic outspread. The central banks tried to roll out the economic shock by taking huge liquidity measure along with other comprehensive policies that injected the excess liquidity to the economy to continue the economic activities well-functioning in the short-term basis while some of the measures have been adopted on the medium-term basis too. Since the Covid-19 pandemic crisis has affected the economy very harshly not only from demand side shocks, but also from supply side shocks as well. Although the central banks have taken most of the stimulus measures in line with the proper coordination with the government of respective countries. However, the short-term liquidity measures can stimulate the economy for the interim period only, and it may affect the economic stability through hiking the prices of the economy. So that all the composite initiatives should have been in line with proper combination to their fiscal counterpart that could mitigate the economic blow which has been coming from the demand side as well as from the supply side as the pandemic has not stopped its devastating role until now. Therefore, the central banks have to be more cautious enough in terms of taking the policies with their credibility that could be able to maintain the macroeconomic goals of less fluctuating exchange rate and price stability even if the time of a pandemic outbreak.

## **CONCLUSION**

This paper assesses the central bank's actions in the US, China, and Bangladesh that have been performed to quick response in the recovery process to the economic downturn from the Covid-19 pandemic shock of these economies. The descriptive features reviewed from the recently published information of the various studies on these issues have given the findings that all of these three central banks have taken a series of prompt and concrete policy actions by providing excess liquidity support to the respective economies for mitigating the sudden economic shocks which were originated from the Covid-19 epidemic outbreak across the globe. Since each and every policy measure have been implemented by the central banks on a short-term basis to ensure

a quicker recovery from the instant economic blow and those measures have been well-responsive for the interim period of the Covid-19 crisis. The central banks of these three countries would have to be extended their policy stances for the longest period as Covid-19 has continued its economic and health blow around the world until now. Finally, the Covid-19 crisis has been the reason for the substantial destruction made in economic activities, so a quantitative cross-country analysis is required for examining the impact of the central bank's policy actions in order to mitigate economic turmoil in the Covid-19 pandemic.

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**Certification:** It has been certified that at best of my knowledge, the work of this paper is original. This paper has not been submitted to anywhere for publishing and it has not been published anywhere too.

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# **The Impact of Learning Management System on Academic Performance of Undergraduates in Government Owned Higher Educational Institutions in Sri Lanka**

U.K.S.M. Uduwella<sup>1\*</sup>, M.R.M. Riham<sup>2</sup>

*<sup>1\*</sup>Senior Consultant/Lecturer, National Institute of Business Management, Sri Lanka*

*shamalka@nibm.lk*

*<sup>2</sup>Consultant/Lecturer, National Institute of Business Management, Sri Lanka*

*riham@nibm.lk*

## **ABSTRACT**

*The modern way of connecting the academic staff and the learners to facilitate better learning is the learning management system (LMS). LMS is a digital platform that consists of many features including document sharing, conducting assessments, and various other tools to improve the online learning environment. LMS has become a mandatory element of the learning environment in public as well as private universities to be in line with expectations of stakeholders. Owning LMS and operating them consistently and efficiently requires a significant financial investment. Research based on LMS are very common in many other countries and very few studies are done on this scope within Sri Lanka. Therefore, this research highlights the effects of using the Learning Management System on academic performance of undergraduates. Five independent variables namely Attitude towards LMS, Self- Efficacy, Experience, Anxiety, Collaboration with Lecturer and Students were considered. This study is a quantitative study based on a questionnaire survey and was guided by three objectives. One of the Government Owned Educational Institutions was selected for this study. Even though the study was based on a single government institute, the research findings suggest that Learning Management System can be effectively used for the academic development of undergraduates in Sri Lanka.*

**Key Words: Learning Management System, Higher Educational Institutions, Academic Performance, Online Learning, Management Undergraduates**

## **INTRODUCTION**

### **Background of the Study**

The modern way of connecting the academic staff and the learners to facilitate better learning is the Learning Management System (LMS). LMS is a digital platform that consists of many features including document sharing, conducting assessments, and various other tools to improve the online learning environment. LMS is also an effective tool to encourage formal communication between students and the lecturer compared to having physical meetings and appointments that are time-consuming. Therefore, investment in LMS has become mandatory for all universities and higher education institutions to provide modern learning facilities to students. In a study done by The NEA (National Education Association, 2000) a very high amount, specifically, 75% of the instructors say that they are positive about distance education Irrespective of the demographics of the student. Unlike in the past, internet penetration and network coverage are much better in almost all parts of the country which remove the major barrier to use LMS. Students who are good at using the internet for their studies have a positive attitude towards the introduction of LMS to their learning system (Hong, Ridzuan and Kuek, 2003). Even in USA irrespective of heavy investments in providing facilities such as the internet, the outcome depends on many other factors associated with the internet including curriculum design, classroom culture, and attitude (Schofield and Davison, 2002). LMS is a software developed with many tools to facilitate learning. Different types of LMS are available to purchase in the market, such as Moodle and Blackboard (Blackboard Inc.), (Ellis and Calvo, 2007). This study examines the impact of Learning Management Systems (LMS) on the academic performance of undergraduates in government owned higher educational institutes in Sri Lanka.

### **Problem Statement**

LMS and its importance encourage higher educational institutions to implement LMS if the investment is affordable. But it is extremely important that institutes identify and evaluate the objectives they wish to achieve by introducing an LMS, without which it would not be a rational decision. After the investment decision is taken, the next issue for the institute would be how to utilize LMS in a way that adds value to both the faculty and learners (Watson, 2012). After initial training on LMS during orientation programmes, most of the students decline the use of LMS and it leads to a

poor experience with LMS over time. Hence, this study is based on the impact of LMS on academic performance of undergraduates. Accordingly, this study examines the following research questions.

What is the current level of academic performance of management undergraduates?

What is the impact of LMS on the academic performance of management undergraduates?

### **Objectives of the study**

To identify the existing level of academic performance of Management undergraduates.

To examine the impact of LMS on the academic performance of management undergraduates.

### **Research Hypotheses**

Reviewing the previous research studies, different factors under Learning Management System (LMS) have been identified. Based on those findings Attitude towards LMS, Self- Efficacy, Experience, Anxiety, Collaboration with Lecturer and Students are considered as the factors under LMS in this study. Then, the hypothesis was proposed as:

H<sub>1</sub>: Attitude towards LMS has an impact on the academic performance of undergraduates

H<sub>2</sub>: Self- Efficacy has an impact on the academic performance of undergraduates

H<sub>3</sub>: Experience has an impact on the academic performance of undergraduates

H<sub>4</sub>: Anxiety has an impact on the academic performance of undergraduates

H<sub>5</sub>: Collaboration with lecturer and students has an impact on the academic performance of undergraduates

### **LITERATURE REVIEW**

The introduction of information technology and the development of related industries have been the most notable development of this century. (Agarwal, 2015). IT has become an unavoidable component of the day-to-day life of

every person and every industry. The field of Education and higher education also have accepted the developments in the field of IT and adopted various technologies into the sector. First, the usage of E-learning was recorded at the University of Illinois in the year 1960, where the students were allowed to hear the recorded lectures through terminals (Agarwal, 2015). In early 1990's, with the development of the internet, many universities started to adopt new technologies into higher education including the creation of the first online school namely the CAL campus.

Rapid development of online-based technology in the recent past, many studies are conducted in relation to usage, impact, and consequences of using LMS. As per the review of the studies, it is an evident adaptation of LMS that has played a key role in reducing the time and cost of performing many tasks and has facilitated better utilization of resources. (Berking and Gallagher, 2014). That is one of the main reasons for the rapid growth of organizations and Institutes that uses LMS (Hanon and D'Netto, 2007). Even though many universities use a standard LMS, teachers and their demographics have a greater impact on the effective use of LMS (Craig and Harindranath, 2015). On a positive note, to facilitate change, LMS encourages new methods of teaching which has helped institutes to bring the change they were willing to make for years. (Coates et al., 2005). Students learning through LMS become independent and start using more information from the internet to enhance their learning experience. (Berking and Gallagher 2014). One of the major issues with LMS is ignoring the traditional assessments completely and relying heavily on quizzes and online MCQs (Coates et al. 2005). Another study suggests that LMS reduces team spirit among students as they tend to work alone with LMS (Kistow 2009). Further, it has also been a common complaint among academics and students that LMS makes their work more complex and difficult than before (Weaver 2008). Similar to every other information system, with LMS also, the cost of implementing is directly visible and quantitative whereas the benefits are relatively qualitative (Smith et al 2013).

Academic performance and usage of LMS have a significant relationship. (Dawson and McWilliam, 2008); Beer, Jones, and Clark (2009). But the correlation is effective only for specific students under specific streams hence it is unable to generalize the findings for every student. Hence, there is a research requirement to conduct similar studies in different contexts using the data of students from different streams.

## METHODOLOGY

### Research Design

A cross-sectional research design was used to conduct the study. In terms of business and management, research survey is the most popular method of collecting data as it is suitable for collecting views and opinions of people in relation to different management concepts. This design was identified as the most suitable design to analyze the impact of LMS on the academic performance of undergraduates. Google forms were used to collect data in the form of a self-administered questionnaire. It allowed the researchers to efficiently collect the data representing different districts in the country.

### Population and Sampling

178 first-year management undergraduates currently studying at one of the government-owned higher educational institutes in Sri Lanka were the population of the study. It is very important to have a significant sample size to conduct a survey of this nature. According to the sample size table for a population of 178 students, 122 respondents should be selected, therefore the researcher distributed questionnaires among all the undergraduates, but the researchers were able to collect only 101 questionnaires with complete data. All 101 completed questionnaires were used for the final analysis and to present findings. There is an 82% response rate which, according to Mangione (1995), is a 'very good' rate acceptable for this kind of study.

**Table 1 indicates the number of respondents selected from each branch.**

**Table 1: Population and Sample**

<b>Name of the Branch</b>	<b>Population</b>	<b>Sample</b>	<b>% of the Sample</b>
<b>Colombo</b>	90	31	34%
<b>Kandy</b>	36	30	83%
<b>Kurunagala</b>	30	25	83%
<b>Galle</b>	22	15	68%
<b>Total</b>	178	101	57%

*Source: Survey Data (2019)*

## **Research Strategy**

Data Collection techniques and data analysis techniques in doing business and management research mainly differ based on whether it is a quantitative or qualitative study (Saunders et al., 2012). Numeric data from the quantitative study and the otherwise would be considered as a qualitative study. (Curran and Blackburn, 2001).

The study is based on quantitative methods and collected numeric data from a sample to draw a conclusion on how LMS affects the academic performance of undergraduates in government higher educational institutes.

## **Conceptual Framework**

The conceptual framework was based on the concept of, the impact of LMS on the academic performance of undergraduates. The focus of the study was the academic performance of undergraduates.

## **Independent Variables**

The primary concern of the research is the effect of LMS usage on the academic performance of management undergraduates. LMS can be the independent variable. The academic performance of undergraduates is the dependent variable. Based on the previous researchers' attitude towards LMS, Self- Efficacy, Experience, Anxiety, and Collaboration with lecturers and students (Rashida, Nawaz, and Sameem, 2018), the same set of components were considered as the factors under LMS in this study.

The model used in the study is as follows:

Academic Performance = f (LMS)

Academic Performance = f (ALMS, SE, E, A, CLS)

LMS = Learning Management System

ALMS = Attitude towards LMS

SE = Self- Efficacy

E = Experience

A = Anxiety

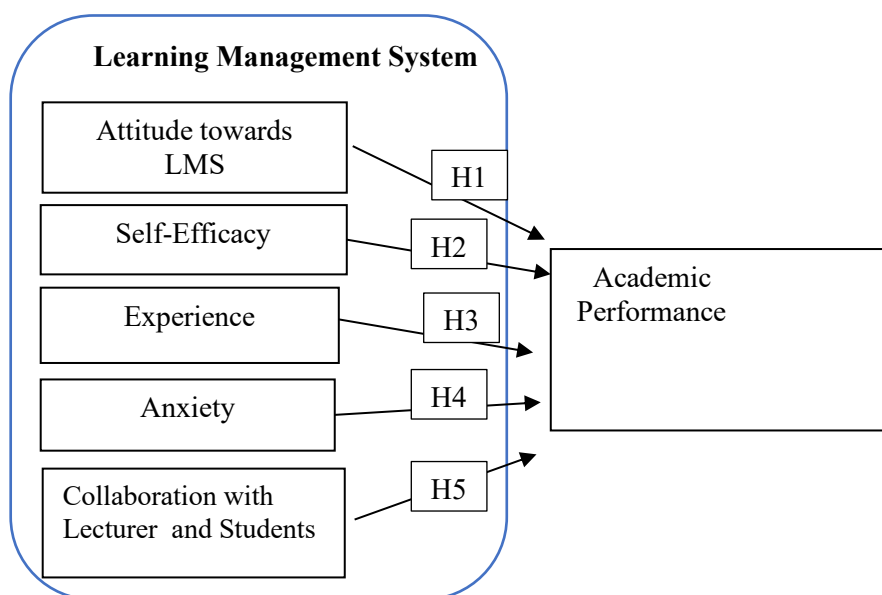
CLS= Collaboration with Lecturer and Students

## **Dependent Variable – Academic Performance**

The academic performance of a student is a combined effect of their

presentations, classroom activities, assignments, and final evaluations (Ong, Bessie, & Cheong, 2009). GPA is the globally accepted measurement to measure the academic achievement of undergraduates (Galiher, 2006; Darling, 2005; Weerahewa, et al., 2012; Stephen and Schaban, 2002). Hence the researchers also used GPA of the first trimester to measure the academic performance of the students. The conceptual framework is indicated in figure 1.

**Figure 1: Conceptual Framework**



*Source:* Developed by the Researchers

## Data Collection

**Secondary Data:** Secondary data represents the different types of data collected from external sources such as journals, textbooks, websites, and database of the institute. The use of secondary data is limited in this study as it has focused on a specific population of undergraduates. Previous studies in relation to the study are used in order to construct the literature review.

**Primary Data:** The primary data collected through an online survey would form the main source of data to conduct the research. Interview methods are also not used as they are highly used in the qualitative study and would

deviate from the selected design. Collecting data through a questionnaire would ensure very less researcher bias, hence improves the quality of the data collected (Robson, 2002). The effectiveness of questionnaire-based data is high as a sizable sample from the population would increase the reliability of the data collected.

The survey questionnaire is divided into two parts: A and B. Data collected in Part A are in relation to building the demographic profile of the respondents including gender, age, parents' income, branch, type of the device used to LMS, and distance from home to the institution. Part B includes questions related to five LMS factors and variable that measures academic performance to measure the LMS and academic performance with seven-point scale ranging. After creating the initial questionnaire, a pilot study was conducted and then the questionnaire would be reviewed by two professionals in the same field in order to improve the reliability, validity, and accuracy of the data.

## **DATA ANALYSIS**

Collected data through google forms were converted into an analyzable format using Ms- Excel and coded before initiating the data analysis. Researchers have conducted the following analysis.

Reliability – Reliability of the data must be tested before conducting any further analysis. For this purpose, Cronbach's Alpha is used for all the questions with a 7-point Likert scale. Cronbach Alpha of 0.7 or more would ensure the reliability of data

Demographic analysis – demographic data collected in Part A of the questionnaire are analyzed using percentages and frequency to understand the demographical background of the respondents.

Descriptive Analysis – A basic analysis done to understand the central tendency and dispersion in relation to the quantitative data collected including the dependent and independent variables. Arithmetic means minimum, maximum, and standard deviation were used in this analysis.

Correlation Analysis – association between two variables is explained through correlation. Researchers have done the correlation between academic performance and each of the five factors related to LMS. Pearson's Correlation Coefficient is identified by  $r$  (rho), Correlation answers could be between -1 to +1. +1 shows the perfect positive correlation and -1 shows the perfect negative correlation and anything in between could be interpreted as strong or moderate or weak correlation as

they approach zero(Saunders et al, 2012).

Linear Regression – Regression Analysis is used to establish causal effect. The impact of LMS factors on the academic achievement of undergraduates is analyzed through linear regression. Since there are multiple independent factors multiple regression analysis was also used in this study.

$$\text{Academic Performance} = \beta_0 + \beta_1 \text{ Attitude towards LMS} + \beta_2 \text{ Self-Efficacy} + \beta_3 \text{ Experience} + \beta_4 \text{ Anxiety} + \beta_5 \text{ Collaboration with Lecturer and students} + \text{error term}$$

Table 2 shows the summary of statistics used to achieve research objectives;

**Table 2: Research objectives and Statistics**

Objective	Tool of Analysis
Identify the existing level of Academic Performance	<ul style="list-style-type: none"> <li>• Arithmetic Mean</li> <li>• Standard deviation</li> </ul>
Examine the impact of LMS on Academic Performance	<ul style="list-style-type: none"> <li>• Independent Variables – LMS factors</li> <li>• Dependent Variable – Academic Performance</li> </ul> <p>Correlation and multiple regression were used.</p>

## RESULTS AND DISCUSSION

Based on the results of Cronbach's Alpha all the variables tested have passed the reliability tests by having a Cronbach's alpha of more than 0.7. Large sample sizes of more than 40 would not require specific normality tests to ensure the normality of the data. Since the sample size is more than 100 normality test is not required (Pallant, 2007). After the initial questionnaire was prepared a pilot study was conducted which suggested no changes were required for the questionnaire. But series of reviews were carried out with the experts in the same field, and it has improved the validity of the data collected through the questionnaire.

### Demographic Analysis

As per Figure 02, the majority (43 %) of the students have a monthly parental income of 50,000 – 100,000 Sri Lankan Rupees and another 20 % have a monthly parental income of less than 20 %. On average the course fee per year is 200,000 LKR. It could be a concern for students to spend additional money on buying electronic devices like laptops or tabs for studying

purposes. It is obvious that 66 % of students use only smartphones and another 24 % of students use both smartphones and laptops. Since the sample consisted of full-time degree followers, the majority of the students, approximately 75%, were immediate school leavers and the rest have delayed their degree enrolment for various reasons such as financial burdens and second attempt in Advanced Level Exams at Schools, etc.

## Descriptive Analysis

**Figure 02: Summary of Demographic Factors**

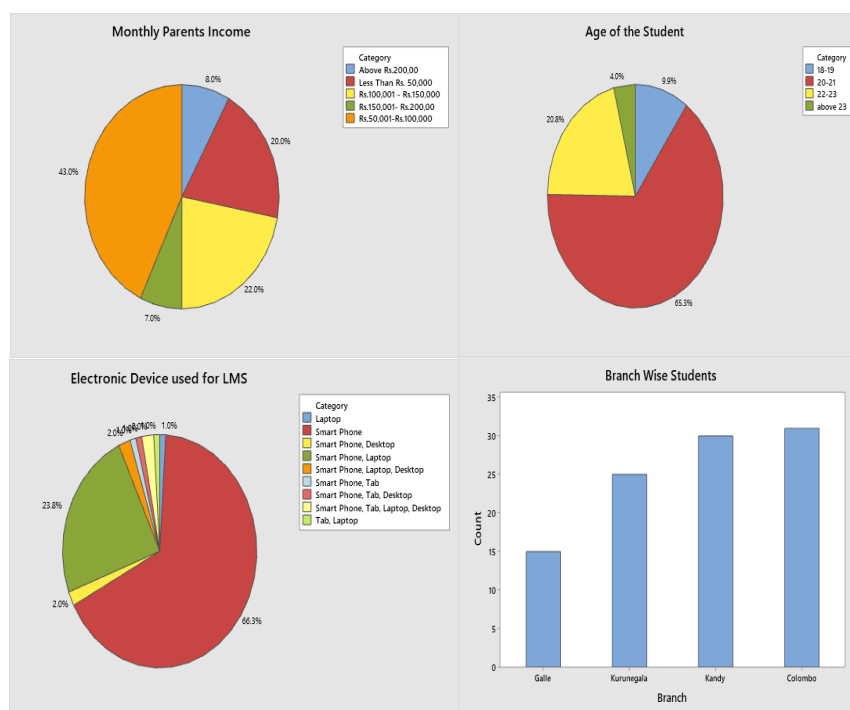


Table 03 shows the mean, standard deviation, minimum, and maximum of all the variables categorized into four branches of the Institute. The average GPA of all the branches is at a high level (GPA above 3.3), but some outliers with extremely low GPAs and with the highest GPA of 4 were noticed. The GPA at the end of the year might come down as the given GPA is only based on the first trimester. Attitude towards LMS, Self-Efficacy, Experience, and Collaboration with lecturers and other students shows a mean value of more than 0.8 or 80 % for all the branches showing on average students have a positive attitude, higher self-efficacy, better experience, and better

collaboration. Galle branch shows the highest average for all the above factors and Kurunegala branch shows the lowest average for the first three factors. Further, the standard deviation in Kurunegala branch is higher rather than there is a considerable difference among students in using and experiencing LMS. In terms of the fourth independent variable, Anxiety, which is a negative factor, also Galle branch students have an average of 73 % showing that they are highly stressed with the use of LMS, and Colombo

**Table 03: Summary of Descriptive Analysis**

Variable	Branch	Total Count	Mean	StDev	Minimum	Maximum
GPA	Colombo	31	3.6210	0.4553	2.0000	4.0000
	Galle	15	3.453	0.690	1.700	4.000
	Kandy	30	3.6383	0.5070	1.7000	4.0000
	Kurunegala	25	3.386	0.781	1.000	4.000
Attitude towards LMS	Colombo	31	0.8306	0.0940	0.5000	0.9643
	Galle	15	0.8833	0.0654	0.7500	1.0000
	Kandy	30	0.8560	0.0847	0.6429	1.0000
	Kurunegala	25	0.8229	0.1373	0.4286	1.0000
Self Efficacy	Colombo	31	0.8214	0.1314	0.3929	1.0000
	Galle	15	0.8524	0.1221	0.5714	1.0000
	Kandy	30	0.8357	0.0842	0.6786	1.0000
	Kurunegala	25	0.8129	0.1738	0.2857	1.0000
Experience	Colombo	31	0.8191	0.1106	0.5000	1.0000
	Galle	15	0.8429	0.1596	0.3571	1.0000
	Kandy	30	0.8357	0.0912	0.6429	1.0000
	Kurunegala	25	0.8043	0.1865	0.1786	1.0000
Anxiety	Colombo	31	0.4677	0.2576	0.1429	1.0000
	Galle	15	0.7381	0.2436	0.1786	1.0000
	Kandy	30	0.6821	0.1679	0.3571	0.9286
	Kurunegala	25	0.6500	0.2553	0.1786	1.0000
Collaboration with Lecturer and other Students	Colombo	31	0.7972	0.1701	0.2143	1.0000
	Galle	15	0.8548	0.1628	0.4286	1.0000
	Kandy	30	0.8429	0.1092	0.6071	1.0000
	Kurunegala	25	0.8043	0.1653	0.2857	1.0000

Branch has a significantly lower Anxiety average of only 47 % might be due to the fact that Colombo students are from urban environment and have access for more facilities and technologies than the other branch students.

## Correlation Analysis

**Table 04: Summary of Correlation Analysis**

Sample 1	Sample 2	Correlation	P-Value
Attitude towards LMS	GPA	0.390	0.000
Self – Efficacy	GPA	0.296	0.003
Experience	GPA	0.262	0.008
Anxiety	GPA	-0.179	0.074
Collaboration with Lecturer and other students	GPA	0.267	0.007
Self – Efficacy	Attitude towards LMS	0.738	0.000
Experience	Attitude towards LMS	0.696	0.000
Anxiety	Attitude towards LMS	0.188	0.059
Collaboration with Lecturer and other students	Attitude towards LMS	0.641	0.000
Experience	Self - Efficacy	0.880	0.000
Anxiety	Self - Efficacy	0.155	0.121
Collaboration with Lecturer and other students	Self - Efficacy	0.657	0.000
Anxiety	Experience	0.174	0.082
Collaboration with Lecturer and other students	Experience	0.602	0.000
Collaboration with Lecturer and other students	Anxiety	0.187	0.062

As per Table 4, all independent variables except Anxiety have a significant positive but weak correlation with GPA. As expected, Anxiety has a negative correlation with GPA, but the result is not statistically significant with a p-value of more than 0.05. In the same table, when analyzing the intercorrelations between independent variables, most of them have a significant strong positive correlation. But when tested with Anxiety, it is not

having a significant correlation with any of the other independent variables. Based on correlation analysis it is proven that there is an association between Measurement variables of LMS and GPA. Conducting a regression analysis would reveal whether the LMS has any impact on the GPA of the students.

### Regression Analysis

The output Regression Analysis is presented in Tables 05, 06, and 07. Table 06 shows a p-value of 0.000 for regression means the overall model is statistically significant. Further, the table shows that two independent variables namely Attitude towards LMS, and Anxiety have a significant impact on the Student's GPA. Table 05 shows the importance of the regression model and an adjusted R-Squared of 17.95% percentage means Usage of LMS affects approximately 18% of variability with relation to GPA. That shows even in the first trimester LMS has played a significant role in deciding the results of students. Table 07 shows that students' attitudes towards LMS have a significant positive effect on their GPA and Anxiety has a significant negative effect on their GPA.

**Table 05: Model Summary**

S	R-sq	R-sq(adj)	R-sq(pred)
0.544756	22.06%	17.95%	5.72%

**Table 06: Analysis of Variance**

Source	DF	Adj SS	Adj MS	F-Value	P-Value
Regression	5	7.9780	1.59560	5.38	0.000
Attitude towards LMS	1	2.3806	2.38057	8.02	0.006
Self - Efficacy	1	0.0087	0.00868	0.03	0.865
Experience	1	0.0120	0.01198	0.04	0.841
Anxiety	1	2.4080	2.40803	8.11	0.005
Collaboration with Lecturer and other Students	1	0.0603	0.06025	0.20	0.653
Error	95	28.1921	0.29676		
Lack-of-Fit	84	27.8938	0.33207	12.24	0.000
Pure Error	11	0.2983	0.02712		
Total	100	36.1701			

**Table 07: Coefficients**

Term	Coef	SE Coef	T-Value	P-Value	VIF
Constant	1.733	0.460	3.77	0.000	
Attitude towards LMS	2.393	0.845	2.83	0.006	2.48
Self - Efficacy	0.168	0.980	0.17	0.865	5.42
Experience	-0.173	0.862	-0.20	0.841	4.55
Anxiety	-0.635	0.223	-2.85	0.005	1.05
Collaboration with Lecturer and Other Students	0.226	0.503	0.45	0.653	1.96

A further regression analysis on Anxiety, as per table 08, shows that there is a significant difference in Anxiety among branches with a p-value of 0.000, stressing the need to handle Anxiety in a tailor-made way for each branch.

**Table 08: ANOVA of Anxiety Vs Branch**

Source	DF	Adj SS	Adj MS	F-Value	P-Value
Branch	3	1.065	0.35503	6.62	0.000
Error	97	5.202	0.05363		
Total	100	6.268			

In the same way, further analysis manifests that there is a significant difference in student attitudes towards LMS. Specifically, the youngest age group 18-19 has a very high positive attitude of 88 % on average towards LMS usage, and the oldest age group 22-23 has the lowest percentage of 69%.

**Table 09: ANOVA of Attitude towards LMS Vs Age Levels**

Source	DF	Adj SS	Adj MS	F-Value	P-Value
Age	3	0.1018	0.033937	3.55	0.017
Error	97	0.9281	0.009568		
Total	100	1.0299			

## CONCLUSION

The aim of this research was to identify the impact of LMS on the academic performance of first-year management undergraduates currently studying at one of the government's own higher educational institutes in Sri Lanka. The

analysis of the existing literature and findings of previous studies, researchers tried to evaluate the current level of academic achievement of undergraduates. Until this research was conducted there was very little evidence to discuss students' characteristics including self-efficacy and their impact on LMS related to government institute undergraduates in Sri Lanka. The study proves that students' attitudes towards the use of LMS and anxiety have significant impacts on the academic performance of undergraduates.

Students' attitude shows the student's level of motivation towards using the LMS. Further discussions with respondents proved that they were excited to use LMS and have seen the adaptation of LMS in a more positive manner than expected. Students expected many positive outcomes in using LMS including time savings in learning activities.

Contradictory to previous studies (Pituch and Lee, 2006; Wan et al., 2007), self-efficacy and experience in LMS do not have any significant impact on the academic performance of the selected undergraduates in this study. But as expected, anxiety has a negative impact on the academic performance of undergraduates. Collaboration and participation in discussions between students and lecturers are important parts of learning. But in the given context collaboration does not have any impact on the academic performance of management undergraduates.

Further, the views of students related to LMS suggested that the LMS is available to access for many students and most of them have a positive opinion about LMS. Hence, investing and implementing LMS-based higher education would be very timely.

The findings of the study would contribute to the future development of the industry. Moreover, future research can be carried out in this area through comparative studies taking private universities and government universities or based on the usage of LMS in pre covid and post covid periods.

### **Limitations**

Even though research objectives are met, the study has many limitations including the scope. Despite there are many government and private higher educational institutes, researchers have selected only one government institute due to difficulties in accessing data and financial constraints.

Another limitation of this study was related to the difficulty of reaching all the undergraduates in the first year all over the country. The researcher distributed 140 questionnaires among first-year management undergraduates who are currently studying in one of the government's own

institutions in Sri Lanka, but only 101 questionnaires returned with answers. Out of 140 respondents, 39 respondents have not responded the questionnaire properly. Further, the data that was used to conduct the study was based on the year 2019. The inclusion of more recent data with more variables could lead to new findings in the area.

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# **A Strategic Training Framework for Women Micro-retail Pop-up Owners to Manage their Temporary Retail Pop-ups for the Long-term**

R.M. Gallellalage<sup>1\*</sup>, K. Galanakis<sup>2</sup>, L. Oxborrow<sup>3</sup>, G. Armannsdottir<sup>4</sup>

*<sup>1\*</sup>Senior Lecturer, Nottingham Business School, Nottingham Trent University, Nottingham, UK*

*ramani.gallellalage@ntu.ac.uk*

*<sup>2</sup>Associate Professor (Management), Nottingham Business School, Nottingham, Trent University, Nottingham, UK*

*kostas.galanakis@ntu.ac.uk*

*<sup>3</sup>Professor (Management), Nottingham Business School, Nottingham Trent, University, Nottingham, UK*

*lynn.oxborrow@ntu.ac.uk*

*<sup>4</sup>Senior Lecturer, Nottingham Business School, Nottingham Trent University, Nottingham, UK*

*guja.armannsdottir@ntu.ac.uk*

## **ABSTRACT**

*This research aims to explore the success factors and the challenges encountered by women micro-retail pop-up owners and to develop a strategic framework, which will assist them to develop their temporary micro-retail pop-ups and survive in the UK retail market beyond five years. The research adopted a qualitative research design associated with interpretive philosophy within a Participatory Action Research (PAR) approach. Sixty-nine participants were recruited, and semi-structured interviews were conducted with the women who had all operated temporary micro-retail pop-ups in three cities in the UK retail market. The thematically analysed qualitative data were used to identify success factors and challenges of women micro-retail pop-up owners. This study fills the gap caused by the lack of a strategic framework specifically developed for women micro-retail pop-up owners; this study develops a strategic framework, named the Pop-up Pathway, which also includes an action-based training. After development, the Pop-up Pathway was tested using three focus group discussions followed by short interviews to learn about the experiences of the participants. Findings: (a) the action-learning activities of the Pop-up Pathway did help women pop-up owners to utilise their strengths to*

*overcome challenges (2) the women benefited from the action-learning activities by experiencing peer-to-peer support, collaboration, and the sense of community they derive from the Pop-up Pathway; (3) the women strengthened their business management knowledge and skills as well as the achieve a work-life balance which could be seen as a solution for the declining British High Street market.*

**Keywords: Women-owned micro-retail pop-ups, Strategic management, Action learning, Pop-up Pathway.**

## INTRODUCTION

Women entrepreneurs start and manage their businesses in the retail market and contribute to the economy. This study focuses on nascent women entrepreneurs and the study's context is women micro-retail pop-up owners in the United Kingdom (UK). Considering the changes happening in the business environment, temporary micro-retail pop-ups have emerged as a notable platform for a solution to the declining British High Street marketplace (Gallellalage, 2020). There is a lack of a Strategic Framework (SF) specifically designed to address the needs of women micro-retail pop-up owners. Studies have focused on the success factors and challenges encountered by women entrepreneurs in general. Further, Higher Education Institutions, Government and Non-Government Organisations (NGOs) provide support and offer formal and non-formal education programmes for established women entrepreneurs and have developed Strategic Frameworks (SFs) to support women entrepreneurs in general. However, there is a question of whether those SFs can address challenges specific to the circumstances of women pop-up owners.

The context of this study is women micro business owners who conduct their businesses in temporary micro-retail pop-ups for up to five years in three cities; namely, Nottingham, Manchester and Birmingham. The women-owned micro-retail pop-ups of this study are defined as enterprises that employ fewer than 10 persons and whose annual turnover or annual balance sheet total does not exceed EUR 2 million (European Commission, 2015). The above pop-ups encompass a broad range of businesses including general food, beverage, designer fashion and clothes in general, market stalls selling local produce, street food vendors, and art and design (Gallellalage, 2020). They operate event stunts and anniversary celebrations, within shopping centres, city centres, transition hubs, abandoned areas, vacant spaces and cultural and sports events in the UK retail marketplace (Pop-up Stores, 2016).

The typology of the women-owned micro-retail pop-ups in this study is summarised below in Table 1.

**Table 1: Typology of Women-owned Micro-retail Pop-ups**

<b>Category</b>	<b>Pop-up event</b>	<b>Location</b>	<b>Example</b>
A	One-site campaigns.	Street marketing, stunt events, anniversary celebrations.	Spinningfields Square, Manchester.
B	Temporary retail markets.	Shopping centres, city centres, railway stations, transition hubs.	Victoria Shopping Centre, Nottingham.
C	One-off events.	Abandoned areas, vacant spaces.	Market stalls, Nottingham. Sneinton Pop-up stores.
D	Limited-time brand expositions.	High street, cultural venues, sports events, fairs and festivals.	Christmas Market, Victoria Square Birmingham.

This study aims to develop a strategic framework which focuses on the development of an entrepreneurship education toolkit for women entrepreneurs who operate their businesses in temporary micro-retail pop-ups. The Strategic Framework is aimed at helping women pop-up owners to address the challenges they encounter in the real business world and to survive in the UK retail market in the long term. Accordingly, the study objectives are:

- Objective 1: To identify the success factors and challenges encountered by women pop-ups
- Objective 2: To develop and validate a strategic framework to support women pop-up owners to address the challenges they encounter.

In order to develop a Strategic Framework with a practical toolkit SWOT

analysis and TOWS matrix adapted to assess the conditions under which women micro-retail pop-up owners operate. This study uses a qualitative method in studying women micro-retail pop-up owners in order to achieve the reliability and validity of the findings as well as to gain insightful empirical data which answers the qualitative questions of ‘why’ and ‘what’ because the qualitative method allows the researchers to ask more in-depth questions regarding the experiences of women pop-up owners. At the initial stage, the literature was analysed thematically. The semi-structured interview guide was developed based a thematic literature review on women's entrepreneurship, information about retail pop-ups and strategic management models for small businesses.

Sixty-nine interviews were conducted with women micro-retail pop-up owners to identify their success factors as well as the challenges they encounter. Based on the findings of the interviews, a strategic framework, namely ‘The Pop-up Pathway’ was developed to identify ways to overcome the challenges and mitigate the threats. From the initial sixty-nine interviews, fifteen individuals were chosen and invited to participate in three separate focus groups according to their desire, willingness, and time availability to assess the viability and effectiveness of the Pop-up Pathway and its action learning activities. Hence, through these focus groups the participants were introduced to the strategic framework. Following the focus groups, the fifteen individuals participated in short interviews to allow them to share their views and experiences with the pop-up pathway approach. All the interviews were recorded and transcribed in order to be thematically analysed.

## **LITERATURE REVIEW**

This study adopts a thematic approach for the analysis of the selected academic journals and other resources and is considered as most relevant for the review of the literature. The identified literature has been analysed thematically as proposed by Braun and Clark (2006) by following a six-phase guide to developing a detailed account of women entrepreneurship and retail-ups.

A summary of the steps in identifying relevant sources follows is provided below in Table 2.

**Table 2: Identification of Relevant Sources of Women Entrepreneurship Academic Literature**

Action taken	Reason	Example
Searched more widely in databases.	To identify the literature within the study context in order to provide information to support the research questions, method, and design of the study.	ProQuest, Emerald Management Journal, Google Advanced Scholar, government and non-government business support organisations' websites.
Consulted relevant online academic sources.	On account of inadequate research into women-owned micro-retail pop-ups in the UK.	News Reports and UK Government facts and figures.
Determined whether the identified internet sources are reliable sources of information.	Identification of relevant literature within the study context and to ensure the substantive relevance of the academic sources.	Identification of reliability of the academic journal 'Small store design and marketing effects: experiential developments in SME fashion pop-up store strategies.
Used more complex combinations of words and phrases and proceeded with persistence, flexibility and tenacity.	To adhere to a search thoroughness and to keep detailed records.	Searches of the various databases yielded 137 possible sources, of which 113 have been peer-reviewed and published since 2010.
Used primary terms in each search.	To ensure the substantive relevance of the academic sources.	The primary terms included were "women", "retail" and "pop-up" simply because the research topic is women-owned micro-retail pop-ups.
To check to see if articles selected in the previous phase contained at least one of four search key words in their abstract.	The chosen keywords were particularly suitable for identifying those materials which strictly looked at the success factors and the challenges of women entrepreneurs and were suitable to gain more insight into the context of the retail pop-up.	Examples of key words chosen: "challenges", "success", "internal", "external" and "strategies".
Utilisation of	To connect particular search	For example, terms such as

two search tools namely Boolean operator in addition to filters.	terms (single word) and phrases (series of terms).	“women” and “pop-up”, and phrases such as “women-owned pop-ups”.
Consideration of the abstract of each article of literature is important in determining its relevance.	To ensure substantive context and to verify the article’s relevance with this study.	Identified sources were selected after reading each abstract.
Read the full text of all the selected peer-reviewed journals after being chosen by following screening of the abstracts.	To select the final set of primary sources and ensure the materials’ substantive relevance.	At this stage, the quality assessment criteria were reviewed along with the theoretical robustness and methodology robustness.
A successful review of existing peer-reviewed literature.	To identify the most relevant texts and potential areas for the study of women-owned pop-ups as well as to increase understanding of the important concepts and theories within the context of this research.	Identification of 5Ms framework. SWOT analysis and TOWS matrix and the School Design Model.
Reviewed textbooks and other sources; brought together research from news updates and government reports.	To enable a comprehensive literature review of materials which provide information and facilitate an in-depth understanding of the existing relevant research into retail pop-ups and to help understand what has been concluded and what still needs to be researched in the context of women-owned pop-ups. To address the relevant gaps and to provide more insights into the experience of women pop-up owners.	The researcher’s personal library and interlibrary loans; textbooks, book chapters and other related publications and information sources.
To keep a track	This procedure helped to	Using Micro Soft Excel and

record of the reviewing of the indicated journal articles.	make sure that all details of authors, titles, dates, volume number, page number, etc are correct.	categorising each piece of material as either very important or moderately important. The printing and storing of a physical copy, or an electronic copy by means of NVivo software, of all journal articles central to the study.
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The identified themes relevant to the study of women pop-up owners discovered by using the thematic approach as summarised in Table 2 are discussed below.

### **Theme One: Second Glass Ceiling**

Over 40 years have elapsed since the studies of women-owned businesses first appeared in women entrepreneur literature. Correa et al. (2019; 2022) highlight women's micro and small business activities as an important element in the development of the economy. It is important, therefore, to identify the challenges encountered by women entrepreneurs. There are many studies that have identified the challenges encountered by women business owners in general, but there is a need to identify the challenges encountered by women micro-retail pop-up owners in particular. The current dearth of literature about the retail pop-ups sphere shows that there is both an opportunity and urgent redress of this void (Gallellalage, 2020).

Studies in management identify the hidden barriers encountered by women in management when they are reaching for higher managerial positions. The under-representation of women at the executive level in large corporations is thought to be one of the main obstacles to female economic empowerment. Researchers identify these challenges as the glass ceiling phenomenon (Morrison *et al.*, 1992). According to studies, some frustrated and discouraged women employees in the corporate world mostly tend to leave their jobs to avoid female-related management issues and are likely to start their own businesses in the absence of a household income (Klenke, 2018). According to studies, many women have found opening their own businesses as an option for their career path (Women as Entrepreneurs in Sweden and the UK, 2001). According to the National Foundation for Women Business Owners, 16% of female owners stated that one of the major motivations for them to start a business was to become an entrepreneur and to escape the glass ceiling problem (Gallellalage, 2020). However, this strategy has not been successful for women according to Business Statistics (2015); in their

2017 report, they found that only 19% of SME employers were majority-led by women, and the women's estimated contribution to the Gross Value Added (GVA) to the UK economy is £85 billion or only 4.6% of GVA. In addition, reports show that there is a higher number of women who start businesses in the UK, but at the same time, reports show that women have a higher level of business closure. According to these studies, this strategy for leaving corporate jobs to avoid the glass ceiling is mostly a failure. The reason is there is a second glass ceiling in the business world where women entrepreneurs encounter challenges and a hindrance to their full entrepreneurial potential.

### **Theme Two: Pop-up Retail Strategy in the UK**

WYG Planning (2016) has identified the retail sector in the UK as a one of the fast-growing segments of the UK economy. However, considering the last fifty years, the retail market has been changing slowly and silently, mostly due to the advancement of new technology and the growth of online retail business formats that occurred during the COVID-19 pandemic, for example which increased the customer's desire for novel experiences. With this in mind, women entrepreneurs ought to manage their businesses steadily and forcefully to improve their performance by achieving competitive advantage by providing novel experiences (Gallellalage, 2020).

According to Surchi (2011, p. 257) pop-ups have identified as an important part of the temporary retail format which had developed into one of the most significant innovations in marketing since it first came to the attention of commentators in 2003. In addition, women entrepreneurs in retail, including women pop-up owners, offer employment opportunities and play a considerable positive role. Retail businesses operate in permanent and temporary retail stores. Pop-ups may be a strategic solution for the declining British High Street market; retail pop-ups provide a potential platform which is situated in high-traffic urban shopping areas with lower operating costs and less dependent on the stores' availability and the time of year (Gallellalage, 2020).

### **Theme Three: Defining the Micro-retail Pop-ups**

As highlighted by Warnaby and Shi (2018), pop-up events can last from a few hours to a year with an average duration of one month. Many researchers have written a definition to define a micro-retail pop-up. See Table 3 for a summary of six definitions that were considered when developing a definition of the micro-retail pop-up for this study.

**Table 3: Definitions of a Pop-up**

Definition	Characteristics	Reference
“Pop-up is a new experiential marketing format intended to engage consumers. It is a promotional retail setting designed to offer an exclusive and highly experiential interaction for the consumer”.	Experiential & Promotional events.	Niehm <i>et al.</i> (2006, p. 2).
“Pop-up retail entails marketing environments that are highly experiential, focused on promoting a brand or a product line, available for a short time period and generally in small venues”.	Experiential, short-term period, small retail space.	Kim <i>et al.</i> (2010, p. 134).
“Pop-ups are natural manifestations .... associated with chic shoppers who know where and when these retailers will appear and are able to take advantage before they disappear, creating an insider-only atmosphere”.	Temporary retail store.	Burgess (2012, p. 285).burr
“A temporary shop, stall or brand experience used to sell goods and services for a limited period of time. It includes everything from market stalls and street food vendors, to fashion shops, galleries, cafes and bars”.	Experiential, Temporary retail store.	CEBU (2014, p. 8).
Pop-up activities take place in a temporary retail space, they can appear in all shapes and sizes, typically inhabiting a space for anything from a day to 6 months.	Temporary retail space.	Appear Here (2015).
“Pop-up stores .... are points of sale that appear, then disappear, in a matter of hours, days or months .... pop-up stores are attractive to consumers who are seeking experience and entertainment”.	Temporary retail stores, Experience.	Klepierre and Qualiquanti (2016, p. 8).

Based on the review of the above definitions, this study makes a clear definition of women-owned micro-retail pop-ups as follows: a women-

owned micro-retail pop-up is defined as a temporary micro-retail business, owned and operated by a woman in different shopping locations, including high traffic shopping areas (Gallellalage, 2020).

#### **Theme Four: The Characteristics of a Retail Pop-up**

A particularly prominent theme appears in the thematic literature review is the characteristics of a pop-up. In terms of its characteristics, a pop-up is a small temporary and short-term retail space. Established women entrepreneurs tend to sell their products in established retail stores but women micro-retail pop-up owners sell their products at pop-up events (e.g., seasonal events) over different periods (Gallellalage, 2020). As highlighted by Kim et al. (2010) and Warnaby and Shi (2018), pop-up events can last from a few hours to a year with an average duration of one month. As highlighted by Gallellalage et al. (2018), established women entrepreneurs tend to sell their products in established retail stores but women micro-retail pop-up owners sell their products at pop-up events (e.g., seasonal events) over different periods (Gallellalage, 2020). Women retail pop-up owners sell products to satisfy daily needs (e.g., food and beverage) and also for high-end luxury products and services by achieving a higher level of customer engagement and public interest.

##### **Sub-theme 1: Novelty and Surprise of Pop-ups**

Pomodor (2013) highlights that retail pop-ups are driving novelty by providing surprising, exciting retail experiences. Neihim *et al.* (2006) state that retail pop-ups are gaining public interest by providing an experiential marketing format. Picot-Coupey (2012, p.9) point out that retail pop-ups are 'based on surprise and exclusivity and have the intention of engaging customers. Likewise, women-owned pop-ups can be identified as individual physical manifestations and promotional retail settings which are 'designed to offer an exclusive and highly experiential interaction for customers' (Pop-up Stores, 2016, p.2; Gallellalage *et al.*, 2018).

As Tube and Warnaby (2017) state, pop-ups are driving novelty by providing a surprising, exciting retail experience for their customers. Women who conduct their businesses in retail pop-ups have the opportunity to provide a higher level of consumer experience for their customers in comparison with established women entrepreneurs who conduct their businesses in permanent retail stores (Gallellalage, 2020). Women pop-up owners have the opportunity (i) to get valuable feedback directly from customers, and (ii) to

build a relationship with customers (Vozza, 2018). Accordingly, the pop-up retail format assists women pop-up owners to drive demand rather than merely generate sales. As highlighted by Pomodoro (2013) a pop-up retail store atmosphere is a fleeting experience as well as being conceived as an exciting event. Therefore, women, pop-up owners can foster an exciting and immediate form of communication by employing the use of all six key characteristics of retail pop-ups as shown in Figure 1. The one important aspect of the characteristics that make them especially effective is that all characteristics can be integrated to develop unique marketing strategies.

**Figure 1: Main Characteristics of a Retail Pop-up Store**



*Source:* Gallellalage (2020)

## **Theme Five: Inadequate Studies of Women-owned Micro-retail Pop-ups**

The urgency driving interest in this study relies on an awareness that research into women's entrepreneurship has expanded exponentially, witnessing rapid growth over the past 30 years (Yadav and Unni, 2016), coupled with the contrast that there has been very little research into women-owned micro-retail pop-ups in the UK and that there are relatively inadequate studies in this area of women-owned micro-retail pop-ups. Thus, as suggested by Poggesi *et al.* (2015), the time has come to explore new retail formats and future direction in order to gain deeper insight into women entrepreneurship within the context of a retail pop-up (Gallellalage, 2020). There is a need to identify the challenges encountered by women micro-retail pop-up owners, with the current dearth of literature in the retail pop-up sphere offering the opportunity for an urgent redress (Gallellalage, 2020).

## **Theme Six: Empowering Women Micro-Retail Pop-up Owners**

The literature on women entrepreneurship highlights several success factors, such as goal setting, self-confidence and motivation, entrepreneurial orientation, achievement, and risk-taking. Due to the significant contribution of women entrepreneurs, including women pop-up owners, to economic development, the factors which lead to the success of women business owners are now highlighted here.

### **Sub-theme 1: Goals and Management**

Studies have explored the relationship between 'goal setting' and 'business success' in women-owned business, and this factor definitely relates to women-owned micro-retail pop-ups. Roomi and Harrison (2008) found business structure and goal setting to be other factors influencing women-owned micro and small business success. They found that women entrepreneurs should "generate enough income to support themselves and their families and achieve enough balance between work, family responsibilities and other interests" (Roomi & Harrison, 2012, p.6). Researchers found that goal setting assists women business owners to develop their business management skills to make rational decisions in the business operation process and management. As a contrast, women pop-up owners can have particular goals in addition to those of established women entrepreneurs. This can be on account of the temporary nature of their businesses. Some women pop-up owners may use a pop-up to test the market with the intention of developing the business to a more permanent location

whereas others may simply want to generate buzz (Pop-up Stores, 2016).

### **Sub-theme 2: Motivations**

Studies have found that women business owners' motivation, intention and aspirations are crucial to their business performance. Similarly, Roomi *et al.* (2009), found that business success differs according to a woman business owner's commitment to develop the business. This view is supported by Gibb and Davies (1990) who write that, considering the 'personality dominated approach', a woman business owner's motivation is regarded as key to business development. Women-owned business development literature, (Vistaprint, 2016), identifies the importance of training and embracing a positive mindset towards a long-term survival in the marketplace.

### **Sub-theme 3: Empowering**

Empowering a woman pop-up owner with business management knowledge and skills can be just the beginning of a long journey to survive in the market. Moreover, a business venture consists of a daily learning process where each day comes with new information and technology. Much of available literature on training for women business owners deals with how to best utilize training to develop their businesses. However, considering the temporary nature and micro size of the pop-up, women pop-up owners are more concerned with balancing their multi-tasking responsibilities, and to do this they seek convenient, simple and practical information (Gallellalage *et al.*, 2018).

### **Sub-theme 4: Entrepreneurial Orientation**

Researchers identify women business owners' entrepreneurial orientation as one of the determining factors for successful women-owned business. According to Miller (1983), the concept of entrepreneurial orientation includes three dimensions - innovation, reactivity and risk-taking. Entrepreneurial innovation or the skill and imagination to create new things has been considered as one of the key success factors of business success and survival. The UK retail market has recently seen a plethora of pop-up stores. Women who conduct their businesses in pop-ups are mostly focused on providing a memorable experiential retail experience. Innovation provided by a retail pop-up store can lead to the diversification of customer experience (Gallellalage *et al.*, 2018). According to the Harvard Business Review, access to technology is a key factor in increasing the influence of women-owned business globally as it competes with others in the market. Technology innovation brings benefits. For example, it can increase productivity and

bring customers new and better goods and services that improve their overall standard of living. However, there is a question as to whether or not women pop-up owners have the same opportunity, knowledge, skills and resources to access such technology and innovation, due to their limited income and the micro-size of the retail pop-ups. Pop-up retail, which includes women-owned pop-ups, has become an expected part of the shopping experience and plays a key role in customer engagement (Gallellalage *et al.*, 2018). Based on previous studies, it is important for women business owners to react positively to changes in the market as well as to the presence of their competitors (The Alison Rose Review of Correa *et al.* (2022), 2019). Nevertheless, there is a question as to what extent established women entrepreneurs are able to react positively to the current changes which are happening in the UK retail market due to social, economic, environment and technology changes.

### **Sub-theme 5: Risk**

Risk has been a central issue in entrepreneurship research. However, there are limited empirical studies on risk as regards women business owners, (Brush *et al.*, 2009), and particularly with regard to women-owned pop-up business. In their study, Verheul *et al.* (2012) identified that women are more risk averse, having a lower tolerance for risk. Risk significantly decreases women business owners' development in the venture process. However, in their study Gemenez-Jimenez *et al.* (2020, p. 14) confirmed that socially supportive cultures can help to reduce the negative relationship between risk-taking and venture success. They also confirmed that in socially supportive cultures, the impact of culture on risk is different to that found in performance-based cultures. The temporary nature of the women-owned micro-retail pop-up means that in difficult times it can be easily to close down if needed; this temporary nature also helps towards the reduction of risk (Gallellalage *et al.*, 2018).

### **Sub-theme 6: Finance**

Previous studies on women-owned businesses highlight that finance plays an important role in developing those businesses. Similarly, Vozza (2018), highlights that as a low investment strategy, temporary retail pop-up shops provide a great opportunity for women business owners to get their products in front of new and existing customers and to make sales. The Royal Bank of Scotland (RBS) recognises a special case for women by offering grant funding for micro and small women business owners, including retail pop-ups in order to encourage their start-ups.

### **Sub-theme 7: Network**

Previous research in women-owned business management alludes to the important role of networks in the survival and success of individual businesses. Turkina *et al.* (2016, p1) have identified the important role of the “so-called relational aspect of network embeddedness”. Business owners’ engagement in social networking has been identified as long-term purposeful arrangements among distinct but related businesses to gain competitive advantage. Researchers highlight that women business owners may encounter challenges in accessing network events. Humaira *et al.* (2020, p.163) highlight that business owners’ ‘inability to expand business networks is a major obstacle to the development of women’s businesses’. They suggest that the retail pop-up is a concept within the marketplace which can be used by small-scale women entrepreneurs to support each other, strengthen the women’s community and strengthen the pop-up market brand. Women business owners’ internal networking includes their friends, relatives, mentors, customers and employees (Turkina, 2018). Klyver and Grant (2010, p.215) highlight that “female entrepreneurs’ networks typically include a larger proportion of women and a smaller proportion of men”.

### **Sub-theme 8: Work-life Balance**

Previous researchers have found that women business owners consume less time in building their businesses due to their domestic and caring responsibilities (Koech & Namusonge, 2015). The success of those women who have managed to avoid this restriction results in them having fewer children on average (Powers & Magnoni, 2013). Researchers, including Roomi *et al.* (2009), identify that women business owners’ characteristics contribute to their business success or failure. Some of the women-specific personal factors that were identified are characteristics such as behaviour, personality, attitudes, capabilities, training, education (Henry *et al.*, 2005), social capital influencing access to resources (Brush *et al.*, 2004), previous business management experience, family history, functional skills, and relevant business sector knowledge (Storely, 1994). Based on the thematic literature review findings, the success factors and challenges encountered by women business owners are summarised Table 4.

**Table 4: Summary of Success Factors and the Limitations to Business Success Experienced by Women Business Owners**

<b>Sub-themes</b>	<b>Factors limiting business success</b>	<b>Factors promoting the success of women - business owners</b>	<b>Factors suggestive of a successful performance</b>
Goals and management Motivation	Less motivation.  Operating a business without having a goal.  Lack of business model.	Motivation and goals.  Personal goals and strategy to assess the performance.  Business model, business strategies, planning and strategic choices, formulation of objectives.	Set realistic short-term and long-term goals.  Strategically operate the business.
Network	Fewer or lack of opportunities in engaging in networking events.  Women are overloaded with business and family responsibilities and may not have the time to join beneficial associations, and this	Network affiliation, human capital and environmental influences, networking Participating in a variety of business and marketing functions to promote individual's business.	Engage effectively and often in networking events.  It is important for women to engage in professional networking events in order to excel in their business and personal lives.

	automatically limits women business owners' wings of exploration.	Participating in mentoring programmes.	
Finance	Lack of finance	Amount of finance	Availability of finance can fuel the business
Technology	Inadequate knowledge of how to utilise technology to develop the business	Use of technology	Utilisation of technology along with innovation
	Lack of confidence	Attributed personal factors, individual characteristics and entrepreneurial orientation	Confidently building a strong and long-term customer relationship
	Lack of previous experience	Number of previous starts and experience  Previous entrepreneurial experience  Management practice	Previous experience can assist in developing the business
	Lack of education or lack of knowledge and skills in business	Level of education, business skills	Having a good education background, business management knowledge and

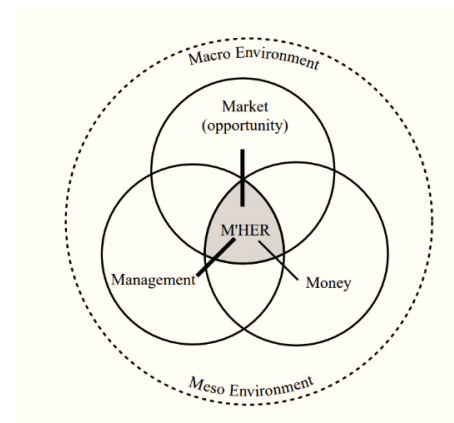
management		skills	
Entrepreneurial orientation	Lack of entrepreneurial orientation Inadequate knowledge and skills in decision-making	Individual characteristics/ entrepreneurial orientation Strengths in generating ideas and dealing with people Decision-making style.	Higher level of knowledge can help decision-making and dealing with people

*Source:* Lerner and Hisrich (1997); Theo *et al.* (2007); Hisrich *et al.* (1997); Vistaprint (2016); Thibault *et al.* (2002); Gallellalage (2020).

### Theme Seven: Theoretical Framework of the Study

Women micro-retail pop-up owners demonstrate specific characteristics and conduct their temporary micro-retail pop-up business activities differently compared to women entrepreneurs in general (Gallellalage *et al.*, 2018). To address these issues the study uses the 5Ms theoretical framework. This is shown below in Figure 2.

**Figure 2 Women micro-retail pop-up owners and the 5Ms framework**



*Source :* Brush *et al.* (2009), Welsh *et al.* (2017)

As highlighted in Figure 2, Brush *et al.* (2009) argue that venture creation is generally built on three fundamental basic constructs of Money, Market and Management (3Ms). Brush and colleagues (2009, p.3) found that the 3Ms framework failed to consider the “underpinning reasons” of “why and how female entrepreneurs and their businesses are different”. The reason is Motherhood and the Meso-macro environment mediate the entrepreneurial activities of women business owners differently. It follows that the theoretical foundation of this study is structured upon the 5Ms framework (Brush *et al.*, 2009): (i) as a lens for viewing the challenges encountered by women micro-retail pop-up owners; (ii) to better understand the real nature and intricacies of the dynamic inherent in their retail pop-up businesses in such a way as to demonstrate; (iii) to discover how motherhood or the family embeddedness within the meso-macro environment affects women-owned micro-retail pop-ups (Welsh, 2017); (iv) to focus on the factors that influence or hinder their business development and sustain them in the UK retail market (Brush *et al.*, 2010).

## **RESEARCH DESIGN AND METHODOLOGY**

The research process was developed methodologically as an interactive continuum to answer the research questions and reach the aims and objectives of the study. Based on the researcher’s prior experience as well as indicated in the literature review carried out in this study, a qualitative research approach has been identified as the most appropriate. This means that methodological choices have been assessed with the study being seen best framed as purely qualitative (Creswell, 2013).

### **Qualitative Research Design**

Qualitative research design offers an effective way of gaining more insight into the experiences of women pop-up owners in the UK retail marketplace. This section is aimed at justification according to three fundamental questions, namely where, why, and how data were collected and analysed. Thus, the research approach proposed for the conducting of this study involves a combination of philosophy, research design and methods and procedures and how they translate into practice (Creswell & Creswell, 2018). In this qualitative multiple research, the researcher makes ontological assumptions. The researcher considered that (a) there is a real social world that consists of personal acceptance and attributes, that (b) there are ‘issues relating to the nature of reality and its characteristics’ (Creswell, 2013, p. 20).

In the identification of women pop-up owners' experiences, the study is conducted with the intent of reporting multiple realities. As suggested by Creswell (2013, p. 45), evidence of multiple realities includes the use of 'multiple forms of data' in themes using the actual words of different participants. In articulating the answers to the research questions, the researcher draws from sources of knowledge, particularly from empirical knowledge, and leans towards an empirical epistemology approach. To gain a deeper understanding of the epistemological elements of the research paradigm, the assumptions made in this study focus on determining the nature of women micro-retail pop-up owners' business management knowledge and experiences, and their social and cultural context. As inferred by Holmes (2020) (2010), ontological and epistemological assumptions about women pop-up owners' nature and experiences shown through this study assist the researcher to effectively engage in the Participatory Action Research (PAR) process (Holmes (2020), 2010). On account of the research questions, the interpretivism paradigm has been considered as a philosophical guideline for the undertaking of this qualitative research. The epistemological dimension of the qualitative approach of this study highlights the purpose behind the 'interpretive' paradigm (Denzin & Lincoln, 1994, p.4). Table 5 shows a descriptive presentation of the interpretive research paradigm in relation to epistemology, methodology and methods.

**Table 5: Research Paradigm Adopted in this Study: Interpretivism**

Philosophical Assumption	Interpretivism
Ontology  (what is a truth? and what are we considering?)	Truth is socially constructed. It can be understood differently depending on a particular context. Interpersonal relationships and interactions among research participants: women micro-retail pop-up owners in the UK.
Epistemology (theory of knowledge) (How is the world or knowledge understood?)	To be subjective Meanings behind interactions are understood by meanings behind interpretation.
Axiology What is the role of values?	Researcher openly discusses values that shape the narrative and includes own personal interpretation in conjunction with the interpretations of participants.
Methodology	

(aims of scientific investigation)	Qualitative approaches
(What is a framework for undertaking this research?)	
Research Methods (techniques and tools) - within the qualitative multiple method	Phase 1: semi-structured interviews Phase 2: focus groups Phase 3: semi-structured short interviews Audio recording, taking notes. Thematic analysis
(What are specific techniques used to collect and analyse research data?)	
<i>Synthesised from: McLinden et al. (2018)</i>	

## Research Methodology

This study has employed qualitative data collection methods that are sensitive to the context of women pop-up owners. As do Choudrie and Culkin (2013), this research adopts a qualitative multiple method and collects empirical data in three phases by conducting (i) semi-structured interviews (ii) focus groups and (iii) follow up, semi-structured short interviews.

Qualitative data were collected in specific geographical areas in the UK, those well populated by women micro-retail pop-ups, namely, Manchester ( $n = 23$ ), Nottingham ( $n = 23$ ) and Birmingham ( $n = 23$ ). These three areas were selected for having recorded lower survival rates during a three consecutive year period of Micro, Small and Medium Enterprises (MSMEs) based on enterprises initiated in 2008 (Business Support: Micro, Small and Medium Enterprises, 2013). However, statistics differed somewhat during the six years.

The first city, Manchester (UK) is a modern, large city with a population of 2,639,000 (Census Data, 2011). It was to be involved since it had been recorded at the lowest survival rate of 49.9% during the considered three years. At the beginning of the first year (2008) there were 2155 MSMEs. However, at the end of the third year (2010) just 1075 MSMEs had been able to survive.

The second city, Nottingham (UK) is a small-medium city with a population of 755,000 (Census Data, 2011). The city was to be involved since it had been recorded at the second-lowest survival rate of 53.6% during the considered three-year period. At the beginning of the first year (2008) there were 915 MSMEs. However, at the end of the third year (2010) just 490 MSMEs had been able to survive in the market.

The third and final city, Birmingham (UK) is a medium-large city with a population of 2,512,000 (Census Data, 2011). The city was to be involved because it had been recorded at the third-lowest survival rate of 54.4% during the considered three-year period of time. At the beginning of the first year (2008) there were 3610 MSMEs. However, at the end of the third year (2010) just 1965 MSMEs had been able to survive

The first few participants were recruited through the Creative Quarter in Nottingham, the Nottingham Women Centre and the Chambers of Commerce of Nottingham, Birmingham and Manchester, not to forget family and friends. Prior to the study, the researcher had already gained access to local authorities. These channels were seen as natural settings where participants would be willing to offer their participation voluntarily. They were asked to refer further potential respondents in order to reach a larger pool of participants. The chain referral process of the snowball sampling technique allowed the researcher to simply reach the population of the study, women micro-retail pop-up owners in the UK. The qualitative data collection process followed in this study shows in Table 6.

**Table 6 : Qualitative Data Collection**

<b>PAR Cycle</b>	<b>Action taken</b>
<b>Cycle 1</b>	Thematic literature review Prepared the semi-structured interview guide (research instrument) based on the thematic literature review findings.
<b>Cycle 2</b>	<b>Semi-structured interviews</b> The researcher conducted semi-structured open-ended, face-to-face interviews with the women pop-up owners by using a semi-structured open-ended interview guide as the research instrument. (a) To provide an effective way of exploring women's self-employment experiences (Foster, 2011). (b) To allow the researcher to gain detailed information from the participants (Yin, 2014). (c) To assist in gaining more insight into the meaning of the spoken words of the participants (Creswell, 2014). (d) To allow the researcher to probe questions and obtain rich data (Bryman & Bell, 2015). The semi-structured interviews were conducted with 69 women micro-retail pop-up owners in three cities namely, Birmingham, Manchester and Nottingham in

	<p>the UK.</p> <p>The participating women pop-ups owners' numbers per city depend on city size and diversity of retail presence (Creswell &amp; Creswell, 2018).</p> <p>Along with the thematic literature review findings, the semi-structured interviews findings allowed the researcher to address the second objective of the study. The action-learning activities of the Pop-up Pathway were designed to support the women pop-up owners.</p>
<b>Cycle 3</b>	<p><b>Focus groups</b></p> <p>Three focus groups were conducted to validate the action-based training of the Pop-up Pathway.</p> <p>The researcher conducted three focus group discussions with women micro-retail pop-up owners to validate the developed Pop-up Pathway. These participants had already participated in the semi-structured interviews. The number of participants per focus group was six. The action learning activities of the Pop-up Pathway were tested during the focus groups (Mertler, 2017).</p>
<b>Cycle 4</b>	<p><b>Follow up individual short interviews</b></p> <p>The researcher conducts eighteen (18) short interviews with the participants who had already participated in the semi-structured interviews and the focus groups and benefits from the feedback of the participants and accordingly, makes some further improvements.</p> <p>Gathered qualitative data were analysed thematically (a) manually and (b) using NVivo software<sup>101</sup>.</p>

*Source:* Gallellalage (2020)

### **Participatory Action Research Cycles of the study**

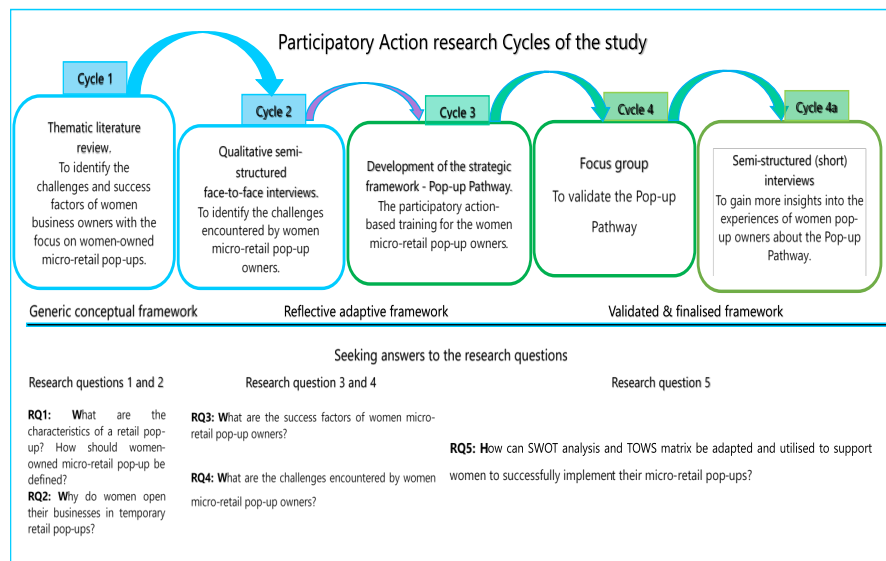
The study conducted in cyclic nature within four cycles (Mertler, 2011). Thematic literature review findings of the study were instrumental in identifying the success factors and the challenges encountered by women entrepreneurs in general. Based on the thematic literature review findings, the interview guide was developed, and pilot tested. Sixty-nine interviews were conducted with women pop-up owners in three cities namely Manchester, Nottingham and Birmingham. and mainly lasted for an hour, but

<sup>101</sup> For the purpose of this study, research ethics were approved by the College Research Ethics Committee (CREC) of Nottingham Trent University. Ethical clearance was obtained on 26.09.2017 under approval No. 2017/227, (see Appendix 4), to conduct the semi-structured interview, and then again on 13.12.2019 under approval No. 2019/269 to conduct the focus groups and follow-up short interviews (see Appendix 5). Participants' confidentiality and anonymity were priorities in this project.

some interviews lasted for one-and-a half hours. This number was reached through data saturation and at this point, no new themes emerged from semi-structured interviews or the interview materials (Bowen, 2008). All the interviews were conducted in English (British) and audio-recorded and information was recorded through the making of handwritten notes.

Thematically analysed empirical data were assisted to identify the success factors and the challenges encountered by women micro-retail pop-up owners. The identified challenges were considered in designing the action-learning activities of the Pop-up Pathway. As mentioned earlier, the Pop-up Pathway was tested by conducting three focus groups with 15 women pop-up owners. Further fifteen short interviews were conducted to get their experiences of the Pop-up Pathway and its action-learning activities. The Participatory Action Research cycles followed in this study are depicted in Figure 3.

**Figure 3: Participatory Action Research (PAR) Cycles of the study**



*Source:* Gallellalage (2020)

## SEMI-STRUCTURED INTERVIEW FINDINGS

By achieving the Objective one of the study, the semi-structured interview findings revealed the success factors and challenges encounter by women pop-up owners in the UK retail market within five categories: Money, Market, Management, Motherhood, Meso and Macro environment factors and link to the 5Ms theoretical framework adopted in this study. Some of the identified success factors were micro-size and temporary nature of their pop-ups; unique, interactive and experiential marketing format and gain public interest and ability to move to different markets and generate urgency and buzz in the retail market, open the pop-up when convenient, close down if difficulties are unsurmountable without losing money. A participant commented:

“[...] pop-up events encourage customers to buy the product as we are only there for a limited time [...]” (PB12).

Another participant mentioned that:

“[...] selling products at a pop-up event offers me the opportunity to engage with customers. It is difficult to find this kind of communication with the customers in a permanent retail shop [...]” (PB12).

Identified some of the other success factors were networking, access finance and lower rent and running cost. One participant stated that:

“[...] it is important for me to be able to get help from someone to get a bank loan or find someone to invest in my pop-up business. It would help me to grow my business [...]” (PB4).

This view is supported by PB13:

“[...] I don't have money to rent a permanent retail space because the rent of a permanent retail shop is higher than the rent of a pop-up. Pop-up retail space is more convenient and affordable for me [...]” (PB13).

Focus on narrow product lines, business management knowledge and skills, keeping fresh, support from family and friends, one participant stated that:

“[...] from my experience, I think it is important for us to have the knowledge in how to identify a good product to sell in the market, how to manage the necessary documents, how to record income and expenditure and how to pay the

required tax [...]" (PM3).

The following factors were identified as challenges encountered by women pop-up owners: competition from the larger retailers, inadequate or lack of networking, lack of savings, barriers to access finance, lower sales turnover. A participant mentioned that:

"[...] as I sell creative jewellery, in some weeks my sales go down. It is difficult for me to save some money to invest in my business [...]" (PN8).

This view is supported by another participant:

"[...] I found it very difficult to get financial support to invest in my pop-up business. It was especially difficult for me to get a bank loan as a female who has childcare responsibilities and as I operate my retail business as a temporary pop-up [...]" (PN6).

Some other challenges and constraints that limit opportunities for women pop-up owners were inadequate or lack of education, business management knowledge, skills, training and experience, mothering role, lack of childcare and support systems, household and family context and relationships, lack of flexibility, balancing business and family life and social-cultural expectations. One informant reported that:

"[...] I had problems in looking after my children. That was the biggest problem I had at that time. Three children and looking after the family, relatives, extended family needs, taking care of the home, needing to take care of bills to be paid, obviously, but definitely the children. And always working around the children with difficulty because of the many hands and feeds impressions I had to take during the day. When the children have gone to bed that is when the real impressions work starts. Then I will be able to make the actual frame as well. Yes, I would work late at night when the children are sleeping. At that time, I will be able to produce the actual product remembering that the impression was the easy bit. Time is definitely an issue with children [...]" (PN6).

Another participant added:

"[...] Looking after three children, family and relatives with the extended family needs, taking care of the home, taking

care of bills which need to be paid, obviously, but with particular attention to the welfare of the children [...]” (PN6).

Based on the identified success factors and challenges, the Pop-up Pathway has been developed, implemented and validated. The action-learning activities of the Pop-up Pathway has been tailored to meet the needs of the women micro-retail pop-up owners and assist and empower them to take effective action to successfully survive in the retail market.

### **Development of the Pop-Up Pathway**

The Pop-up Pathway has two components: The Resource Guide and the Play Book. The Resource Guide indicates to the action-learning activities of the Play Book. The objective of the action-learning activities is to assist women pop-up owners to dismantle former structure in the pursuit of best practice and conceptualise actions in order to offer effective practical solutions to address the identified real-world challenges they encounter.

In designing the action-learning activities, the strategic management tools, and techniques namely, Strengths, Weaknesses, Threats and Opportunities (SWOT) analysis and Threats, Opportunities, Weaknesses and Strengths (TOWS) matrix<sup>102</sup> (Lynch, 2018) were adapted to match the characteristics of women pop-up owners as they are the target audience and main beneficiaries. Their socioeconomic significance was considered as important: their mothering role and family caring responsibilities; family-business life balance; level of education; their business knowledge and skills; previous experience; opportunities and resources available to them. With the 5M framework a strong link was developed to a richer theoretical perspective within the subject of women-owned micro-retail pop-ups (Creswell & Creswell, 2018).

The action-learning activities of the Pop-up Pathway have been implemented and validated with participants during the research cycles of the study as shown in Figure 3. The researcher adopts a participatory, collaborative approach which involves the researcher, women pop-up owners and resource

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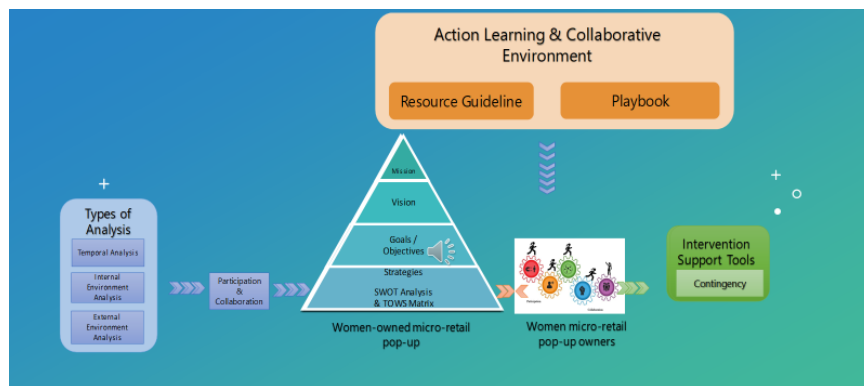
<sup>102</sup> These tools mostly have been adapted in larger organisations and have been adapted in this study to match the characteristics of women and temporary nature of the micro-retail pop-up by including interactive action-learning activities associated with reflective thinking.

persons in developing the Pop-up Pathway. This Participatory Action Research (PAR) combines theory, practice and diagnosis, action and reflection as a more practical method with a vested interest in finding solutions for the challenges they face. The action-learning activities of the Pop-up Pathway are designed to assist and support women micro-retail pop-up owners within the following areas.

- (a) To work with potential group members.
- (b) To strengthen each other by sharing and utilising their diverse business management knowledge, skills, expertise, practice and experiences.
- (c) To identify their strengths, weaknesses, threats and opportunities.
- (d) To decouple the complexities and identify strategies to turn their weaknesses into strengths and threats into opportunities (Lynch, 2018).
- (e) To improve their business management skills and develop an entrepreneurial mindset.
- (f) To utilise their strengths, capabilities and resources to respond positively to the changes in the retail market.
- (g) To identify potential solutions and take action within a collaborative learning environment to overcome the challenges (Greenwood & Levin, 2007).

The development of the Pop-up Pathway shows in Figure 4.

**Figure 4: The Pop-up Pathway**



*Source:* Gallellalage (2020)

## FINDINGS OF FOCUS GROUPS AND FOLLOW-UP SHORT INTERVIEWS

Three focus groups were conducted (five women pop-up owners in each focus group) to test and validate action-learning activities of the Pop-up Pathway. The participants played a crucial role in bringing context to the analysis and making decisions on the feedback provided. Greater insight into the experience of women micro-retail pop-up owners was vital in order to understand the actions required to support them. That insight only be perceived through women pop-up owners themselves because they view reality through the lens of their own experiences, knowledge and expectations. The interpretivism paradigm assists the researcher: (a) to identify effective ways to communicate and actively engage with women pop-up owners; (b) to meaningfully understand the way that participants interpret their different social realities such as experiences, ideas, motivations and intentions (Foster, 1996).

There are major ways in which the researcher's positionality has impacted this study: firstly, by helping participants feel relaxed so they may be more willing to share their experiences in managing their micro-retail pop-up experiences with someone who is willing to listen to their passion, and success as well as their circumstances; secondly the researcher's shifts from facilitator to moderator to researcher; thirdly, the researcher's worldview, background and experiences shape the lens of the research (Berger, 2015).

The researcher played an insider role by facilitating the action-learning activities of the Pop-up Pathway during focus group discussions. This role shifts to facilitator and then to moderator, respectively, in (a) facilitating a collaborative and supportive learning environment and in (b) implementing the action learning activities of the Pop-up pathway. As an insider, the researcher shared personal characteristics such as, role, experience, opinions and perspectives with study participants. In situations like this the researcher felt an integral part of belonging to the community of women pop-up owners under study. However, this was not always the case. Even when feeling to be an integral part of the culture of women-owned micro-retail pop-ups, it was often difficult to understand the sub-culture within women-owned micro-retail pop-ups especially when it came to the topic of cost and profit of their business activities.

Focus group findings provided the largest set of a significant cluster of strengths specific to the women-owned micro-retail pop-ups. During this activity the women pop-up owners were able to identify women specific strengths. Some of the strengths that participants mentioned were, being unwilling to fail, being a person with good ideas and attitudes, having special perspectives, seeking to make a social contribution, and ensuring the quality of the products and service they offer. This finding confirmed earlier research findings where scholars identified that women seek to make a social contribution and want to ensure their quality as women. During the identification of strengths, the researcher was catalytic in facilitating the participants to recognise their strengths and focus on those strengths to empower their pop-up business improvement. It became evident that strengths-based action-learning activity provided a leading-edge approach and helped participants to generate positive thoughts as an evolutionary experience, where all were able to identify some of their strengths. Also interesting are the narratives that the women micro-retail pop-up owners used to express their strengths; how they utilised their strengths to overcome their weaknesses and identify ways to take the next effective steps that follows a clear path to build a pop-up business.

This can be identified as one of the key contributions of this study in that the PAR methodology has facilitated listening to women micro-retail pop-up owners' voices. Also interesting are the narratives that the women micro-retail pop-up owners used to express their strengths; how they utilise their strengths to overcome their weaknesses and identify ways to take the next effective steps that follow a clear path to build a pop-up business.

Participants were induced and sometimes entranced by the facilitation and the peer-to-peer support of the action-learning activities of the Pop-up Pathway. Roomi and Harrion (2008) highlight that the lack of business management training facilities is a major challenge encountered by women business owners. This study responded to that paucity with action-learning activities placing particular emphasis on supporting women pop-up owners to identify their weaknesses and recognise ways to overcome those weaknesses. Moreover, it helped them to raise awareness of their strong personalities and apply the strengths-based approach in embarking on their pop-up retail journey of self-reflection and building up their business endeavours.

Follow up short interviews were conducted with fifteen women who already participated in the focuses groups and shared their experiences about the Pop-up Pathway. Focus groups and the follow-up short interviews findings show that the action-learning activities of the Pop-up Pathway plus the facilitation assisted participants to start in building/creating an appropriate knowledge structure to accommodate spatial and temporal learning. The focus group findings revealed that most women micro-retail pop-up owners might not be able to use the Pop-up Pathway themselves without having it introduced to them. The findings confirmed that, at least from the beginning, a facilitator needs to be involved and guide and support the pop-up owners to familiarise themselves with the tools and materials of the Pop-up Pathway. More importantly, the facilitator needed to help the pop-up owners step-by-step to understand how to use the materials, when they can use them, and how to complete the action-learning activities individually and collectively to develop their pop-up business. The study findings confirmed that the group dynamic with its collaborative nature is an important and effective factor role within the strategic management process in supporting women pop-up owners (Coleman & Robb, 2015).

## **DISCUSSION**

The result of this research disclosed that the Pop-up Pathway has a significant direct impact on women entrepreneurs who conduct their businesses in temporary micro-retail pop-ups by increasing their self-confidence. The Pop-up Pathway did assist women to engage in a positive, diversified and collaborative work environment that helped them to gain the self-confidence to develop their temporary micro-retail pop-ups. The reasoning is that the self-confidence they get from being empowered breeds happiness; it

encourages their wellbeing; inspires them to have braver, better business ideas; to set higher goals and to find novel ways to achieve them; self-confidence assists them to gain strengths and believe in themselves to take successful paths and break new ground.

Of equal importance, this study found that women pop-up owners cannot, or are less likely to manage the action-learning activities by themselves because it was the researcher who facilitated the focus groups who stimulated the participants to (a) engage in effective group discussions, (b) foster participation and move forward through the action-learning activities, (c) identify their strengths, weaknesses, threats and opportunities in a manner that encourages participation, thinking and creativity to come up with ideas, thoughts and perspectives to add value to their businesses, (d) refresh their existing business management knowledge to develop new knowledge and skills and add value to their pop-up businesses within a group dynamic. Consequently, this study validated the aim of the Pop-up Pathway to contextualise the action-learning activities into facilitator-led action-based training.

Finally, the most interesting finding was that action-learning activities of the Pop-up Pathway assisted women pop-up owners to develop their knowledge and skills in developing their business in order to survive in the UK retail market. As it was found, the strategic management tool was the beginning of a sense of community and collaboration among the women micro-retail pop-up owners who participated in the study.

### **Contribution of the Study**

This study makes several practical and theoretical contributions to the field of women-owned micro-retail pop-ups. First, it gives support to the research area of strategic management in micro and small enterprises because of its specific focus on women-owned temporary pop-ups in the UK retail market.

Second, the Pop-up Pathway is projected to assist women pop-up owners to identify practical solutions; gain required support to implement those solutions; take effective and prolific decisions; foster positive improvements and evaluate and reflect on the process and the outcomes of change. Furthermore, it helps them to compete within a competitive but collaborative retail environment; share their knowledge, ideas and views to support their colleagues; strive for improvement and create a competitive but collaborative support model which aims to gain effective and positive responses for

improving the performance of women-owned retail pop-ups. The evidence shows that the Pop-up Pathway assists women pop-up owners to explore and embrace new ideas and put them into practice, utilising their intellectual capital and untapped potential to gain the power to successfully survive in the UK retail market.

Third, it is evident from the focus groups and short interviews findings that the Pop-up Pathway assists women pop-up owners to strategically plan their business activities and make flexible and practical business decisions in the short and long term, all while fulfilling their family caring responsibilities. A distinctive feature of the Pop-up Pathway is that women micro-retail pop-up owners can apply the Pop-up Pathway at any stage between 0 and 5 years during their pop-up business.

The theoretical contributions of this study include: (1) this is the first study to explore the women-owned micro-retail pop-up phenomenon and present a definition of micro-retail pop-ups; (2) it contributes to our understanding of the success factors and challenges encountered by women micro-retail pop-up owners within the context of the UK retail market. Prior to this study, evidence of the success factors and challenges encountered by women micro-retail pop-up owners was purely anecdotal; (3) this study is the first comprehensive investigation using a strategic framework of women entrepreneurs who are conducting their micro-size retail businesses in the form of temporary retail pop-ups. Previous researchers have discussed adaption of the strategic management tools in micro, small and medium businesses. However, there are inadequate studies on how to adapt strategic management tools in developing strategic frameworks in the women-owned micro-retail pop-up business context.

## **Recommendations**

The researcher would also recommend expanding this study internationally, perhaps to different economies or developing countries, to explore the socio-economic and cultural aspects of women temporary retail business owners and accordingly adapt the Pop-up Pathway to different contexts. This could be a fruitful area for further research. It could give support to women micro-retail business owners who operate their retail businesses on a temporary basis with more difficulties due to economic constraints and could contribute to uplifting hundreds of thousands of women, children and families to meet their basic needs, adding new employment opportunities to increase the gross

domestic product of an economy. It is intended for the newly developed Pop-up Pathway to provide a model to conduct future research in the field of women-owned business. The Pop-up Pathway assists women micro-retail pop-up owners in the UK to use robust business management knowledge and skills and to continue to achieve success along the entrepreneurial journey while fulfilling family caring responsibilities and achieving a work-life balance.

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# **An Investigation of The Causality Relationship between the Returns of Major South Asian Currencies and Major Cryptocurrencies**

H.N.S.G.A. Weerakoon<sup>1\*</sup>, A.A. Lokeshwara<sup>2</sup>, C.M. Gamage<sup>3</sup>, H.S. Liyanage<sup>4</sup>, D.M.S.C. Wanninayaka<sup>5</sup>

*<sup>1\*</sup>Department of SLIIT Business School, Sri Lanka Institute of Information Technology, Malabe, Sri Lanka, anuja.l@slit.lk*

*<sup>2</sup>Department of SLIIT Business School, Sri Lanka Institute of Information Technology, Malabe, Sri Lanka, nethee.weerakoon@gmail.com*

*<sup>3</sup>Department of SLIIT Business School, Sri Lanka Institute of Information Technology, Malabe, Sri Lanka, chamodagamage97@gmail.com*

*<sup>4</sup>Department of SLIIT Business School, Sri Lanka Institute of Information Technology, Malabe, Sri Lanka, hasini123liyanage@gmail.com,*

*<sup>5</sup>Department of SLIIT Business School, Sri Lanka Institute of Information Technology, Malabe, Sri Lanka, supunwanninayaka07@gmail.com*

## **ABSTRACT**

*This article investigates the causality relationship between the returns of major South Asian foreign currency and major cryptocurrency based on the selected South Asian countries include Bangladesh, India, Pakistan, and Sri Lanka using daily data from the 9<sup>th</sup> of November 2017 to the 8<sup>th</sup> of November 2020. The dependent variables of this study as cryptocurrencies such as Bitcoin, Ethereum, Litecoin, and Bitcoin Cash while the independent variables selected from South Asian foreign currency returns as against the anchor currencies such as United States Dollar (USD), British Pound Sterling (GBP), and Euro (EUR). This study will be the first attempt of this kind to be conducted with data on a broad scale covering selected countries in the South Asian region (Bangladesh, Pakistan, India, and Sri Lanka) as per the information available to the researchers. This study used a quantitative approach based on secondary data from various sources, namely the Central Bank of South Asian countries and the Coinmarketcap website. To establish this relationship, causality analysis was applied. We tested the Panel Unit Root test and Panel Granger Causality test for the causality analysis techniques. The findings reflected that there is no significant relationship between major cryptocurrencies with United States Dollar in Bangladesh, Pakistan, and Sri Lanka. Moreover, the result shows*

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*that there is a unidirectional relationship between major cryptocurrencies to USD in India. But there is bidirectional causality running from Bitcoin Cash to USD in India. Bidirectional causality reflects that foreign currency markets can respond similarly to new information (changes in monetary or macroeconomic policy) without one particular foreign exchange market specifically impacting the other. The study also found that exchange markets in South Asian nations have not highly impact on cryptocurrency markets. This finding may be related to the fact that governments have not yet given cryptocurrencies official legal recognition, in addition to the fact that the public does not widely accept them. Hence, the findings of this research were important to stakeholders such as developers, researchers' academia, miners, industry bodies, traders, entrepreneurs, government, banking sector, investors, and end-users who were in the cryptocurrency market.*

**Keywords: Bitcoin, Cryptocurrencies, Foreign Currency, Granger Causality, South Asia**

## **INTRODUCTION**

Cryptocurrencies have garnered considerable attention from the general society, investors, and legislators in recent years. People were interested in modern technology, while some were focused on enormous profits. Regardless of focus, the economics and finance research community should be interested in cryptocurrencies because of its potential to disrupt financial stability, conventional payment methods, and perhaps even financial systems (Bohme et al., 2015). Furthermore, these notions have made the modern economy increasingly dependent on digital payment methods.

The cryptocurrency phenomenon is proliferating day by day, it originated in 2008 by Satoshi Nakamoto (Nakamoto, 2008) and introduced Bitcoin as the first digital currency to facilitate everyday transactions. The first decentralized cryptocurrency released was a whitepaper which was named as "Bitcoin: A Peer-to-Peer Electronic Cash System." This whitepaper outlines the basics of blockchain technology and the over"ll decentralized revolution (Nakamoto, 2008). A cryptocurrency is a digital currency that is exchanged for services or products that use encryption methods to generate, regulate, and analyze money (Fauzi et al., 2020). The first cryptocurrency of Bitcoin was initially traded in 2009. Since then, many more cryptocurrencies have been created using the same Innovations Introduced by Bitcoin. The top cryptocurrencies currently in the world are Bitcoin, Litecoin, Ethereum, Bitcoin Cash, etc. (Bondarenko et al., 2019). Cryptocurrency has become a

prevalent financial and economic issue in the 21<sup>st</sup> century. As a result, there are currently 9,849 cryptocurrencies on the market (CoinMarketCap, 2022). Bitcoin has used approximately 62.5 million transactions among 109 million accounts (Bohme et al., 2015). As of March 2022, the cryptocurrency market capitalization is approximately \$ 3 trillion, and it is growing (CoinMarketCap, 2022).

Since the creation of Bitcoin in 2008, the financial industry, the media, and academics had all been enthusiastic about cryptocurrencies. Although Bitcoin was the first decentralized form, it was developed on blockchain technology and offers several advantages over conventional payment systems such as MasterCard and visa. The use of blockchain technology could only be accessed by parties who were engaged with the cryptocurrency (Pathiranage, Xiao, and Weifeng, 2021). Cryptocurrency had generated global interest, making it a critical piece of financial technology that should be studied by academics, financial stakeholders, and the media.

Cryptocurrency prices have consistently shown high volatility, and high volatility usually contributes actively to the cryptocurrency's ownership of its economy. Interest in the crypto market is growing among users and the academic research community (Levent and Caglar, 2018). Therefore, cryptocurrency is the most well-known and frequently used in the world, it has become a controversial topic due to its dynamics, usage, mining, high volatility, as well as the growing popularity of the cryptocurrency, and its popularity among a wider audience.

In a short period, market analysts estimated that the total number of crypto users were close to 230 million in 2021. However, a few months later, when the market started to rise, that number increased to 263 million (Zhou, 2021). To come out of this, the government and central banks tried their best to regulate cryptocurrency. If this was regulated and cryptocurrency became an acceptable currency, cryptocurrency could be utilized to engage in international risk mitigation methods such as hedging which many developed countries were already implemented (Mallick and Mallik, 2020).

This study was to address the following main question: What is the direction of the causality between the returns of major South Asian foreign currency and major Cryptocurrency?

To facilitate the above research question, the following sub-questions will be answered in particular:

Is there a bidirectional between the returns of major South Asian foreign

currency and major cryptocurrency?

Is there a unidirectional between the returns of major South Asian foreign currency and major cryptocurrency?

This study's main objective is to investigate the causality relationship between the returns of major South Asian foreign currency and major cryptocurrency based on the selected South Asian countries using daily data from 2017 to 2020. Therefore, in this study, we aimed to determine whether cryptocurrencies were a viable alternative for the exchange rates. This study will be the first attempt of this kind to be conducted with data on a broad scale covering selected countries in the south Asian region (Bangladesh, Pakistan, India, and Sri Lanka) as per the information available to the researchers.

The first chapter of this article addresses the introduction, and the second chapter describes the literature review. In the third chapter, data and methodology are explained along with summary statistics for key variables and a discussion of the relationships between the variables. Results are discussed in the fourth chapter, along with data analysis. The highlights and research constraints are discussed in the fifth chapter's conclusion.

## **LITERATURE REVIEW**

Gunay et al. (2021) compared three emerging (Rupee, Ruble, and Yuan) and developed (Yen, Pound Sterling, and Euro) market economies with Bitcoin. Markov Regime Switching Regression (MRSR) analysis and symmetric, asymmetric and nonlinear causality tests were used to conduct the empirical tests. The findings suggested that the price of Bitcoin and various return components have a causal relationship with the Indian Rupee and the Chinese Yuan. These results were supported by the MRSR analysis, which showed that there was an interaction in the contraction regimes. The findings in this study demonstrate that, even after separate the components of positive and negative returns, the causal association between Bitcoin and the Chinese Yuan and Bitcoin and the Indian Rupee is still significant for various combinations of returns. The results of the asymmetric causality analysis are consistent with the finding that the relationship between Bitcoin and the Chinese Yuan and the Indian Rupee is significant under contractionary regimes.

A study by Pakenaite and Taujanskaite (2019) found that quantitative analytic methodologies were used to investigate the possible influence of

bitcoins and blockchain on the exchange rates of selected fiat currencies. The researchers have analyzed the impact of cryptocurrencies on the money market. Accordingly, the authors also focus on key issues such as the currency exchange rate and bitcoin market capitalization, money supply, inflation rate, and cryptocurrency price analysis. Many significant forces are constantly increasing the demand for cryptocurrency. Therefore, it brings potential benefits to society and the wealth of the country. The economic benefits of cryptocurrencies have opened new opportunities for enterprises. Furthermore, they have found that the economy grows by providing new business opportunities such as cryptocurrency mining hardware development. The study findings show that Bitcoin money supply and exchange rates (USD/EUR) have a negative relationship, but Bitcoin inflation rate and exchange rates (USD/EUR) have a positive relationship.

Almansour et al. (2020) revealed to media and academics that cryptocurrencies have gained considerable attention. This study looked at how currency rates affected profits on Bitcoins from 2014 to 2019. The findings showed that the profits on Bitcoin were not greatly impacted by changes in foreign currency prices. However, when significance is evaluated at the 90% level, the GBP was shown to be significant. As the EUR value rises, bitcoin returns rise as well, and vice versa. The returns on the USD/JPY, USD/GBP, and USD/AUD currency pairs have also been found to be negatively related. As a result, the price of Bitcoin will rise if the value of the JPY, GBP, and AUD decreases. This suggests that variations in foreign currencies will not have a significant impact on Bitcoin returns.

As in the previous article, this article discusses bitcoin price fluctuations for buyers. Levent and Caglar (2018) the Hatemi-J test is used to investigate the asymmetric link between Bitcoin and Gold, Brent oil, the US dollar, the S&P 500, and the BIST 100 (Borsa Istanbul Stock exchange) indices for weekly data between November 2013 and July 2018. The findings demonstrate that the price of Bitcoin and the S&P 500 index is merely causally linked. As a result, fluctuations in Bitcoin expenses appear to have an impact on S&P 500 Index buyers' different selections. As a result, buyers on the S&P 500 Index have been closely monitoring potential macroeconomic changes and have been active on the S&P 500 market. However, it has not been possible to determine whether there is a rational date between its mile Bitcoin rate and the various variables. As a result, bitcoin is expected to exist in the future in conjunction with market commodities and other global indicators, as well as the recognition, popularity, and increased reliability of the Bitcoin currency through the use of countries.

Elsayed et al. (2020) disclosed the causal dynamics between nine main currencies for the foreign currency markets and the Bitcoin, Litecoin, and Ripple markets. To find dynamics, two techniques: the Bayesian graphical structure vector and the Diebold-Yilmaz approach were applied. This report indicated that in the first three quarters of 2017, there was a significant leverage effect between Bitcoin and Litecoin and major currencies, with the exception of the Chinese yuan, showed little impact on cryptocurrencies. According to the authors, Bitcoin and Litecoin can be used as a hedge against potential currency devaluations and price inflation in the Chinese economy. The report's findings demonstrate that they are useless for predicting the quantity and movements of cryptocurrencies or other currency rates.

Al-Naif (2020) performed multiple regression analyses, unit root tests, and correlations to examine the link between the returns on exchange rates for the major three cryptocurrencies (Bitcoin, Ethereum, and Ripple) and eight currencies from the Arabian. For the sample selected between the 1<sup>st</sup> of January 2017 and the 1<sup>st</sup> of January 2020, daily closing prices (against the US dollar) data were gathered from various sources. According to the findings, there was no correlation between the exchange rates of Arabian currencies and cryptocurrencies. However, the findings revealed a strong positive correlation between Ripple, Ethereum, and Bitcoin. As a result of the negative correlation between the Iraqi dinar and Ripple, the study concluded that the former can gain from hedging and diversification.

Mallick and Mallik (2021) investigated the relationship between official Indian currencies (USD, GBP, EUR, YEN) and cryptocurrencies (Bitcoin, Ethereum, Binance Coin, Litecoin) using daily data. To determine the relationship between cryptocurrencies and Indian currency exchange rates, multiple regression analysis, Durbin-Watson (DW), and correlational statistical models were used. The outcomes demonstrated that USD and Litecoin have a negative correlation, which makes it useful for diversification and hedging investments. The study discovered that the Indian forex market has less impact on cryptocurrency markets because cryptocurrencies are not legally recognized by the government in India, affecting public perception and reducing public acceptance. The Supreme Court's new ruling is expected to serve as a spark to encourage cryptocurrency trading and consolidation in India.

Cheong (2019) study the attributes of four prominent cryptocurrencies and see how they might be utilized as a simpler alternative to traditional financial risk management strategies for hedging foreign currency (FX) risks. Fama

and MacBeth (1973) as well as visual data presentations are used in this study. The results show that, when compared to other conventional hedging instruments or approaches like gold or a diversified currency portfolio, cryptocurrencies can be a more effective hedge against Forex risks.

Sebastiao and Godinho (2020) study the long- and short-term links between the official USD/EUR exchange rate as a monetary unit and the implied exchange rate via Bitcoin from March 7, 2016, to November 22, 2019. The findings in this instance demonstrate that the two exchange rates are cointegrated, and the cointegrating vector is statistically identical to the theoretical one generated from the single price term. The key finding is that essential data from the official USD/EUR exchange rate is incorporated into Bitcoin USD and EUR values.

Research conducted by Chinthapalli (2021) presents a comparative analysis of the probability of volatility clusters on cryptocurrencies and foreign exchange currencies. This research covers the sampling period from August 2017 to August 2020. This is because cryptocurrencies became widespread during this period. For cryptocurrencies and forex currencies, the study used daily open and close prices for about four years to analyze data based on five attributes: centrality, volatility, robustness, risk, and cluster structure. This paper investigates the GARCH index (Generalized Auto Regressive Conditional Heteroskedasticity) hybrid approaches and simulates them using Eviews and SPSS software. The outcome demonstrates how well the probability clusters accurately depict the influence on cryptocurrencies and Forex currencies.

Liljestrom (2019) show that although the cryptocurrency business continues to grow, the academic studies on the area is relatively undeveloped. Examining the risk exposure of identical investments across different cryptocurrencies adds to prior studies on cryptocurrency market efficiency. Four cryptocurrencies and nine distinct exchanges were covered in this analysis. The data was analyzed during the course of a full sample period as well as two sub-sample periods. The results showed that identical investments in chosen exchanges had large rapid rate fluctuations, but that efficiency increased between the first and second sub-sample periods. Although the study concludes that the cryptocurrency market has considerable inefficiencies, the findings also demonstrate that the system is growing more efficiently with time.

Ozyesil (2019) finds the link between Bitcoin final values and currency rates (USD and EUR) using daily data from October 27, 2017, to April 5, 2019.

This research looked into the interaction between Bitcoin and Exchange Rates in order to determine whether it was Bitcoin. To explore the interaction between exchange rates and Bitcoin, the Var model was used to analyze the interaction (exchange) between the exchange rate and the daily closing price of both Bitcoin. As a result, attempts have been made to demonstrate the susceptibility of Bitcoin values to exchange rate changes. According to the research, Bitcoin and the Euro are mostly external variables, with the USD having little impact on their pricing. The conclusion that the USD exchange rate is considerably sensitive to the Euro is an intriguing result of this investigation. Finally, the study's findings suggest that Bitcoin and exchange rates are not yet mutually exclusive instruments.

Corelli (2018) the article investigates the relationship between the most widely used cryptocurrencies and a few fiat currencies in an effort to identify any patterns or causes. Cryptocurrencies are a hot topic in the financial world and are often regarded as being a part of the present, global financial revolution due to their tight link to the Blockchain system from which they come. In order to investigate this link for the first time, this preliminary study carefully investigated the data, their qualities, and how they relate. The results show some really surprising conclusions about how concentrated the causal effect is on some particular cryptocurrencies and fiat currencies. An obvious and understandable link between cryptocurrencies and Asian markets is anticipated to be present in the final product, giving it some degree of Asian influence.

## **DATA AND METHODOLOGY**

This study was conducted in selected South Asian countries (Bangladesh, India, Pakistan, and Sri Lanka). The purpose of this study was to examine the causality relationship between major South Asian foreign currency returns (USD, GBP, EUR) on major cryptocurrency returns (Bitcoin, Ethereum, Litecoin, and Bitcoin Cash) data within the period 9<sup>th</sup> of November 2017 to 8<sup>th</sup> of November 2020 using appropriate statistical techniques. According to the World Bank database, it was observed that the Co<sup>vi</sup>d-19 pandemic caused a change in the exchange rates of South Asian nation<sup>s</sup> between 2015 and 2020 (World Bank, 2022). As a result, it was useful to observe the causal relationship between the returns of major South Asian foreign currencies and the returns of major cryptocurrencies.

All the information on cryptocurrencies and foreign exchange rates for the

years between 2017 and 2020 was gathered from secondary sources, namely the Central Banks of selected South Asian countries and the Coinmarketcap website. The data collection process was completed within the daily data from 9<sup>th</sup> of November 2017 to 8<sup>th</sup> of November 2020.

## Study Variables

### Dependent Variables:

This study employed four cryptocurrencies which are Bitcoin (BTC), Ethereum (ETH), Bitcoin Cash (BCH), and Litecoin (LTC) using daily returns on currency exchange (against the US Dollar). Additionally, the digital currency market is represented by the US Dollar index (USDIX).

### Independent Variables:

The study used selected foreign exchange returns from South Asia against anchor currencies such as the United States Dollar (USD), British Pound Sterling (GBP), and Euro (EUR). Therefore, anchor currencies are frequently utilized in practically all transactions worldwide.

**Table 14: Foreign Currency Returns measured against the Anchor Currencies for each selected South Asian Country**

Bangladesh	Pakistan	India	Sri Lanka
USD/BDT	USD/PKR	USD/INR	USD/LKR
GBP/BDT	GBP/PKR	GBP/INR	GBP/LKR
EUR/BDT	EUR/ PKR	EUR/INR	EUR/LKR

*Source:* Authors' compilation

### Measurement of the variables

This study created a dataset that includes four cryptocurrencies that were with the highest market capitalization and a sufficient history of data from 09<sup>th</sup> of November 2017 to 08<sup>th</sup> of November 2020: Bitcoin, Ethereum, Litecoin and Bitcoin Cash. These were complemented by the most popular forex currencies were the USD, GBP, and Euro. To prevent liquidity peaks in the foreign exchange market, both groups of currencies were compared with the US dollar, and closing values were recorded at 00:00 Greenwich meantime.

The research's independent and dependent variables were the most important. The independent variables were those that had an impact on another variable, whereas the dependent variables were those that were impacted by changes in another variable. Because control variables might influence the outcomes

and findings, they were used in the study to assess the impact of the independent on dependent variables. The following table 2 depicts the variables for supporting past research articles.

**Table 15: Variables and Supporting Past Research Articles**

Variables	Past Research studies
Cryptocurrencies <ul style="list-style-type: none"> <li>▪ Bitcoin</li> <li>▪ Ethereum</li> <li>▪ Litecoin</li> <li>▪ Bitcoin Cash</li> </ul>	Khan N. et al. (2022), Mallick and Mallik (2021), Al-Naif and Al- Balqa (2020), Szetela et al. (2016), Corelli (2018), Baumohl (2019), Jimoh and Benjamin (2020), Chemkha et al. (2020), Kostika and Laopodis (2019)
Foreign Currencies <ul style="list-style-type: none"> <li>▪ USD</li> <li>▪ GBP</li> <li>▪ EUR</li> </ul>	Mallick and Mallik (2021), Al-Naif and Al- Balqa (2020), Szetela et al. (2016), Almansour et al. (2020), Sebastiao and Godinho (2020), Corelli (2018), Pakenaite and Taujanskaite (2019), Baumohl (2019), Aslam (2016), Khan (2021), Rahman and Uddin (2009)

*Source:* Developed by Authors

## Method of Data Collection

As shown in table 2 all the data related to the cryptocurrencies and foreign exchange rates for the period from 2017 to 2020 were collected from secondary sources which are the Central Banks of selected South Asian countries and the Coinmarketcap website. The data collection process was completed within the daily data from 9<sup>th</sup> November to 8<sup>th</sup> November 2020.

**Table 16: Source of Data Collection**

Country	Variables	Source of Data Collection
Global	BTC, ETH, LTC, BCH	CoinMarketCap (2022)
Bangladesh	USD/BDT, GBP/BDT, EUR/BDT	Central Bank of Bangladesh (2022)
India	USD/INR, GBP/INR, EUR/INR	Central Bank of India (2022)
Pakistan	USD/PKR, GBP/PKR, EUR/PKR	Central Bank of Pakistan (2022)
Sri Lanka	USD/LKR, GBP/LKR, EUR/LKR	Central Bank of Sri Lanka (2022)

*Source:* Authors' Compilation

## Currency Returns Equation

The return computation reflects the difference between the current value and the previous value, divided by the previous period value. Generally, the return formula can be written as follows:

### Equation

$$\text{Return} = \left( \frac{R_t - R_{t-1}}{R_{t-1}} \right) \dots\dots\dots (1)$$

Where:

$R_t$  = Value of the currency at period t.

$R_{t-1}$  = Value of the currency at period t-1.

### Model Specification

The following is the linear model that was used in this study:

$$CRC_{i,t} = \alpha + \beta \times CX_{i,t} + \epsilon_{i,t} \dots\dots\dots (2)$$

Where:

$CRC_{i,t}$  = Cryptocurrency

$CX_{i,t}$  = South Asian foreign currency

Because the study uses four cryptocurrencies as proxies for cryptocurrencies, we used the following linear models:

#### Model 1:

$$R_{\text{Bitcoin}} = \alpha + (\beta_1 \times R_{\text{Ethereum}}) + (\beta_2 \times R_{\text{Litecoin}}) + (\beta_3 \times R_{\text{Bitcoin Cash}}) + (\beta_4 \times R_{\text{USD}}) + (\beta_5 \times R_{\text{GBP}}) + (\beta_6 \times R_{\text{EUR}}) + \epsilon \dots\dots\dots (3)$$

#### Model 2:

$$R_{\text{Ethereum}} = \alpha + (\beta_1 \times R_{\text{Bitcoin}}) + (\beta_2 \times R_{\text{Litecoin}}) + (\beta_3 \times R_{\text{Bitcoin Cash}}) + (\beta_4 \times R_{\text{USD}}) + (\beta_5 \times R_{\text{GBP}}) + (\beta_6 \times R_{\text{EUR}}) + \epsilon \dots\dots\dots (4)$$

#### Model 3:

$$R_{\text{Litecoin}} = \alpha + (\beta_1 \times R_{\text{Bitcoin}}) + (\beta_2 \times R_{\text{Ethereum}}) + (\beta_3 \times R_{\text{Bitcoin Cash}}) + (\beta_4 \times R_{\text{USD}}) + (\beta_5 \times R_{\text{GBP}}) + (\beta_6 \times R_{\text{EUR}}) + \epsilon \dots\dots\dots (5)$$

#### Model 4:

$$R_{\text{Bitcoin Cash}} = \alpha + (\beta_1 \times R_{\text{Bitcoin}}) + (\beta_2 \times R_{\text{Ethereum}}) + (\beta_3 \times R_{\text{Litecoin}}) +$$

$$(\beta_4 \times R_{USD}) + (\beta_5 \times R_{GBP}) + (\beta_6 \times R_{EUR}) + \varepsilon \dots \dots \dots (6)$$

Where: The returns for all foreign currencies are as indicated above,

$\alpha$ : Intercept

$\beta$ : Coefficient

$\varepsilon$ : Error

## Statistical Methods

In this study, we examined the causality relationship between major foreign currency returns and major cryptocurrency returns in the selected South Asian countries using statistical software STATA to conduct a panel data analysis applied to daily data throughout the period from November 2017 to November 2020. A statistical model of panel regression analysis will be established using the causality analysis to determine the causality relationship. We tested the Panel Unit Root test and Panel Granger Causality test for the causality analysis.

## RESULTS AND DISCUSSION

### Descriptive Statistics

This research investigated are seven variables in this study: Bitcoin (BTC), Ethereum (ETH), Litecoin (LTC), Bitcoin Cash (BCH), United States Dollar (USD), British Pound (GBP), and Euro (EUR). The basic statistics include Observations, Mean, and Standard. Deviation, Minimum, and Maximum. This study examined 1095 observations in each selected country. The table displays that the average return on cryptocurrencies is negative, with values of -0.3741, -0.4309, -0.4395, -0.3553, for Bitcoin, Ethereum, Litecoin, and Bitcoin Cash respectively. Furthermore, the standard deviations are the values of 0.0422, 0.0524, 0.0700, and 0.0589 for Bitcoin, Ethereum, Litecoin, and Bitcoin Cash respectively.

**Table 17: Descriptive Statistics for all variables**

	<b>BTC Return</b>	<b>ETH Return</b>	<b>LTC Return</b>	<b>BCH Return</b>	<b>USD Return</b>	<b>GBP Retu rn</b>	<b>EUR Retu rn</b>
<b>Bangladesh</b>							
Obs.	1095	1095	1095	1095	1095	1095	1095
Mean	0.0016	0.0017	0.0015	0.0016	0.00002	0.00004	0.00005
Std. Dev.	0.0422	0.0524	0.0700	0.0589	0.0044	0.0065	0.0055
Min.	-0.3741	-0.4309	-0.4395	-0.3553	-0.0350	-0.0539	-0.0354
Max.	0.2342	0.3259	0.5396	0.6106	0.0393	0.0397	0.0432
<b>India</b>							
Obs.	1095	1095	1095	1095	1095	1095	1095
Mean	0.0016	0.0017	0.0015	0.0016	0.0001	0.0001	0.0002
Std. Dev.	0.0422	0.0524	0.0700	0.0589	0.0032	0.0055	0.0045
Min.	-0.3741	-0.4309	-0.4395	-0.3553	-0.0186	-0.0463	-0.0440
Max.	0.2342	0.3259	0.5396	0.6106	0.0157	0.0562	0.0461
<b>Pakistan</b>							
Obs.	1095	1095	1095	1095	1095	1095	1095
Mean	0.0016	0.0017	0.0015	0.0016	0.0003	0.0004	0.0004
Std. Dev.	0.0422	0.0524	0.0700	0.0589	0.0055	0.0072	0.0061
Min.	-0.3741	-0.4309	-0.4395	-0.3553	-0.0308	-0.0550	-0.0266
Max.	0.2342	0.3259	0.5396	0.6106	0.0498	0.0579	0.0458
<b>Sri Lanka</b>							
Obs.	1095	1095	1095	1095	1095	1095	1095
Mean	0.0016	0.0017	0.0015	0.0016	0.0002	0.0002	0.0001
Std. Dev.	0.0422	0.0524	0.0700	0.0589	0.0033	0.0057	0.0044
Min.	-0.3741	-0.4309	-0.4395	-0.3553	-0.0189	-0.0487	-0.0206
Max.	0.2342	0.3259	0.5396	0.6106	0.0192	0.0375	0.0223

## Unit Root Test

The unit root test performs a series of tests for panel dataset stationarity (or unit root). The Levin-Lin-Chu test is used to determine the panel variables' stationarity; it was chosen because of its simple methodology and alternative hypothesis of heterogeneity (Levin et al., 2002). The test was carried out on all of the variables under observation, and it was made practicable by distinguishing them where the variables were not stationary. This is critical in view of recent advances in econometric modelling, which have demonstrated that estimators are inefficient when panel data variables are nonstationary.

This study used two-unit root tests to determine the stationarity of the variables, which are Levin-Lin-Chu and Hadri LM unit root tests. The logarithm of variables was stationary at the levels based on the results of both tests.

**Table 18: Unit Root Test Results**

Variables	Bangladesh Level	India Level	Pakistan Level	Sri Lanka Level
<b>Levin-Lin-Chu</b>				
BTC Return	-23.3556***	-23.3556***	-23.3556***	-23.3556***
ETH Return	-22.8750***	-22.8750***	-22.8750***	-22.8750***
LTC Return	-23.9272***	-23.9272***	-23.9272***	-23.9272***
BCH Return	-21.5749***	-21.5749***	-21.5749***	-21.5749***
USD Return	-44.5206***	-27.1282***	-25.2006***	-31.8343***
GBP Return	-29.0203***	-23.4981***	-24.5269***	-25.9215***
EUR Return	-34.6148***	-24.9303***	-25.4201***	-29.9349***
<b>Hadri LM Test</b>				
BTC Return	-0.3998*	-0.3998*	-0.3998*	-0.3998*
ETH Return	0.0372*	0.0372*	0.0372*	0.0372*
LTC Return	-0.3312*	-0.3312*	-0.3312*	-0.3312*
BCH Return	-0.5136*	-0.5136*	-0.5136*	-0.5136*
USD Return	-1.0965*	-0.5488*	0.7255*	-0.0828*
GBP Return	-0.9200*	-0.8520*	-0.4132*	-0.8678*
EUR Return	-0.7613*	-0.6099*	-0.3402*	-0.7942*

Note: \*\*\*Reject H0 at a 1% level of significance, \*Reject H0 at a 10% level of significance

The Levin-Lin-Chu hypotheses were tested as follows:

H<sub>0</sub>: Panels contain unit roots

H<sub>1</sub>: Panels are stationary

The panel unit root test for all variables demonstrates that the Levin-Lin-Chu method's p-value (0.0000) is less than 0.01 at the level, rejecting the null hypothesis and accepting the alternative hypothesis of panel data stationarity.

In the second panel unit root test, the Hadri LM method, the hypotheses developed are the opposite, as follows:

$H_0$ : All panels are stationary

$H_1$ : Some panels contain unit roots

The Hadri LM method's p-value at level (0.0000) is less than the 10% significance level, indicating that the null hypothesis can be rejected, indicating that the null hypothesis reveals the opposite result and does not confirm the stationarity of the panel data used in the study. If the second test is used, the panel data for this variable reveals non-stationarity.

### Granger Causality Test

The Granger causality test is a useful study for determining if the current value of the dependent variable and the lagged values of explanatory variables have a causal relationship. To decide the direction of the variables Dumitrescu and Hurlin panel Granger causality test was used.

### Bitcoin Return with Major Foreign Currency Returns

**Table 19: Dumitrescu and Hurlin panel Granger Causality Results**

Country	Test	Bangladesh	India	Pakistan	Sri Lanka
Causality from BTC to USD	HENC	-0.7028*	0.3250*	-0.4801*	-0.2824*
Causality from USD to BTC	HENC	-0.0728*	7.5339** *	-0.4816*	-0.6149*
Causality from BTC to GBP	HENC	-0.6636*	-0.3903*	-0.6566*	-0.6686*
Causality from GBP to BTC	HENC	6.8753** *	0.1065*	2.8780***	6.0943***
Causality from BTC to EUR	HENC	-0.3257*	-0.6473*	-0.7020*	-0.6631*
Causality from EUR to BTC	HENC	1.3586*	0.9116*	-0.4790*	0.1154*

Note: HENC: Heterogeneous Non-Causality Hypothesis

\*\*\*Reject  $H_0$  at a 1% level of significance, \*Reject  $H_0$  at a 10% level of significance

Table 4 summarizes the results of panel Granger causality analysis for Bitcoin to USD, Bitcoin to GBP, and Bitcoin to EUR.

**Table 20: Bitcoin Return-USD, GBP, EUR Causality**

Country	Test	Bangladesh	India	Pakistan	Sri Lanka
BTC USD	to	HENC	BTC $\neq$ USD	BTC $\rightarrow$ USD	BTC $\neq$ USD
BTC GBP	to	HENC	BTC $\rightarrow$ GBP	BTC $\neq$ GBP	BTC $\rightarrow$ GBP
BTC EUR	to	HENC	BTC $\neq$ EUR	BTC $\neq$ EUR	BTC $\neq$ EUR

Note: HENC: Heterogeneous Non-Causality Hypothesis

According to table 5, it is seen that there is a unidirectional causality relationship between Bitcoin and USD in India at a 10% significance level. That direction is from Bitcoin to USD. In addition, there is no relationship between Bitcoin and USD in other countries: Bangladesh, Pakistan, and Sri Lanka. Thus, found unidirectional causality running from Bitcoin to GBP in Bangladesh, Pakistan, and Sri Lanka and this research found that there is non-directional causality running from Bitcoin to EUR for selected South Asian countries: Bangladesh, India, Pakistan, and Sri Lanka.

### Ethereum Return with Major Foreign Currency Returns

**Table 21: Dumitrescu and Hurlin panel Granger Causality Results**

Country	Test	Bangladesh	India	Pakistan	Sri Lanka
Causality from ETH to USD	HENC	-0.6706*	1.1908*	-0.5688*	-0.6830*
Causality from USD to ETH	HENC	-0.0392*	11.0016***	-0.6580*	-0.3020*
Causality from ETH to GBP	HENC	-0.3494*	-0.6875*	-0.5703*	0.1406*
Causality from GBP to ETH	HENC	6.3859***	-0.6767*	3.8632***	7.1479***
Causality from ETH to EUR	HENC	-0.3428*	-0.6367*	-0.5924*	0.4304*
Causality from EUR to ETH	HENC	3.6523***	0.7775*	1.3076*	3.7100***

Note: HENC: Heterogeneous Non-Causality Hypothesis

\*\*\*Reject H0 at a 1% level of significance, \*Reject H0 at a 10% level of significance

Table 6 summarize the results of Granger causality analysis for Ethereum to USD, Ethereum to GBP and Ethereum to EUR.

**Table 22: Ethereum Return-USD, GBP, EUR Causality**

Country	Test	Bangladesh	India	Pakistan	Sri Lanka
ETH to USD	HENC	ETH $\neq$ USD	ETH $\rightarrow$ USD	ETH $\neq$ USD	ETH $\neq$ USD
ETH to GBP	HENC	ETH $\rightarrow$ GBP	ETH $\neq$ GBP	ETH $\rightarrow$ GBP	ETH $\rightarrow$ GBP
ETH to EUR	HENC	ETH $\rightarrow$ EUR	ETH $\neq$ EUR	ETH $\neq$ EUR	ETH $\rightarrow$ EUR

Note: HENC: Heterogeneous Non-Causality Hypothesis

Table 7 shows the results of the Granger Causality test relationship variables analyzed. As it was seen in the result, there is evidence of unidirectional causality from Ethereum to USD in India at a 10% significance level. In other selected, South Asian countries like Bangladesh, Pakistan, and Sri Lanka have a non-directional causality relationship. Thus, there is a unidirectional causality relationship from Ethereum to GBP for Bangladesh, Pakistan, and Sri Lanka. Furthermore, from Ethereum to EUR there is a unidirectional causality relationship for Bangladesh and Sri Lanka.

### Litecoin Return with Major Foreign Currency Returns

**Table 23: Dumitrescu and Hurlin panel Granger Causality Results**

Country	Test	Bangladesh	India	Pakistan	Sri Lanka
Causality from LTC to USD	HENC	0.6992*	1.2560***	-0.1792*	-0.7001*
Causality from USD to LTC	HENC	0.4281*	11.8078***	0.7317*	-0.3443*
Causality from LTC to GBP	HENC	-0.4995*	-0.3665*	-0.6502*	-0.5800*
Causality from GBP to LTC	HENC	4.8663***	-0.6668*	5.8291***	5.1782***
Causality from LTC to EUR	HENC	-0.5781*	-0.5088*	-0.6941***	-0.2234*
Causality from EUR to LTC	HENC	1.7944***	2.7455***	2.4655***	1.3820***

Note: HENC: Heterogeneous Non-Causality Hypothesis

\*\*\*Reject H0 at a 1% level of significance, \*Reject H0 at a 10% level of significance

Table 8 summarizes the results of Granger causality analysis for Litecoin to USD, Litecoin to GBP and Litecoin to EUR.

**Table 24: Litecoin Return-USD, GBP, EUR Causality**

Country	Test	Bangladesh	India	Pakistan	Sri Lanka
LTC to USD	HENC	LTC $\neq$ USD	LTC $\rightarrow$ USD	LTC $\neq$ USD	LTC $\neq$ USD
LTC to GBP	HENC	LTC $\rightarrow$ GBP	LTC $\neq$ GBP	LTC $\rightarrow$ GBP	LTC $\rightarrow$ GBP
LTC to EUR	HENC	LTC $\rightarrow$ EUR	LTC $\rightarrow$ EUR	LTC $\rightarrow$ EUR	LTC $\neq$ EUR

Note: HENC: Heterogeneous Non-Causality Hypothesis

Looking at table 9, there is a unidirectional causality running from Litecoin to USD in India at a 1% significance level, but no causality relationship exists in Bangladesh, Pakistan, and Sri Lanka. There is a unidirectional causality running from Litecoin to GBP in Bangladesh, Pakistan, and Sri Lanka, but no causality relationship in India. Apart from Sri Lanka, selected South Asian countries such as Bangladesh, Pakistan, and India have a unidirectional causality relationship from Litecoin to EUR.

### Bitcoin Cash Return with Major Foreign Currency Returns

**Table 25: Dumitrescu and Hurlin panel Granger Causality Results**

Country	Test	Bangladesh	India	Pakistan	Sri Lanka
Causality from BCH to USD	HENC	-0.5721*	3.1505***	-0.7064*	-0.6433*
Causality from USD to BCH	HENC	-0.6278*	9.5301***	-0.6682*	1.4093*
Causality from BCH to GBP	HENC	-0.3643*	0.2778*	-0.6291*	-0.4351*
Causality from GBP to BCH	HENC	2.2342***	-0.6801*	2.7973***	8.1183***
Causality from BCH to EUR	HENC	-0.4203*	1.1656*	-0.6721*	-0.4757*
Causality from EUR to BCH	HENC	-0.0579*	1.1086*	0.3783*	4.2697***

Note: HENC: Heterogeneous Non-Causality Hypothesis

\*\*\*Reject H0 at a 1% level of significance, \*Reject H0 at a 10% level of significance

Table 10 summarize the results of Granger causality analysis for Bitcoin Cash to USD, Bitcoin Cash to GBP, and Bitcoin Cash to EUR.

**Table 26: Bitcoin Cash Return-USD, GBP, EUR Causality**

Country		Test	Bangladesh		India		Pakistan		Sri Lanka	
BCH USD	to	HENC	BCH USD	≠	BCH USD	↔	BCH USD	≠	BCH USD	≠
BCH GBP	to	HENC	BCH GBP	→	BCH GBP	≠	BCH GBP	→	BCH GBP	→
BCH EUR	to	HENC	BCH EUR	≠	BCH EUR	≠	BCH EUR	≠	BCH EUR	→

Note: HENC: Heterogeneous Non-Causality Hypothesis

The results in table 11 indicate the existence of bidirectional causality running from Bitcoin Cash to USD when one lags are applied in India at the 1% level of significance. The results reveal unidirectional causality running from Bitcoin Cash to GBP in Bangladesh, Pakistan, and Sri Lanka. This study found that only Sri Lanka has a unidirectional causality relationship from Bitcoin Cash to EUR. Thus, the results seen that there is no connection between Bitcoin Cash and EUR in Bangladesh, India, and Pakistan.

Gunay et al. (2021) and Palazzi et al. (2021) had stated that there is no significant relationship between major cryptocurrencies with USD in Bangladesh, Pakistan, and Sri Lanka. Moreover, Mallick and Mallick (2021) had proven that there is a unidirectional relationship between major cryptocurrencies to USD/INR in India. But there is bidirectional causality running from Bitcoin Cash to USD/INR in India. Bidirectional causality reflects that foreign currency markets can respond similarly to new information (changes in monetary or macroeconomic policy) without one particular foreign exchange market specifically impacting the other. In Bangladesh, Pakistan, and Sri Lanka there is a unidirectional causality running from major cryptocurrencies to GBP/BDT. This implies that the price movements of GBP are influenced by the major cryptocurrencies. When considering the relationship between Ethereum and Litecoin to EUR/BDT there is a unidirectional relationship in Bangladesh.

A similar finding was revealed by Kim et al. (2021), Bitcoin (BTC) and Ethereum (ETH), the two biggest cryptocurrencies show stronger causality to smaller ones in high quantiles. It is challenging for investors to manage risk in the cryptocurrency market since the findings of the non-causality test

point to a significant causal relationship in the tail quantile.

Operators can incorporate cryptocurrencies into their portfolio management and market analysis to gain a deeper understanding of the market, which will help them make more informed decisions and acquire additional hedging tools. Moreover, Urquhart and Zhang (2019) demonstrate the risk-averse investors might utilize Bitcoin, the primary cryptocurrency asset, as a tool in advance of unfavorable news. Researchers further contend that Bitcoin may combine the benefits of both commodities and currencies in the financial markets, making it a viable instrument for risk analysis, portfolio management, and market sentiment analysis.

## **CONCLUSION**

Cryptocurrencies attract more and more people's attention day by day. Many people from practically every background are attempting to comprehend these new technologies, regardless of whether they have any familiarity with financial markets and instruments. The popularity of cryptocurrencies is significantly influenced by people's desire to profit on speculative price volatility and make large profits quickly. Additionally, these assets catch the interest of investors, researchers, and even governments. Cryptocurrencies are a tool for diversification that investors are considering adding to their portfolios. On the other hand, governments are considering regulating both these cryptocurrencies and the market, and there is a steady increase in the amount of academic study on cryptocurrencies.

This study examined the causal link between the major selected South Asian foreign currency returns and the major cryptocurrencies returns using the Granger causality from November 2017 to November 2020. The results show that major cryptocurrencies in Bangladesh, Pakistan, and Sri Lanka have no significant relationship with USD. Furthermore, the outcome demonstrates that the major cryptocurrencies and USD have a unidirectional relationship in India. But there is a bidirectional causality relationship that runs from Bitcoin Cash to USD in India. Bidirectional causality reflects the fact that foreign exchange markets can respond equally to new information (changes in monetary or macroeconomic policies) that do not specifically affect one particular foreign exchange market.

These findings provide a better and more comprehensive understanding of the causal link between major South Asian forex and major cryptocurrencies, since the enhanced predictability may assist in the development of the most optimal hedging strategies by investors, portfolio managers, and foreign exchange traders. The high level of market volatility, which has an

implication on monetary policy, can also be informed to regulators and policymakers. However, it is still uncertain whether cryptocurrencies will ever meet the requirements to be classified as a currency. Since cryptocurrency has thus far functioned more as an asset than a medium of exchange. Thus, this study is very important for users to investigate further in the next few years.

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# **The Impact of Work Stress on Work-Life Balance: A Study of Public Sector Bank Employees in the Western Province**

A.P. Sachintha Dilhan<sup>1\*</sup>, E.M.U.A. Ekanayake<sup>2</sup>, S. Suthasan<sup>3</sup>, M.D.T.S Gunathilake<sup>4</sup>, J.K.P.S.K Jayasinghe<sup>5</sup>, L. D. A. D. Dissanayake<sup>6</sup>

<sup>1\*</sup>*BBA(Hons) in Accounting and Finance, Sri Lanka Institute of Information Technology (SLIIT), Malabe, Sri Lanka*

*bm19519050@my.sliit.lk*

<sup>2\*</sup>*BBA(Hons) in Human Capital Management, Sri Lanka Institute of Information Technology (SLIIT), Malabe, Sri Lanka.*

*bm19523224@my.sliit.lk*

<sup>3\*</sup>*BBA(Hons) in Management Information Systems, Sri Lanka Institute of Information Technology (SLIIT), Malabe, Sri Lanka*

*bm19526294@my.sliit.lk*

<sup>4\*</sup>*BBA(Hons) in Human Capital Management, Sri Lanka Institute of Information Technology (SLIIT), Malabe, Sri Lanka*

*bm19520018@my.sliit.lk*

<sup>5\*</sup>*Assistant Lecturer, Sri Lanka Institute of Information Technology (SLIIT), Malabe, Sri Lanka*

*madara.j@sliit.lk*

<sup>6\*</sup>*Senior Lecturer, Sri Lanka Institute of Information Technology (SLIIT), Malabe, Sri Lanka*

*anupama.d@sliit.lk*

## **ABSTRACT**

*Workplace stress has become a prevalent concern for employees in many businesses today, regardless of the industry they work in. Work-life balance and stress are inextricably linked. What appears to be important in this respect is the value workers place on achieving balance in their lives, as well as the effectiveness of workplace rules and practices in assisting them in doing so. This study examines employees' work lives in the public bank sector in the Western Province, as well as how work-life balance might be accomplished. Employers must create rules that reduce employee burden while maintaining organizational efficiency to achieve a good work-life balance. The main goal of this study was to determine how job stress impacts the work-life balance of bank employees working in the western province of*

*Sri Lanka. The study is a fundamental research project in which the researchers made an effort to address a dilemma over closing a population gap in empirical information. The study was mostly explanatory and used a deductive method in its application. This was done as cross-sectional, quantitative field research using 384 randomly chosen bank employees as the sample. The sample size for this study was calculated using the Taro Yamane formula (Yamane, 1967) with a 90% level of confidence. A common questionnaire that met the requirements for reliability and validity was used to gather primary data. The study chooses three state banks from Sri Lanka's western province (Bank of Ceylon, Peoples Bank, and National Savings Bank). The major research area is Western Province, which is separated into the districts of Kalutara, Gampaha, and Colombo. The independent variable is work stress, and the dependent variable is work-life balance. The SPSS Statistical Software was used to examine the collected data. The research data were analyzed using multiple regression analysis methodologies. Researchers simply discovered that work stress has a significant positive impact on the work-life balance of State Bank employees in Sri Lanka's Western Province. It concludes that work stress has become a common problem in organizations and that work stress increases organizational inefficiencies, high staff turnover, sick leave, lower practice quality and quantity, higher health care expenditures, and decreased job satisfaction. People who suffer from work stress do less well at work and have a worse quality of life.*

**Keywords: - work stress, work-life balance, state bank employees**

## **INTRODUCTION**

Work-life balance is an issue that is discussed in both professional and academic circles. A solid work-life balance is critical for employees to be more efficient and effective, resulting in employees' job satisfaction and other positive outcomes. Work-life balance for the banking sector has become a dire challenge, and it is likely to be lacking in the case of the private bank and the employees in the Colombo district, who need to strike a balance between workload and household chores. Work-family disputes, strained relationships, and poor work performance are all symptoms of an unbalanced lifestyle (Mendis & Weerakkody, 2017). Work and personal life are neglected in the process, putting much stress on employees, especially those in the banking sector. This generates physical stress and bad health, manifesting as short-term setbacks such as headaches, gastritis, and body

aches, or long-term ailments such as heart difficulties, high blood pressure, diabetes, or other psychological issues (Oroian, et al., 2021). In today's world, most people who work in the service industry are concerned about achieving a work-life balance. Most people, especially banking sector employees, are paying attention to work-life balance and how businesses might establish policies to achieve this effect. This study's core purpose is to examine the impact of work stress on the work-life balance of public sector bank workers in the western province of Sri Lanka. When work and personal life are out of harmony, it affects both, which leads to drowsiness, subpar performance, and a reduction in both (Prabaharan & Panchanatham, 2016). Higher turnover also results in absenteeism, theft, disciplinary issues, complaints, and misuse of funds (Papinaho, Laitila, & Kangasniemi, 2022). It negatively influences the organization's general effectiveness, efficiency, performance, and reputation (Willems, Jegers, & Faulk, 2015). One of the primary factors contributing to employee stress at work is overwork. The influence of work-life balance on employee work stress is critical in determining key human resource development challenges (Dinh L. N., 2020). Organizational support impacts the work-life balance (or imbalance) (Kumarasamy, Pangil, & Mohd Isa, 2016). Employee commitment, performance, desire to leave the company, job happiness, engagement, and, ultimately, leaving the company are all influenced by the work-life imbalance (Jaharuddin & Zainol, 2019). Sri Lankan banks typically open at 9.00 a.m. and close at 5:00 p.m. However, because there is no time limit at first, workers are forced to work long hours due to unpredictable workloads. Employees are required to work quickly in workplaces with tight deadlines compared to other careers, which is also a problem. Consequently, many workers have voiced worries regarding stress and work-life balance (Adikaram, 2016). Researchers assert that state bank personnel in Sri Lanka experience moderate to high job-related stress (Velampy, 2013). Employees at all levels, particularly those working in the banking industry, endure a work-life imbalance due to their work schedules, working hours, organizational support, and severe workloads (Prabaharan & Panchanatham, 2016). In this situation, tools created with the aid of work-life balance programs (WLBP) can help people juggle numerous tasks. Because banking is a complicated, challenging, and intensely competitive job, workers need support from their employers, families, and WLBP. The public banking sector competes with its rivals to get the upper hand. They want to create harsh working conditions to achieve their goals and increase their profit to acquire a competitive edge. They would thus decrease organizational support, increase employee workload, and automatically boost their goal-

achieving intent. Employees are stressed out and under much strain due to the absence of organizational support. Staff-level personnel in the public banking industry are under pressure from top management.

Thus, this study follows the effect of stress levels experienced by workers of public sector banks in the western province on their work-life balance. Additionally, data will be acquired by thoroughly examining those components using questionnaires and examining the effects of each element. The information will be gathered taking into account characteristics like marital status, gender, age group, name of the bank, and educational status.

### **Research Objectives**

The main goals of this research were

- To assess the job stress of public sector bank personnel, with a focus on state bank staff in Sri Lanka's western province,
- To ascertain the elements that affect the amount of work stress experienced by employees of state banks.

### **Significance of the Study**

This study will help policymakers formulate new employee and industrial policies related to employee stress and work-life balance by identifying shortcomings in existing policies that need to be addressed. Furthermore, the study may benefit both public and private sector banks. With the aid of the current study, banks can create the ideal environment and support structures to lessen stress among their workforce in order to provide a better work-life balance.

## **LITERATURE REVIEW**

### **Work-Life Balance**

Although work is a crucial component of one's professional identity, it can be challenging to strike a balance with non-work interests. The maintenance of this equilibrium between one's employment and many elements of life has been a subject of substantial public concern in recent years as more workers recognize the necessity to preserve what is now referred to as 'work-life balance'. Since the 1990s, when the conversation around work-life balance (WLB) first started, there have been significant developments in society, the workforce, and demographics (Rashmi, Kataria, & Singh, 2021). Due to the simultaneous occurrence of all these developments, people's duties toward their personal and professional lives have multiplied, leading to an increase

in work-life 'imbalance'. As a result, the idea of WLB has gained importance for people in contemporary society (Oruh, et al., 2020). They are now more focused on achieving harmony between paid jobs and private and family obligations to achieve a feeling of overall well-being, including familial happiness, mental hygiene, and general life gratification (Le, et al., 2020).

Similarly, other groups have recently expressed worry over the WLB phenomenon. WLB practices and policies (WLBPs) are being synchronized and linked with more general and strategic company objectives. Organizations frequently search for a variety of strategies to boost workers' favorable opinions of their WLB. To help their staff members accomplish a variety of work-related goals, including a performance at work, organizational loyalty, work happiness, etc., they also make an effort to promote a healthy workplace. (Haar, et al., 2019). More importantly, the coronavirus disease 2019 (COVID-19) pandemic crisis has profoundly impacted millions of people's perceptions of WLB. The WLB of workers has unavoidably been impacted by businesses' rapid changes in work and operations (Palumbo, 2020).

Employees have experienced significant physical, mental, and emotional stress as a result of the COVID-19 problem. They were compelled to work from home and adopt telecommuting techniques, which made their work-life balance requirements more apparent (Bhumika, 2020). Workers from a variety of occupations are coping with unprecedented workloads in this difficult climate. They now have to manage their paid professional roles with domestic, eldercare, and childcare responsibilities. Their tasks and responsibilities have multiplied. Balancing commitments for both business and home life is undoubtedly one of the most urgent concerns of our day on a worldwide scale (Corbera, et al., 2020).

Therefore, WLB has developed into a dynamic phenomenon that influences how an individual perceives their job and non-work activities to determine how well they complement one another and to foster growth in line with their current life objectives. Most research has limited the idea of work-life balance to the simple lack of a conflict between family and job (Au, et al., 2020). In contrast to the traditional "conflict" and "enrichment" focus, the present study tries to understand "work-life balance" in a manner that enhances the scientific profession. The factors that affect a person's work-life encounters in the professional and personal spheres have been the subject of calls for more research by academics (Bello & Tanko, 2020).

The concept of WLB is one that frequently draws attention to more

comprehensive access, such as addressing fundamental issues with male and female equity and the application of family affable policies, that people encounter in their search for financial independence and self-worth. Moreover, the influence of work-life balance on workers' attitudes, behaviors, overall well-being, as well as organizational effectiveness. Moreover, work-life balance refers to methods for achieving a person's desired balance between their personal and professional lives at work and home. In other words, it represents how people carry out their personal and professional obligations in such a way that a conflicting situation is avoided (Agarwal & Lenka, 2015).

WLB is crucial, especially when businesses are required to manage highly skilled professionals because of their high level of loyalty and dedication to the establishment. The fact that there are differences between men and women in the workplace is another crucial reality. This makes it challenging for both the company and the employees to manage and balance their workforce. An earlier researcher claimed in researches that striking a balance between work and personal life can benefit employers in several ways, including having a workforce that is convinced productive and less stressful because they feel valued by the company, attracting more candidates, improving productivity, reducing absenteeism, developing a reputation as an employer of choice, retaining employees who are crucial to the organization, and maximizing the existing work (Denson, Szelenyi, & Bresonis, 2018).

It has been demonstrated that work-life balance may have an impact on workplace problems such as employee churn, stress, organizational commitment, absenteeism, and productivity (Isaksson, 2018). When a person must balance their obligations as a spouse, parent, friend, and social member of society, they experience work-family conflict. Time, dedication, and vigor are needed to accomplish each component. Additionally, because there is a significant direct correlation between work-life balance and organizational productivity, both contemporary researchers and employers are paying more attention to the facts (Nawaz, 2016). As a result, when employees believe they have a good work-life balance, they are more likely to respond positively to lessen the overwork within the company, develop a better workplace philosophy, and ensure that the labor force is not overworked and the extra work is not viewed as a burden. In addition, work-life balance may aid in improving the productivity and high performance of the employees within a business (Shanafelt, et al., 2015).

## **Work Stress**

Work stress was defined as the negative response that individuals had to unreasonably high demands or other forms of pressure. According to the aforementioned claim, workplace stress is caused by both the physical environment of the office and the tasks that employees are required to perform by their job descriptions. Employees may experience certain effects of workplace stress. It can show itself as a lack of desire, illness, subpar work performance, illness, and absenteeism. Moreover, employees feel they have less control over their job because work stress undermines self-efficacy (Mo, et al.). Work stress is frequently recognized as a serious problem for managers of companies since it tends to increase organizational inefficiencies, high staff turnover, sick leave, lower practice quality and quantity, higher health care expenditures, and decreased job satisfaction. Workplace stress has important effects on productivity, among other things. An individual's productivity, effectiveness, personal health, and the standard of their job can all be negatively impacted by work stress, a mental and physical condition. People who suffer from work stress do less well at work and have a worse quality of life. The detrimental and expensive effects of stress highlight the necessity of methods to reduce stressors within the workplace. Employees may leave a company that does not use stress-relieving measures in search of better employment possibilities. Organizations in poor countries have suffered a severe and sometimes catastrophic impact from the stress caused by overwork, lengthy workdays, and work intensification (Kar & Mishra, 2016). This diminished feeling of self-efficacy may hinder contextual performance by causing communication breakdowns and strained relationships with coworkers and bosses. The stressed workers see a lack of social support at work and may lose faith in others (Wickham, et al., 2014)

The research claimed that a variety of conditions, including mental illness, anxiety, and depression, affected occupational stress. Workplace stress may be divided into two types: work-related stress and non-work-related stress. When a person struggles to manage the tasks and activities they must carry out, work-related stress can emerge. Workplace stress among employees may be significantly influenced by a variety of factors, including job ambiguity, workload, organizational bureaucracy, role schedules and duties, and others (Eddy, et al., 2016). Additionally, stress at work may impair individuals' ability to embrace new techniques and hamper their ability to think clearly. This inhibits their workflow, which impairs their capacity for adaptation (Roster & Ferrari, 2019). According to several studies, stress has a

detrimental impact on performance. It is not always the case, though. One study, for instance, found that job stress inspired people to adopt new behaviors for improved performance (Siswanto, et al., 2019). In a different recent study, it is suggested that stress may flip the U-shaped link between employee performance and output. Initially, stress increases motivation to work, but after crossing a certain point, it starts to lower motivation and lower performance owing to unfair job allocation, irrelevant work, complexity, and boredom (Harras, 2019). Initially, stress increases motivation for work. Additionally, it is asserted that a person's performance increases when their tolerance for work-related stress rises to a certain point. After then, though, more work-related stress may harm performance (Jackson & Frame, 2018). Workplace stress and performance are significantly correlated, according to the literature. As a result, we suggest that work with banking personnel will considerably influence their activities, both contextually and adaptively, based on the findings from the aforementioned literature.

### **Work Stress and Work Life Balance**

Work-life balance and workplace commitment, according to employee stress surveys, low earnings have a direct impact on the level of work-related stress among employees (Rathore, 2017). However, since there is no fixed time initially, employees are compelled to work long hours owing to unexpected workloads, and employees are forced to work rapidly in workplaces with tight deadlines. As a result, employees have raised worries regarding work-life balance and stress (Perera & Wijewardene, 2021). Employee overwork is one of the leading causes of work-related stress, which leads to work-life unbalance (Kabir, 2017). Employees with more experience are less stressed by their organizations and have improved employee balance. He goes on to say that the more experience they have, the less stressed they will be in their corporate careers and the better their work-life balance will be (Mitra, 2015). Work-life balance and work stress indicators across professionals show that more experienced employees perform better and with less stress than less experienced employees (Ankireddy, 2016).

*Hypothesis 1: There is a significant impact of work stress on the employees' work-life balance.*

### **DATA AND METHODOLOGY**

To evaluate the effects of job stress on the work-life balance among workers working in 3 state banks (Bank of Ceylon, Peoples Bank, and National

Saving Bank) of the Western Province located in Sri Lanka, researchers have used the quantitative research methodology technique. The major research area is Western Province, which is separated into the districts of Kalutara, Gampaha, and Colombo. The independent variable is work stress and the dependent variable is work-life balance. The framework for the study investigates the significance of the impact between the dependent and independent variables. This research is descriptive, and cross-sectional data will be conducted. The population of the research consists of all levels of professionals working in the public banking industry in Sri Lanka's Western Province. Simple random sampling is the method of sampling used for the investigation. The sample size for this study was calculated using the Taro Yamane formula (Yamane, 1967) with a 90% level of confidence. The sample size will be 384 units with a 95% confidence level according to the Yamane technique.

### **Methods of Data Collection**

The two categories of data-gathering techniques are primary data collection and secondary data collection. From the survey, primary data were gathered. To gather data on work stress and work-life balance, a questionnaire was created. Four fundamental ideas were covered in its formulation if they are employee demographic data, the status of work stress, and the status of work-life balance, respectively. Over alternative scale assessments, the 5-Point Likert scale (5 – strongly disagree, 4 – disagree, 3 – not certain, 4 – agree, and 5 – strongly agree) was chosen for the investigation. The population was selected from Census reports, journals, reports, research papers, statistical abstracts, government gazettes, and yearly reports of the Central Bank of Sri Lanka, and the Internet was used as a secondary data source for the study. All of the answer variables in this study were addressed by descriptive statistics. The relevant study objectives were tested using correlation and regression analysis. An ANOVA test would be used to analyze the hypothesis. To explore the hypothesis more completely, analyses of correlation and linear regression were performed. Using SPSS software, the validity of the developed hypothesis will be assessed.

## **DATA ANALYSIS**

### **Demographic Data**

In this study, 384 public sector bank workers from the Western Province of Sri Lanka were chosen as the sample. The first section of the questionnaire

asked about the employees' personal information, including their age, gender, marital status, level of education, and district. These particulars will aid in understanding the characteristics of the sample. In this study, 56.25% of the sample of 384 was female and 33.07% was male in the state banks located in the western province. This sample led 57.29% of employees between the age of 18-30, 33.07 % of employees between the age of 31-45 and 9.6% of employees above 45. Out of the total sample, 54.95% are single and 45.05% are married employees. The number of respondents with a bachelor's degree is as follows (58.98 percent). Additionally, 29.5% of employees have earned their professional certification and postgraduate degree. The Western Province which is the study area, is made up of three districts namely Colombo, Gampaha, and Kalutara.

### Reliability Test

**Table 01: Overall Reliability Statistics**

Cronbach's Alpha	N of Items
.911	20

*Source: Sample Survey (2022)*

According to Table 4.1, the 20 items utilized in this study's analysis have a Cronbach's Alpha value of 0.911. Since the value of Cronbach's Alpha is 0.7, which is deemed acceptable but more than 0.7, the data is regarded as credible (Cronbach's Alpha > 0.9). As a result, it may be said that data dependability is excellent.

The findings of the Cronbach's Alpha coefficients are shown in table 4.2, and they indicate that the reliability of each item's dependent and independent variable is sufficient.

**Table 02: Cronbach's Alpha coefficients of variables**

		Cronbach's Alpha	N of Items
Independent Variables	Job Stress	.865	9
Dependent Variable	Work-Life Balance	.920	11

*Source: Sample Survey, 2022*

All of the assertions have a value greater than 0.7, as shown in table 4.2 concerning the reliability test's computed values. Finally, it may be said that

all dependent and independent variable data are trustworthy.

### Correlation Analysis

#### Correlation between Job Stress & Work-Life Balance

**Table 03: Correlation Analysis**

		Work Stress	Work-Life Balance
Work Stress	Correlation Coefficient	1	.484**
	Sig. (2-tailed)		.000
	N	384	384
Work-Life Balance	Correlation Coefficient	.484**	1
	Sig. (2-tailed)	.000	
	N	384	384

\*\*. Correlation is significant at the 0.01 level (2-tailed).

*Source:* Sample Survey, 2022

The p-value is 0.000. If the p-value is equal to or less than 0.05, the result is significant. As a result, the null hypothesis is rejected. Therefore, there is a significant relationship between work-life balance and work stress. However, the correlation coefficient is 0.484. Hence, there is a positive correlation between work stress and work-life balance.

## Regression Analysis

**Table 04: Analysis of Variance**

ANOVA <sup>a</sup>						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	39.600	1	39.600	74.158	.000 <sup>b</sup>
	Residual	203.983	382	.534		
	Total	243.583	383			

a. Dependent Variable: Work-Life Balance

b. Predictors: (Constant), Work Stress

*Source:* Sample Survey, 2022

According to table 4.4, it is evident that Fstatistic value = 74.158 with significance value of  $p = 0.000$  ( $p < 0.05$ ). The analysis' outcome complies with the criteria of the hypothesis test where Fstatistic > Ftable and significance  $p < 0.05$ , It can be concluded that H1 is accepted, in other words, that work stress has a positive and significant on work-life balance. The table 4.5 shows the extent to which work stress has an impact on work-life balance.

**Table 05: Model Summary**

Model Summary				
Adjusted				
Model	R	R Square	R Square	Std. The error of the Estimate
1	.403 <sup>a</sup>	.163	.160	.73074

a. Predictors: (Constant), Work Stress

*Source:* Sample Survey, 2022

According to table 4.5, as can be observed, 0.163 (R square) is the basic regression analysis coefficient. This result indicates that 16.3% of work-life balance of employees is influenced by work stress while the rest is influenced by other factors.

**Table 06: Correlation Coefficients**

Coefficients <sup>a</sup>					
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	1.791	.200		8.940	.000
Work Stress	.477	.055	.403	8.612	.000

a. Dependent Variable: Work-Life Balance

Source: Sample Survey, 2022

The resulting regression line equation is depicted in table 4.6 as  $Y = 1.791 + 0.477 X$ . Work-life balance is denoted by (X), and the variable work stress is (Y). According to the regression line equation, the constant value is 1.791, which indicates that the work-life balance (Y) is positive at 1.791 if work stress (X) is zero. Work-life balance will improve by 0.477 if the work stress variable's score increases by one unit, according to the regression coefficient, which stands at 0.477.

## DISCUSSION

The findings of the current research consist of the study results on the effects of work stress on work-life balance (Weerasinghe & Dilhara, 2018). This research mentions that the Customs department's ability to manage work and personal life is severely impacted by work stress. Most of the workers in the organization, concerning flexible work hours, reduced workload and favorable work conditions. Based on those elements the main variables of the study are measured using a questionnaire. The current study indicates that from the 384 samples, most of the respondents were female, most of them were between the ages of 18-30, and most of them were single and hold bachelor's degrees as an educational qualification. The demographic data cover areas of Colombo, Gampaha, and Kalutara.

The stud' illustrates that employees have experienced significant physical, mental, and emotional stress as a result of the COVID-19 problem. Working from home is unpredictable for certain occupations, and workload becomes difficult in the work climate. The work-life balance impacts on workers'

attitudes, behaviors, and overall well-being, as well as organizational effectiveness, therefore most workers are looking for an exchange workload (Agarwal & Lenka, 2015). Business success mainly depends on work conditions. Therefore, maintaining work stress and managing work-life balance are very much critical for employees. Work from home schedule increases the workload and workers need to work long hours without overtime payments. The pandemic causes employee stress and workers look forward to flexible work schedules and much support for work-life balance from the organization. These implications justify that there is a significant impact of work stress on work-life balance and employees are turning to reduce work stress (Tabasum, et al., 2022).

Apart from the discussion of current research with similar research findings, current research has found that there is a significant positive correlation between work stress and work-life balance with a p-value equal to or less than 0.05, and the result is significant. As per the results, the null hypothesis is rejected. The correlation coefficient indicates 0.484 with a significant value of .000. From the regression analysis, it has been found that the F statistic value implies 74.158 with a significance value of 0.000. The model is valid for 16.3%, and it shows that 16.3% of employees' work-life balance is impacted by job stress, with the remaining percentage being influenced by other variables. Last but not least, it has been discovered that if the work-life balance score improves by 0.477 units and the work-stress score increases by one unit, the equation for the regression line is  $Y = 1.791 + 0.477X$ . The positive significant impact of work stress on work-life balance is consistent with the previous research findings (Idham, et al., 2014). According to the research it has found that workplace stress is caused by both the physical environment of the office and the tasks that employees are required to perform following their job descriptions. Finally, it has been identified that work stress becomes a common problem and employers need to formulate policies that can minimize long hours of working and workload, while creating a better work environment that helps to enhance company productivity.

## CONCLUSION

The primary goal of the study is to assess the work stress of public sector bank workers, with particular attention to State Bank employees in the Western Province of Sri Lanka, and to ascertain the effects of work stress on employee work-life balance. The work-life balance of State Bank employees is significantly positively impacted by work stress, according to the study's

findings. Additionally, studies conclude work stress become a common problem in organizations, and it increases organizational inefficiencies, high staff turnover, sick leave, lower practice quality and quantity, higher healthcare expenditures, and decreased job satisfaction. People who suffer from work stress do less well at work and have a worse quality of life.

The research used a quantitative research method and selected 3 state banks (Bank of Ceylon, Peoples bank, and national Saving Bank) located in the Western Province of Sri Lanka. The major research area was Western Province, which is separated into the districts of Kalutara, Gampaha, and Colombo. The independent variable was work stress and the dependent variable was work-life balance. This research is descriptive and cross-sectional data will be conducted. Using a simple random sampling method, researcher selected the sample of the study. Primary data and secondary data were used to structure literature and to find independent and dependent variables. The relevant study objectives were tested using correlation and regression analysis. An ANOVA test would be used to analyze the hypothesis. To explore the hypothesis more completely, analyses of correlation and linear regression were performed. Using SPSS software, the validity of the developed hypothesis was assessed.

Finally, it was discovered that there is a strong link between job stress and work-life balance, with work stress affecting 16.3% of an employee's work-life balance and other factors and scores affecting the remaining 77%. When the job stress variable goes up by one unit, the work-life balance goes up by 0.477.

The findings of the present study shed light on future studies, and they can be used to develop further conceptual and theoretical frameworks concerning work stress and work-life balance. Organizations face significant challenges in reducing work stress and managing employees' work-life balance. Thus it is recommended that it would be appropriate to restructure company policies with flexible work hours, and workload, reduce workplace conflicts, and align job roles to increase work-life balance. Working in banking will considerably influence their activities, both contextually and adaptively.

Within certain constraints, the current study has completed the set of objectives and is open for future research to add value to increase the knowledge and understanding of the study. Therefore, future research can expand with research methods and collect data from the mixed method for further clarifications of reasons for work stress and its impact on work-life balance.

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# **What factors drive the customer adoption of digital banking? An empirical study with comparison for Private and Public Banking sector in Sri Lanka During the post COVID-19 Pandemic**

J.A.D.P.M. Jayakody<sup>1\*</sup>, K.N.M. Perera<sup>2</sup>, D.S.I. Perera<sup>3</sup>, K.

Liyanaarachchige<sup>4</sup>, V.R. Dunuwila<sup>5</sup>, A. Lokeshwara<sup>6</sup>

<sup>1,2,3,4,5,6</sup> Business Faculty, Sri Lanka Institute of Information and Technology  
Malabe, Sri Lanka

pamathijayakody96@gmail.com

## **ABSTRACT**

*The concept of digitalization is now accepted in every industry. Robotics and artificial intelligence are replacing people in the workplace. As a result of increased regulations and competitive challenges, banks have been compelled to deleverage and find new sources of value. This has resulted in the development of digital banking, where transactions are conducted mostly through technology. Customers are however still waiting for this new banking experience, which is being reasoned for a revolutionary change that would introduce numerous new features, such as anytime and anywhere banking, incredibly quick response times, and ubiquitous advisors. This study investigates customer adoption comparing the rural and urban areas focusing on the district variation adoption as well as the barriers which avoid customers from accessing digital banking platforms during the post-COVID-19 Pandemic in Sri Lanka. The target population for the study was bank customers and bank staff from selected rural and urban districts of Sri Lanka. Data was collected using online questionnaires. The authors have used quantitative data in analyzing the process. Analysis was undertaken with the aid of the Statistical Package for Social Sciences where correlation analysis and multiple linear regression model and ANOVA were performed. The findings revealed that there was a strong positive relationship between each independent variable to customer adoption. But only perceived ease of use (PEOU), accessibility, and digital literacy (DL), have a significant impact on digital banking adoption while perceived trust (PT), perceived risk (PR) and perceived usefulness (PU), have no impact for customer adoption for digital banking with high significance values. With a comparison of private and public bank adoption for digital banking, private banking customer adoption percentage for digital banking platforms are higher than public*

*bank customer adoption through regression, correlation analysis and chi-square quantified analysis values, the analysis process was conducted.*

**Keywords: Digital banking, Digitalization, COVID -19, Adoption, Geographic location**

## **INTRODUCTION**

Banks are being directed by new digital models into client connections that offer new sources of value. Banks are being forced to reduce their leverage and find alternate sources of wealth because of today's increased regulations and competitive difficulties. And because of that, traditional banks are replaced with digital banking platforms. Among the different modern information and communication technologies used by banks around the world, digital banking is recognized as one of the most efficient and useful business services (Mano et al, 2020). A few years back, it was necessary to visit the bank to make financial transfers. Due to the limited hours of the banking, customers would have to wait in long queues to complete banking transfers. Because of the emergence of digital banking customers nowadays, they have the facility to do banking transactions without entering the bank.

According to Rajapaksha (2021), the banks are trying to popularize digital banking applications among their customers, to get rid of ever-increasing traffic on physical bank premises. Sri Lanka is still in the initial stages of using digital platforms to conduct banking activities in comparison to some developed and developing nations. One of the key reasons for the underuse of digital banking applications is a lack of understanding of the advantages of digital banking over traditional banking. Additionally, Digital Banking (DB) discovered that a lack of internet access knowledge and facilities also contributes to the unfavourable perception of digital banking. When checking account balances, transferring money, withdrawing money, etc., consumers had to visit the bank branches in person decades ago. At that time, people's requirements were not being met by digital banking because of a lack of complete information. The time they spent on banking activities and transactions had to be increased as a result (Kumari & Mendis, 2021).

Department of Census and Statistics - Sri Lanka (2020), says that most bank and financial institution urged their customers to use online financial services to reduce their trips to bank locations. In this study, researchers are focused on Automated Teller Machines (ATMs), Electronic Fund Transfers (EFT), Society for Worldwide Interbank Financial Telecommunications (SWIFT) transfers, Bank debit credit cards, digital bill payments, internet transactions,

and digital wallets as digital banking platforms. Digital banking usage among customers has increased with the COVID – 19 pandemics. And the Central Bank of Sri Lanka has declared 2020 to be the year of digital transactions, therefore the country's banking sector must go digital to reach nearly all of its citizens, both in urban and rural areas (Rajapaksha, 2021).

During the COVID -19 pandemic, most banks in Sri Lanka were closed several times due to the government imposing an island-wide curfew situation. With the experiences had in COVID-19 pandemic, customers were able to engage with DB platforms in the post COVID-19 pandemic. Customers had the option of visiting the bank and doing their banking before the pandemic, but during the pandemic period, they could not visit the bank because of the lock down and bank closure. Some banks also closed several times because of the COVID-infected cases of their staff members. Research which is related to digital banking adoption in the post-COVID -19 pandemic Sri Lanka comparing the rural and urban areas and these kinds of research are rare as the research focuses on the district variation adoption as well as the barriers which prevent customers from accessing digital banking platforms during COVID - 19 pandemic. The research study provides clear identification of the research gap by gathering primary data through online servers.

The general objective of this study is to investigate customer adoption of DB platforms during the Post COVID-19 pandemic in Sri Lanka. And the authors have subdivided this general objective into three sub-objectives to investigate the relationship between customer perceptions towards customer adoption of digital banking platforms during the post-COVID -19 pandemic in Sri Lanka, secondly to investigate the impact of customer perceptions towards customer adoption of digital banking platforms during the post-COVID -19 pandemic in Sri Lanka and To compare the customer adoption of digital banking platforms among customers of public and private banks during the post-COVID -19 pandemic in Sri Lanka.

Sri Lanka is a developing country with a population of roughly 21.37 million people, of whom 10.10 million utilize the internet (Mano et al, 2020). Digital Banking users are predominately men (Rajapaksha, 2021). According to a review of the current research, it was discovered that women who use smartphones are less likely to use mobile apps that are unfamiliar to them. According to a case study titled “case study of tower group,” the maturity level of digital banking in Sri Lanka is still at a primary stage. The barriers to the adoption of the digital banking system in Sri Lanka are the majority of

the mobile phone users in rural areas have limited capabilities and the majority do not have smartphones. As a result, designers must pay close attention to the non-users of smartphones by integrating different technologies to target them also. Digital banking was first introduced in the United States. And in Sri Lanka, Sampath bank became the first institution to accept online banking. Their initial step was connecting all of their branches nationwide so that clients could access their accounts at any branch from anywhere.

According to Kariyawasam (2016), less than 1% of banking customers in Sri Lanka used internet banking, which is a substantially lower percentage than in developed nations in 2011. Internet usage in Sri Lanka expanded quickly from 2010 to 2014, from 8.3% of the population in 2010 to 19.9% in 2014, due to broadband connections. According to the central bank of Sri Lanka records, there are currently 24 listed commercial banks in Sri Lanka, 12 of which are local banks that have digital banking capabilities except for Amana bank. Hettiarachchi (2013), has stated that the dark side of digital banking in Sri Lanka is that, even though most customers were aware of the existence of digital banking services, the majority of them had never used them. They continue to conduct most of their banking activities in the same manner at their bank counters, including paying their bills and withdrawing cash. The banks frequently adopt a “wait-and-see” mentality because the bulk of Sri Lankans lacks technological sophistication.

Kumari and Mendis (2021), stated that most customers in Sri Lanka rely on private commercial banks rather than state banks. And also, this study has pointed out that senior citizens are reluctant to adopt this platform compared with the young crowd. Seniors are more likely to use the traditional banking system in Sri Lanka. According to Fernando and ALF (2021), Sri Lanka's banking industry has seen a rapid transformation as a result of the adoption of Information Communication Technology (ICT) based financial solutions. Shermukhamedov (2021), stated that In European nations, the idea of digital banking rapidly expanded between 2015 and 2020. Digital banks frequently employ contemporary digital technologies to provide their clients with more user-friendly and advantageous services. And the meaning of digital banking can be defined as the digital bank customers can use digital banking services within 24 hours every day. In other words, the digital bank system provides a mobile application to the consumer and offers high flexibility of banking activities based on a mobile application with a sophisticated IT infrastructure. And digital banking can be divided into two categories: those with a license and those without. Some have their brand and operate independently at first,

while others partner with established traditional banks to serve as their online subsidiary. Both categories are permitted to operate independently as well.

The authors have mainly elaborated on six main independent variables in this study to measure the impact and the relationship on customer adoption of digital banking platforms. They are perceived ease of use, perceived usefulness, perceived trust, perceived risk, accessibility, and digital literacy. Ramli and Rahmawati (2020), explain in their research that perceived ease of use is the degree or circumstance at which someone feels that utilizing a given technology is effortless. The frequency and quality of user contact with the system can also be referred to as ease of use. According to their research ease of use can be measured by using easy to learn, easy for users, and easy to operate. Authors have further defined ease of use as the level of trust of people who use new technology will have fewer problems.

According to Sitorus et al. (2017), perceived ease of use is one of the main constructs of the Technology Acceptance Model (TAM) model. The author has defined this factor as the extent how which mobile banking is perceived as easy to understand and use. Bastari et al (2020), indicate that PEOU is a point at which someone believes that using technology equals being free of a job or other obligations. And as a simple definition perceived ease of use is described as a visible and understandable perception of how to utilize a system. The majority of recent research findings have shown that people's willingness to adopt technology is influenced by how easily they can use it (Omar Ali et al., 2020).

Mano et al. (2020), defined perceived usefulness as individuals' belief that using new technologies will enhance their performance. PU is more important than other considerations when most consumers choose whether or not to use digital banking. Customers are significantly more likely to use digital banking if they find it more convenient. PU has a major impact on the usage of internet banking (Premarathne & Gunatilake, 2016). Perceived usefulness is described as a measure in which the usage of technology is thought to provide usefulness to those who utilize it (Ramli & Rahmawati, 2020). Implementing a specific information technology system will boost work performance. According to Bastari et al. (2020), perceived usefulness plays a role in obtaining valued outcomes that are distinct from activities involving the use of information technology systems, such as performance enhancement, remuneration, or job advancement.

Perceived risk is the risk of losing money when using an electronic service to achieve the desired result (Martins et al., 2014). Authors have mentioned

seven types of risks performance risk, financial risk, time risk, psychological risk, social risk, privacy risk, and overall risk. "The situation where the decision maker has a priori knowledge of both the consequences of alternatives and their probabilities of occurrence" ( Lampugnani & Basso, 2018, p.5). Risk perception, which is connected to risk inclination, is one of the elements of risk behavior. When considering a certain online purchase, an internet shopper's subjectively determined anticipation of loss is described as PR in the online buying platform.

Ramli and Rahmawati, (2020, p.36) stated that trust is "the willingness of consumers that depend on other parties and be vulnerable to other parties' actions during a certain process, with the hope that the other party will adopt acceptable platforms and will be able to provide the products and services that they have promised". Furthermore, 'trust' is a concept used to express a person's opinion of something. This opinion may or may not be based on factual data, precepts, or religious beliefs, and it may or may not arouse strong feelings in the person. According to Mano et al. (2020), trust is an important factor in the use of online transactions because it is associated with risks. Elderly people are aware of the security of online platforms and may not believe that digital banking is secure because transaction failures can happen due to human errors or system malfunctions.

Iravonga and Miroga (2018) defined accessibility as how easily customers can use various digital channels, such as online banking services, ATMs, Point Of Sales (POS) terminals, and mobile banking, to access financial tools, their accounts, make payments from those accounts, and access money that is available in the accounts. Furthermore, Accessibility refers to how these channels provide clients with a meaningful experience in terms of their ability to access their money, use banking services and facilities, and provide feedback (Muluka et al., 2015). In the research of Santhiya and Radhika (2019), 76.7% of customers in Bangladesh have access to financial institutions within a five-kilometer radius. The authors have noted that there has been a rapid increase in access points to technological innovations, financial systems, and increased competition in the market.

Digital literacy is described as an adequate understanding of the current use of technology to enable a person to live and work in the modern world without additional effort and as the talents and information needed by a person to continue and succeed in a civilization that is bonded with the technology for managing information for his or her day to day work (Rathnaweera, 2020). Lack of digital literacy is one of the main barriers to

adopt to digital banking platforms. Digital literacy has four aspects the ability to recognize when information is needed, the ability to locate the needed information, the ability to evaluate the sustainability of retrieved information, and the ability to use effectively and appropriately the needed information (Sridharan, 2018).

Because this study is focused on investigating consumer Adoption to Digital Banking Platforms during the post-COVID - 19 pandemic in Sri Lanka, research pertaining to digital banking adoption during the post COVID - 19 pandemic in Sri Lanka is extremely uncommon as only limited number of research were conducted to identify the adoption compared to rural and urban areas and the private and public bank comparison. Because the study focuses on rural and urban area comparison and public and private bank adoption for DB platforms as well as the major platforms which customers were engaged with digital banking in during the post COVID-19 pandemic. Using google questionnaire databases, this research collects primary data to close the research gap.

## **METHODOLOGY**

Investigating how rural and urban customers adopt digital banking platforms, in the Post COVID-19 pandemic situation in Sri Lanka, and how each independent variable has impacted for the dependent variable to adopt DB platforms is analyzed through the methodology. The authors included quantitative data analysis techniques, used in the research and mainly quantitative data is collected through the google questionnaire which is distributed among the population, with the online platforms as facebook and linkedin, at least one respondent representing each district, so through the selected respondents, they were asked to share the questionnaire among the districts. As the secondary sources authors refer to the Department of Census and Statistics (2012) report with publications and high-ranked journals and the population reports based on several parameters. The conceptual framework of the research is organized with six independent variables and a dependent variable mainly to determine whether there is a relationship between the independent variables and the dependent variable.

Throughout the rural geographical districts of Kilinochchi, Batticaloa, Mullaitivu, Kegalle, Mannar, Polonnaruwa, and Monaragala, authors have distributed the 1-to-10-point Lickert scales and starting from 1 strongly Disagree to 10 for Strongly Agree. The questionnaire was distributed among

both rural and urban districts such as Kurunegala, Anuradhapura, Kandy, Colombo, Galle, Gampaha, and Rathnapura with the main aim of collecting the data accurately. According to the Department of Census and Statistics (2012), the categorization of urban and rural was done covering a total population in selected districts as thirteen million (13,164,624) including the people who have done at least a single bank transaction through online banking or traditional banking.

To maintain the equitation of the data from the entire population, a cluster sampling technique was conducted. Throughout the selected clusters researchers were able to gather accurate responses and information and from these responses, would classify the bigger picture of the state by accumulating the valid data from the selected districts quantitatively. According to the Morgan table, a confidence level of 95% and 10% margin error was selected and approximately 384 responses should be collected according to the records and authors were able to collect 481 responses without elimination throughout the 14 districts covering the 9 provinces. With elimination 421 accurate sample was selected.

To investigate the relationship between customer perceptions towards customer adoption for DB, the authors used the correlation analysis technique with IBM Statistical Package for the Social Sciences (SPSS) 26 version, and for the 2<sup>nd</sup> sub-objective to investigate the impact of customer perceptions towards customer adoption for digital banking authors used the multiple linear regression with the SPSS Software and to analyze mainly this research accentuates the statistical generalization of main direction comparing with the theoretic conceptions with the usage of descriptive statistics. The 3<sup>rd</sup> sub-objective is to compare the customer adoption of digital banking platforms among customers of public and private banks during the post-COVID -19 pandemic in Sri Lanka.

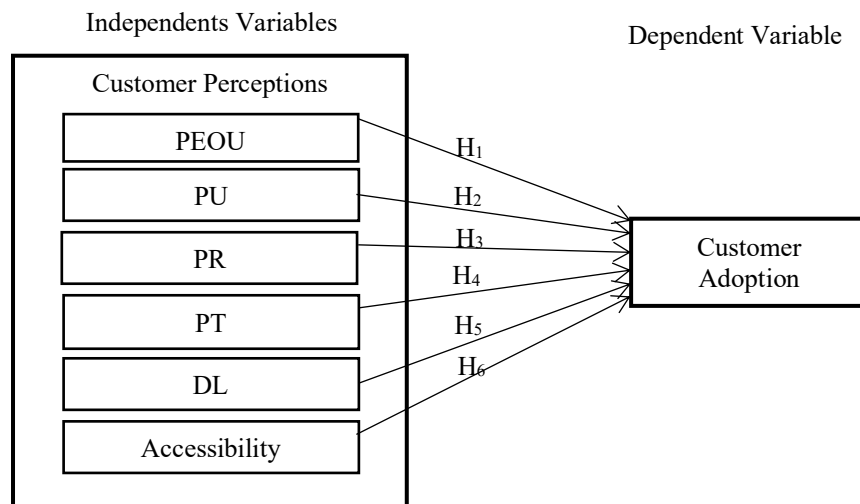
The conceptual framework alligns with the six independent variables, to test whether there is an impact on each variable towards customer adoption. Or otherwise, whether there is no impact of each variable on customer adoption. As all the variables had a significant impact towards to internet banking and mobile banking adoption according to previous literature these predictor variables were selected to build up the conceptual model. As an example for the first variable, authors are going to test whether, each variable have an impact on customer adoption and the null hypothesis as each variable does not have an impact on customer adoption.

Alternative hypothesis -  $H_A$  - There is an impact of PEOU on customer adoption.

Null Hypothesis -  $H_0$  - There is no impact of PEOU on customer adoption.

## Conceptual Framework

**Figure 1: Conceptual Framework**



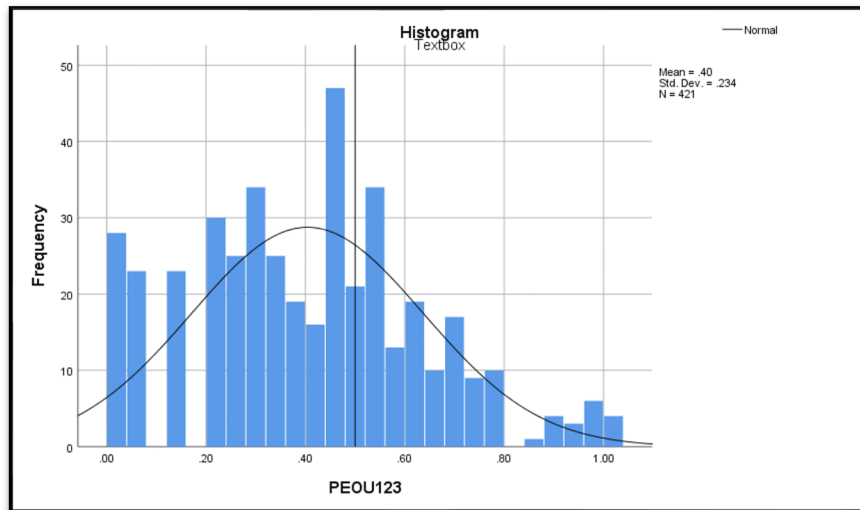
*Source: Author Compilation*

## RESULTS AND DISCUSSION

To maintain the steadfastness and the validity of the data set, in the quantitative analyzing process, a cleaning and purification process was done and removed the outliers and the coding errors, missing values, and responses that had logically inconsistency was removed with the specification with reference for the questionnaire distributed among 14 districts, total responses of 481 were collected representing the accurate response rate of 88.73% with 421 respondents eliminating the unwanted district responses.

From the demographic statistic results, 285 responses indicated that urban area people are using DB while 36 responses indicated that they are not using DB platforms and among 100 responses in rural areas 74 respondents are using DB platforms while 26 respondents are not using DB platforms.

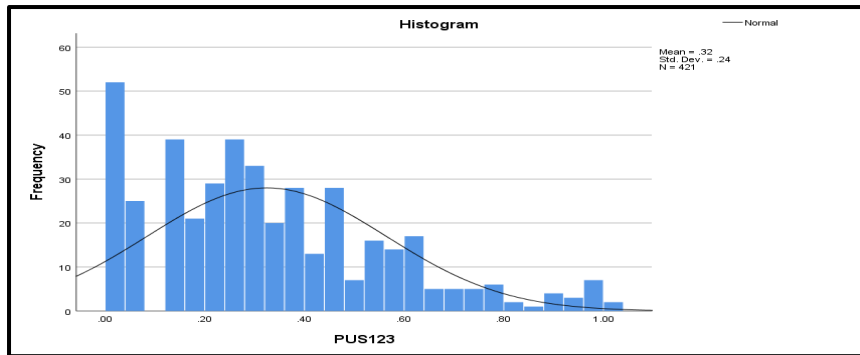
**Figure 2: Histogram for Perceived Ease of Use**



*Source: SPSS Output Data (2022)*

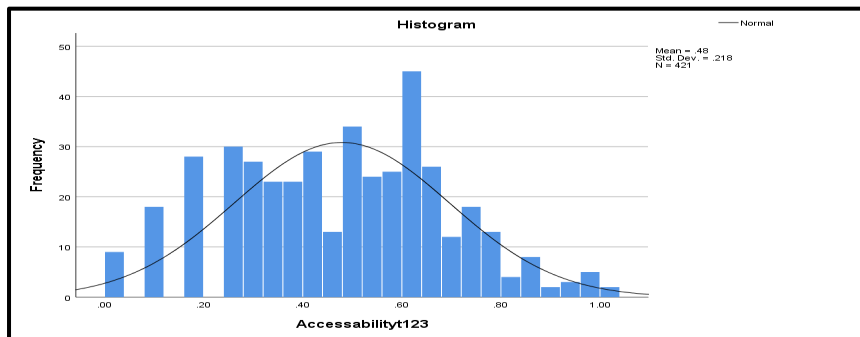
Figure 2 which was mentioned above, describes the respondents' reactions to the perceived ease of use variable-related questions and the distribution of answers according to (Ghasemi & Zahediasl, 2012b), the histogram of the data set had a bell-shaped distribution, indicating that the data set had a normal distribution. The authors may underline the existence of a normal distribution of the variable through the findings. As previously said, the data set need not be distributed exactly as a bell-shaped curve; rather, if its formed is somewhat similar to the bell-shaped, it may be considered as the variable responses being noramly distributed. 421 replies were distributed significantly more closely to the bell-shaped distribution, according to the researcher's study histogram outputs for the remaining variables also visible as normaly distriobution among the variables.

**Figure 3: Histogram for Perceived Usefulness**



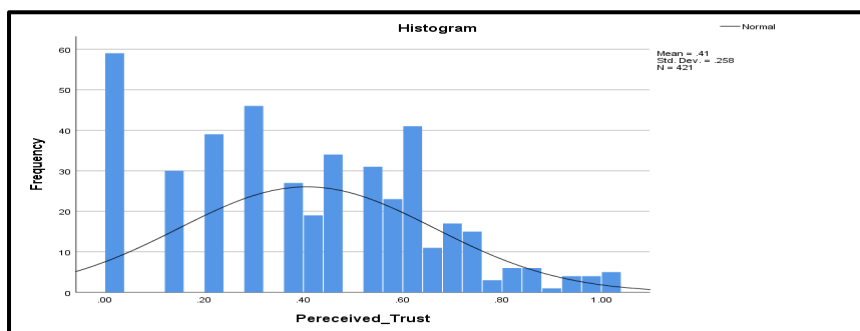
*Source: SPSS Output Data (2022)*

**Figure 4: Histogram for Accessibility**



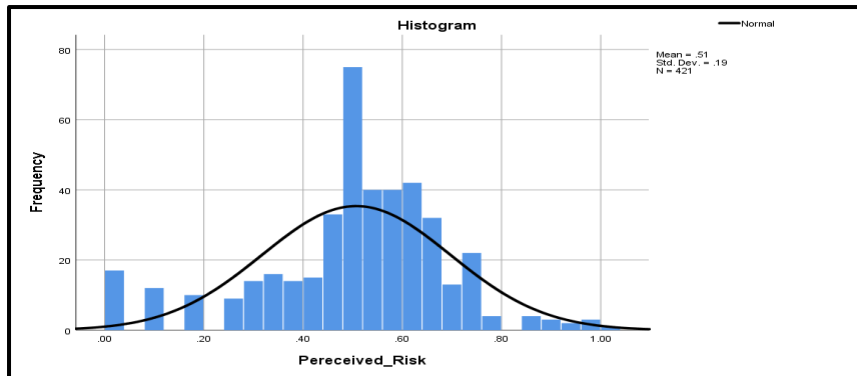
*Source: SPSS Output Data (2022)*

**Figure 5: Histogram for Perceived Trust**



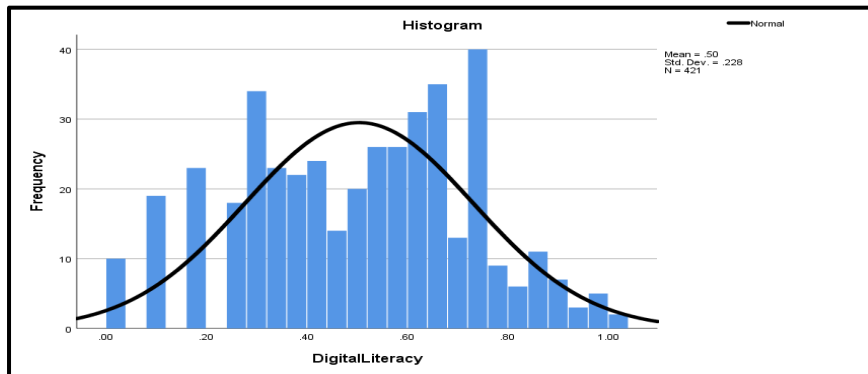
*Source: SPSS Output Data (2022)*

**Figure 6: Histogram for Perceived Risk**



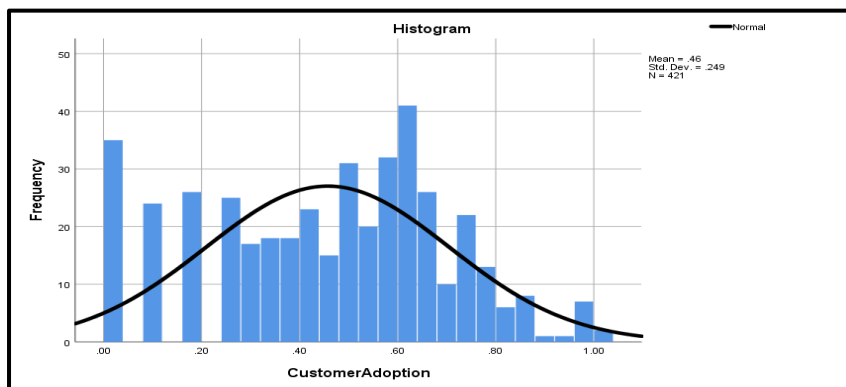
*Source: SPSS Output Data (2022)*

**Figure 7: Histogram for Digital Literacy**



*Source: SPSS Output Data (2022)*

**Figure 8: Histogram for Customer Adoption**



*Source: SPSS Output Data (2022)*

**Figure 9: Word cloud analysis was done to identify the frequency of digital banking platform usage**



*Source:* Authors' calculation based on Survey data (2022)

Above mentioned figure 9 Word Cloud analysis was done to analyse how the customers are using DB platforms, a frequency within the selected districts in rural and urban districts. Through the word cloud, based on extra small text letters indicated the least frequency of digital banking platforms users as indicated in the small size text in the word cloud and from the large text sizes indicated the highest frequency of DB platforms used by the customers.

**Table 1: Demographics Variables Information**

	Measurement	Frequency	Percentage	Cumulative percentage
Gender	Male	158	37.5%	37.5%
	Female	263	62.5%	100%
Districts	Galle	28	6.7%	6.7%
	Kandy	23	5.5%	12.1%
	Kurunegala	4	1.0%	13.1%
	Rathnapura	17	4%	17.1%

	Colombo	101	24%	41.1%
	Gampaha	132	33%	72.4%
	Anuradhapura	12	2.9%	77.4%
	Mullaitivu	9	2.1%	78.4%
	Polonnaruwa	56	13.3%	90.7%
	Mannar	11	2.6%	93.3%
	Kegalle	14	3.3%	97.6%
	Kilinochchi	5	1.2%	98.8%
	Monaragala	5	1.2%	100%
	Batticaloa	4	1.0%	98.8%
	Total	421	100%	
Age Group	Between 18-30	183	43.46%	43.5%
	Between 31-45	176	41.8%	85.3%
	Above 45	50	11.9%	97.1%
	Below 18	12	2.85%	100%
Job Category	Government	107	25.4%	18.3%
	Private	205	48.7%	67%
	Self Employed	23	5.5%	72.3%
	Not Employed	77	18.3%	97.9%
	Other	9	2.1%	100%
Educational Level	GCE Ordinary Level	1	0.02%	0.5%
	GCE Advanced Level	12	2.8%	27.6%
	Diploma Level	106	25.1%	24.1%
	Batchelor's	95	22.67%	20%

		Degree			
		Professional Qualifications	34	19.00%	20.65%
		Masters	80	8.07%	2.3833%
		PhD	2	0.475%	3.84%
		Professional Qualifications	87	20.6%	0.67%
		PhD Post Doctorate Position	1	0.237%	0.56%
		Other	3	0.71%	100%
Average Monthly Income	Less Than 50,000	163	38.171%	45.1%	
	50,000-100,000	110	26.1%	71.3%	
	100,000-150,000	44	10.5%	81.7%	
	150,000-200,000	17	4%	85.7%	
	More than 200,000	10	2.4%	88.1	
	Unemployed	77	11.9%	100%	
	Total	421	100%	100%	
Digital Banking Usage	Yes	359	85.3%	85.3%	
	No	62	14.7%	100%	
Digital Banking Usage	Once a Day	32	7.6%	7.6%	
	Several Times a Day	64	15.2%	22.8%	

Frequency	Once a week	60	14.3%	37.1%
	Several Times A weeks	112	26.6%	63.7%
	Once a month	35	8.3%	72.0%
	Several times a month	91	21.6%	93.6%
	Never	19	4.5%	98.1%
	Depending on the need	8	1.9%	100%

Source: Author Compilation (2022)

Above mentioned table 1 indicates the demographic variables of questionnaire respondents.

**Table 2: Urban and Rural both area Digital banking Platform users and non-users Distribution**

	Districts	Digitalized banking platforms Users			Digital banking platforms non-users			Total	
		Count	Percentage	Cumulative Percentage	Count	Percentage	Cumulative Percentage	Count	Percentage
Urban areas	Gampaha	126	28.7%	90.6%	13	2.6%	9.4%	139	31.4%
	Colombo	95	22.6%	86.1%	6	1.4%	14.9%	101	24%
	Kurunagala	3	0.7%	100%	0	0.2%	0%	1	0.9%
	Galle	24	5.7%	85.7	4	1%	14.3%	28	6.7%
	Kandy	20	4.8%	87%	3	0.7%	13%	23	5.5%

Rural areas	Anura dhapura	9	2.1%	75%	3	0.7%	25%	12	2.9%
	Rathnapura	10	2.4%	58.8%	7	1.7%	41.2%	17	4%
	Monaragala	2	0.5%	40%	3	0.7%	60%	5	1.2%
	Kilinochchi	4	1%	80%	1	0.2%	20%	5	1.2%
	Mullaitivu	7	1.7%	77.8%	2	0.5%	22.2%	9	2.1%
	Mannar	9	2.1%	81.8%	2	0.5%	18.2%	11	2.6%
	Polonnaruwa	42	10%	75%	14	3.3%	25%	56	13.3%
	Kegalle	10	2.4%	71.4%	4	1%	28.6%	11	2.6%
	Batticaloa	3	0.7%	75%	1	0.2%	25%	4	1%
	Total	359	85.3%		62	14.7%		421	100%

Source: Statistical data collected through the survey

The above-mentioned Table 2 has indicated the results of rural and urban area customers as a percentage of how the platforms have been utilized. So as a total of 359 of the respondents of both rural and urban areas have responded they are utilizing DB platforms as a percentage of people have responded they are digital banking platforms as a percentage of 85.3% 62 respondents gave the response mentioning they are not using DB platforms as a percentage of 14.7%.

Urban Areas	Rural Areas
-------------	-------------

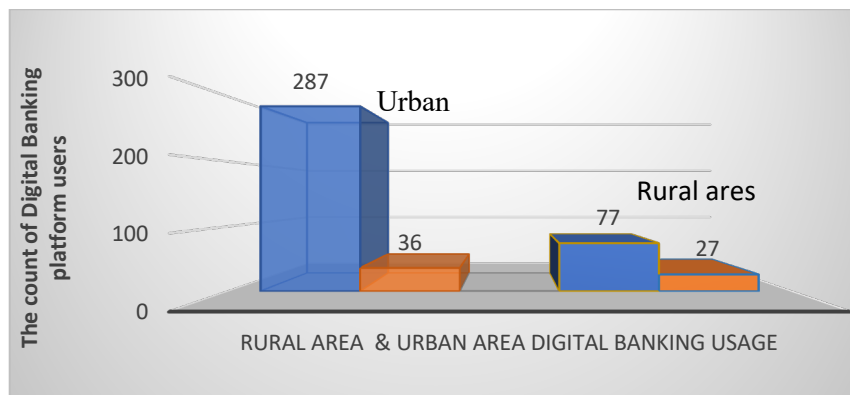
Digital banking Users		Non –Digital banking Users		Digital banking Users		Non –Digital banking Users	
Count	%	Count	%	Count	%	Count	%
287	66.21 %	36	8.43%	77	18.03 %	27	6.32%

**Table 3: Digital banking usage in Urban and Rural areas**

*Source:* Authors' calculation based on Survey data (2022)

With the illustration of Table 3 on the above digital banking platform variation of urban and rural area platforms has been drawn.

**Figure 10: Urban, Rural Digital Banking Platforms usage**



*Source:* Author Compilation (2022)

Urban area and rural area DB platform adoption has been described in the above-mentioned Figure 10 which illustrates more results on how the district variation has been categorized.

### **Reliability Measurement through Cornbrash's Alpha**

From Cronbach's alpha value measurement, the overall reliability of the data set was measured, and from the alpha value which detects the internal consistency, of the questionnaire and a higher value was detected at the overall reliability which indicates that the questionnaire is more reliable and much acceptable. From these reliability measurements, all questions in the questionnaire can be in a scale measure in the same construct, The overall

reliability value of 0.904 detects the measure and the internal consistency is shown. Below mentioned table 4 illustrates the results of Cronbach's alpha.

**Table 4: Reliability Analysis through Cronbach's Alpha coefficient**

Variables	Cronbach's coefficient	Alpha	Number of questions
Perceived Ease of Use	0.877		5
Perceived Usefulness	0.947		6
Accessibility	0.770		4
Perceived Trust	0.868		3
Perceived Risk	0.774		5
Digital Literacy	0.806		4
Customer Adoption	0.801		4
Overall Reliability	0.904		31

*Source:* Author Compilation (2022)

### Validity Measurement Through KMO Bartlett's Test

The validity of the responses was checked before the analyzing process and the values of, KMO and Bartlett's Measure of sampling Adequacy which was detected as 0.881, and as it considered the values which came above the range of 0.8 were considered exceptional and highly acceptable, from this KMO Bartlett's test value, it was indicated that the present study has an adequate sample size with the results. Below mentioned table 5 illustrates the results of *KMO and Bartlett's Test of Sphericity*.

**Table 5: KMO and Bartlett's Test of Sphericity for overall validity of the variables**

KMO and Bartlett's Test			
Kaiser-Meyer-Olkin Adequacy	Measure of	sampling	0.881
	Approx. Chi-Square		3681.675
Bartlett's Test of Sphericity	Df		21
	Sig.		0.000

*Source:* Author Compilation (2022)

**Table 6: Descriptive statistics in Dependent variables and independent variables**

	tistic	Statistic	Statistic	Statistic	Statistic	Statistic
Perceived Ease of Use	1	10	8.05	1.787	-1.847	4.193
Perceived Usefulness	1	10	8.49	1.762	-2.309	5.992
Accessibility	1	10	7.59	1.746	-1.263	2.102
Perceived Trust	1	10	7.96	1.883	-1.468	2.631
Perceived Risk	1	10	7.49	1.430	-1.171	3.594
Digital Literacy	1	10	7.36	1.856	-.944	.811
Customer Adoption	1	10	7.66	1.847	-1.097	1.582

*Source:* Author Compilation (2022)

**Note:** ten-point Likert scale was used to gather data. Strongly Disagree 2= Mostly Strongly Disagree, 3=Moderate To Disagree, 4= Slightly Disagree, 5= Neither Agree nor Disagree, 6= Slightly to Agree, 7 = Relatively Agree, 8= Moderate to Agree, 9= Mostly Strongly Agree, 10= Strongly Agree

Above mentioned Table 6 demonstrates the results of *descriptive statistics*. Mainly the mean value of each variable PEOU 8.05, indicates the most common value, measurement of the central tendency to which the respondents have responded averagely for the answer number 8 in the PEOU variable given. From the median value it shows the middle value of the answers given for each variable for PU, it says the answer number 9 is the median. From the mode value, it detects the most frequently detected answer in the dataset. For example, 8 is for Accessibility the Lickert scale answering.

## Relationship analysis between independent variables and dependent variables of customer adoption

**Table 7: Through Correlation, Relationship analysis between Independent variables and the Dependent Variable of Customer Adoption**

		PEOU	PU	Accessibility	PT	PR	DL
Customer Adoption	PC	1	0.85	0.773	0.75	0.74	0.672
	Sig.		0.00	0.00	0.00	0.00	0.00
	N	421	421	421	421	421	421

Correlation is significant at the 0.05 level (2-tailed).

*Source:* Authors' calculation based on Survey data (2022)

Above mentioned table 7 illustrates the Correlation analysis along with the two-tailed Pearson Correlation values are, mentioned in the above diagram illustrates the main findings to investigate whether there is a relationship between the independent variables (customer perceptions) towards digital banking adoption during a post-COVID-19 pandemic.

The greater the Pearson correlation coefficient, stipulate, show how stronger the relationship of each independent variable towards the dependent variable, and as the PEOU, PU, Accessibility value has detected the correlation values above 0.7 and it can say there is a strong positive relationship towards customer adoption for DB platforms, while PR and DL affords a moderate relationship for customer adoption.

**Second Objective analysis - To investigate the impact of customer perceptions towards customer adoption of digital banking platforms during the post-COVID -19 pandemic in Sri Lanka**

### Testing Normality and the Multi-Collinearity error

Compared with the population parameters, an enormous sample size was used in this research and the central limit proposition on which had been applied and there are not any problems related to the normality test detected. There is a major assumption, that if there is a high-level correlation between predictor variables, there are no valid points that can prove, that the research can be approved.

**Table 8: Results of Model Summary Regression**

Model	R	R <sup>2</sup>	Adjusted R <sup>2</sup>	Std. error in the Estimate	Change Statistics		
					R Square Change	F Change	Sig. F Change
A	.0790	.624	.623	1.1134	.624	694.953	0.000
B	.0.797	.635	.634	1.118	.635	364.148	0.000
C	0.984	.969	.969	.326	.969	4361.378	0.000
D	.986	.971	.971	.314	.971	3520.242	0.000
E	.986	.972	.971	.313	.972	2360.791	0.000
F	.986	.972	.971	.313	.972	2834.089	0.000

*Source:* Authors' calculation based on Survey data (2022)

- Predictors: (Constant), PEOU
- Predictors: (Constant), PEOU, PU
- Predictors: (Constant), PEOU, PU, Accessibility
- Predictors: (Constant), PEOU, PU, Accessibility, DL
- Predictors: (Constant), PEOU, PU, Accessibility, DL, PT
- Predictors: (Constant), PEOU, PU, Accessibility, DL, PT, PR

Mentioned Table 8 above calculate each independent variable's contribution to the model summary starting from the value of 0.624 in the model summary and the R square change value varies with the variation of 0.972 with adding each variable for the model. As an example, compared to model a, in model b Perceived Usefulness variable was added and the change in R square value of 0.635 means the perceived usefulness variable contributed to a 63.5% percentage variation in Customer Adoption. Indicating the results to the perceived ease of use variable R square change value as 0.624 meaning 62.4% variation of the customer adoption.

F change in the model indicates the F test values based to determine the significance of the R square change. Above mentioned Table 8 involves a significant f change value providing the meaning if there is one variable added to the model, it significantly improves the model prediction.

With the explanation about the F change, the majority of the variable is significant with a p-value of 0.000 which provides the results that all the variables have an impact on customer adoption.

The overall R square value of 97.1 and the ANOVA, Table 4 model carried

with 0.000 as the value is less than the significance level of 0.05 (standard threshold) specify that model has been significant along with the six variable levels.

According to the regression summary output, the adjusted R square value is equal to 0.971 which says 97.1% of the customer adoption for DB Platforms are represented by all the independent variables Such as digital literacy, perceived risk, perceived trust, perceived usefulness, perceived ease of use, accessibility. P = 0.05 value of the below-mentioned ANOVA Table 9 model carried with 0.000 as the value is less than the significance level of 0.05 (standard threshold) specifies that the model has been signed along with the six variable levels.

**Table 9: ANOVA table output**

<b>Model</b>	<b>Sum Squares</b>	<b>Of Df</b>	<b>Mean Square</b>	<b>F</b>	<b>Sig</b>
Regression	1391.89	6	231.98	2356.16	0.000
Residual	40.761	414	0.098		
Total	1432.65	420			

*Source:* Authors' calculation based on Survey data (2022)

From the above multiple linear regression results in the ANOVA table 9, authors can conclude that PEOU, Accessibility, and DL have significant P values which are less than the significance level of P-value of 0.000 mainly stipulating the values are highly significant compared to the normal significant threshold value, which provides the result of authors have to reject the null hypothesis which mentions there is no impact of PEOU, Accessibility, and DL to DB adoption.

**Table 10: Results of Regression Coefficients Table**

Model	Unstandardized Coefficients Beta	Co-efficient St. Error	Standardized Coefficients Beta	t	Significance	Collinearity Tolerance (CT)	Statistics Variance Inflation Factor (VIF)
Constant	-0.450	0.092		-4.873	0.000		
Perceived Ease of Use	0.067	0.019	0.064	3.540	0.000	0.208	4.818
Perceived Usefulness	.005	0.017	0.005	.313	0.755	.248	4.036
Accessibility	.856	.026	.809	33.326	.000	0.117	8.573
Perceived Trust	.025	.013	.025	1.878	.061	0.383	2.613
Perceived Risk	.002	.013	.001	-.139	.890	0.696	1.437
Digital Literacy	.115	.020	.115	5.743	.000	0.171	5.859

*Source:* Authors' calculation based on Survey data (2022).

Compared to those cases, most of the variables should be adopted or deleted. In the collinearity tolerance value, there are no values detected in which the Variance Inflation Factor (VIF) is less than 0.1 according to table 10 above and the Variance Inflation Factors of each factor have not exceeded the amount of 10, which provides there is no multicollinearity problem in the data set (Kleinbaum et al., 1988).

Multiple Linear Regression table results were analysed after the correlation test was conducted after checking whether independent variables have a relationship to customer adoption. The variables of perceived usefulness, perceived trust, and perceived risk, factors have a significance level above 0.05 denoting those variables are not significant and do not impact on customer adoption. Only perceived ease of use, accessibility, and digital literacy have a significance level below 0.05 and the researchers supposed only those variables have an impact on customer adoption.

The authors do not reject the null hypothesis of perceived usefulness, perceived trust, and perceived risk variables. Below mentioned are the

hypotheses levels that which authors identified.

### **Hypothesis for the conceptual framework**

#### **Perceived Ease of Use**

$H_{1A}$  = There is an impact of perceived ease of use on customer adoption.

$H_{10}$  = There is no impact of perceived ease of use on customer adoption.

#### **Perceived Usefulness**

$H_{2A}$  = There is an impact of perceived usefulness on customer adoption.

$H_{20}$  = There is no impact of perceived usefulness on customer adoption.

#### **Perceived Risk**

$H_{3A}$  = There is an impact of perceived risk on customer adoption.

$H_{30}$  = There is no impact of perceived risk on customer adoption.

#### **Perceived Trust**

$H_{4A}$  = There is an impact of perceived trust on customer adoption.

$H_{40}$  = There is no impact of perceived trust on customer adoption.

#### **Digital Literacy**

$H_{5A}$  = There is an impact of digital literacy on customer adoption.

$H_{50}$  = There is no impact of digital literacy on customer adoption.

#### **Accessibility**

$H_{6A}$  = There is an impact of accessibility on customer adoption.

$H_{60}$  = There is no impact of accessibility on customer adoption.

Mentioned table 10 shows the beta values and t statistics implication, which considers the strength of the inspiration of each predictor variable on customer adoption for DB platforms the accessibility factor has the largest contribution with 33.326 and 0.856 unstandardized beta coefficient statistics correspondingly. Moreover, it is apparent that both PEOU, Accessibility and DL predictor variables positively impact customer adoption of DB platforms.

Moreover PEOU, DL and Accessibility are a positive influence on customer adoption, from the positive beta values, respectively. Finally, below

equation is derived.

#### Customer Adoption

$$\begin{aligned} &= -0.450(\text{constant}) + 0.067x_1(\text{Perceived Ease of use}) \\ &+ 0.856(\text{Accessibility}) + -0.115(\text{Digital Literacy}) \\ &+ .005(\text{Perceived Usefulness}) \\ &+ 0.025(\text{Perceived Trust}) + 0.002(\text{Perceived Risk}) \\ &+ \text{error} \end{aligned}$$

Another hand PU, PT, and PR go with P-values above the level of 0.05 mainly stipulating those P values are not significant at 0.05 the normal threshold value providing the result for the researcher which is, that we don't have to reject the null hypothesis criticizing that PU, PR, PT does not have an impact towards customer adoption for DB platforms.

According to Rathnaweera (2020)'s studied PEOU, PT, and knowledge about internet banking has influenced customers to adopt internet banking, and Premaratne and Gunatilake (2016), mentioned that through trust, the usefulness of DB platforms has majorly impacted the increase of the usage of customers of digital banking. Nethananthan and Shanmugathas (2018), as the most judicious factors which are PEOU, PT and knowledge about internet banking will cause for the adopt for advance technology with the services provided and if the customers don't have a proper knowledge of the internet and the banking, and if they don't have any trust towards internet banking, or if customers are unable to manage the services, they would not adopt for particular platform.

We can estimate the multiple linear regression equation as follow and research has discussed only PEOU, accessibility and DL are significant, only these three variables have an impact on CA.

#### *Customer Adoption*

$$\begin{aligned} &= -0.450(\text{constant}) \\ &+ 0.067x_1(\text{Perceived Ease of use}) \\ &+ 0.856(\text{Accessibility}) + -0.115(\text{Digital Literacy}) \\ &+ .005(\text{Perceived Usefulness}) \\ &+ 0.025(\text{Perceived Trust}) + 0.002(\text{Perceived Risk}) \\ &+ \text{error} \end{aligned}$$

As only PEOU, accessibility and DL are significant, only these three variables have an impact on customer adoption.

**Third Objective analysis- To investigate the impact of customer perceptions towards customer adoption of digital banking platforms during the post-COVID -19 pandemic in Sri Lanka**

**Table 11: Results of Model Summary of The Variation of Private bank adoption for Digital banking platforms**

Model Summary							
Model	R	R Square	Adjusted R Square	Std. The error in the Estimate	Change Statistics		
					R Square Change	F Change	Sig. F Change
1	.983 <sup>b</sup>	.967	.966	.331	.967	1353.532	.000

a. 14) Most preferred banking sector = Private Banks

b. Predictors: (Constant), Digital Literacy, Perceived Risk, Perceived Trust, Perceived Usefulness, Perceived Ease of Use, Accessibility

c. Dependent Variable: Customer Adoption

*Source: Author Compilation (2022)*

### Multiple Regression Analysis

To compare the customer adoption for digital banking platforms separately for private and public banks, regression analysis should measure, regression results have indicated in the above model summary output in Table 11 as R square value has been detected as 0.966 (R-square value = 0.967) which determines 96.6 points of the customer adoption to digital banking platforms are presented by the independent variables such as perceived risk, perceived trust, perceived ease of use, perceived usefulness, accessibility, digital literacy, of the variables.

**Table 12: Results of (ANOVA) - Analysis of The Variation of Private bank, customer adoption for Digital banking platforms**

ANOVA						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	890.135	6	148.356	1353.532	.000 <sup>c</sup>
	Residual	30.580	279	.110		
	Total	920.715	285			
a. 14) Most preferred banking sector = Private Banks						
b. Dependent Variable: Customer Adoption						
c. Predictors: (Constant), Digital Literacy, Perceived Risk, Perceived Trust, Perceived Usefulness, Perceived Ease of Use, Accessibility						

*Source:* Authors' illustration based on SPSS results

As per the mainly emphasized results indicated from ANOVA results in table 12, authors can emphasize the model has been significant with main six variable levels, and while discussing the P -the value of the model, which is 0.000 providing the results less than 0.000, below the significance level of 0.05 (standard threshold) and mainly overall results evaluate that all independents and the dependent variables in the model are inter-related with each other.

**Table 13: Coefficients Table**

Coefficients								
Model	Unstandardized Coefficients	Standard Error	Standardized Coefficients	t	Sig.	Collinearity Statistics		
	B	Std. Error	Beta			Tolerance	Variance Inflation	
1 (Constant)	-	.12		-	.0			
	.43	3		3.54	00			
	6			2				
	Perceived Ease of Use	.06	.02	.060	2.57	.0	.2	4.4
		1	4		9	10	23	89
	Perceived Usefulness	.00	.02	.007	.352	.7	.2	3.5
		8	2			25	82	49
Accessibility	.85	.03	.806	25.8	.0	.1	8.1	
	8	3		46	00	22	65	
Perceived Trust	.02	.01	.028	1.62	.1	.4	2.4	
	8	7		5	05	01	92	
Perceived Risk	-	.01	-.011	-	.3	.7	1.4	
	.01	6		.871	84	11	07	
	4							
Digital Literacy	.12	.02	.125	4.73	.0	.1	5.8	
	2	6		1	00	72	18	

a. 14) Most preferred banking sector = Private Banks

b. Dependent Variable: Customer Adoption

*Source:* Authors' illustration based on SPSS results

The co-efficient statistics in above table 13 demonstrate the co-efficient of each variable there is a relationship between each independent variable to customer adoption, but only digital literacy, PEOU and accessibility variables have only significant values which impact customer adoption as the significance value is less than 0.05 only on accessibility and digital literacy.

According to the regression coefficient values, a multiple regression equation can be derived as below.

$$Y = 1.436 + 0.061(\text{Perceived Ease Of Use}) + 0.008(\text{Perceived Usefulness}) + 0.858(\text{Accessibility}) + .028(\text{Perceived Trust}) \pm -0.014(\text{Perceived Risk}) + 0.122(\text{Digital Literacy}) + \text{Error} \dots\dots\dots (4.2)$$

The above regression co-efficient table emphasizes the results that if there is one unit of increase in the accessibility, there will be 0.858 units will be increased in the customer adoption, dependent variable, holding other independent variables constant.

Same for the results for other significant digital literacy variable indicates that if there is one unit increase DL will increase by 0.122 units in customer adoption.

Other non-significant factors in customer adoption in private banks demonstrate although, for customer adoption, many factors have contributed to the increment of customer adoption, as those factors are not significant, a random chance could have caused the difference.

### Public bank Customer adoption for digital banking platforms

**Table 14: Model Summary of the public bank's customer adoption of Digital banking platforms**

Model Summary										
Model	R				Std. The error in the Estimate	Change Statistics				
	R	R Square	Adjusted Square			R Square Change	F Change	df1	df2	F Sig. Change
1	.990 <sup>b</sup>	.981	.980		.277	.981	109.073	6	12	.000
							32			

Source: Authors' illustration based on SPSS results

Above mentioned table 14 indicates that the adjusted R square value has been detected as 0.980(R-square value = .981 with defining 98.0 points of the customer adoption of digital banking platforms are explained by the independent variables such as digital literacy, perceived risk, perceived trust, perceived usefulness, perceived ease of use, and accessibility of the variables.

**Table 15: Results of (ANOVA) -Analysis of The Variation of Public bank, customer adoption for Digital banking platforms**

ANOVA <sup>a</sup>						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	502.026	6	83.671	1090.732	.000 <sup>c</sup>
	Residual	9.819	128	.077		
	Total	511.845	134			

*Source:* Authors' illustration based on SPSS results

With indication of the main results of ANOVA, in the above-mentioned table 15, the authors could emphasize the model has been signed with the six independent variables as the P value of the model has been detected as 0.000 which provides the significance level of 0.05 (standard threshold) mainly providing the overall result dependent variable and predictor variables of the model have been interrelated.

Regression coefficient table results comparatively to the private banking customer adoption for digital banking is more like the public banking customer adoption for digital banking implying with the results only three variables of digital literacy, PEOU and accessibility variables have the P value of 0.00 for accessibility and 0.002 for digital literacy according to the coefficients table 16 as above mentioned. Related to the unstandardized coefficient beta value for accessibility, if there is a one-unit increase, there will be 0.854 units will be increased in dependent customer adoption. The second significant variable is digital literacy if there is a one-unit increase, there would be 0.098 units will be an increase in customer adoption dependent variable for digital banking platforms.

**Table 16: Coefficients Table**

Coefficients							
Model		Unstandi zed	Coefficients	Standardize d	t	Sig.	Collinearity Statistics
		B	Std. Error	Beta			Tolerance VIE W
1	(Constant)	-.487	.136		-3.589	.000	
	Perceived Ease of Use	.072	.032	.069	2.258	.026	.161
	Perceived Usefulness	.003	.029	.003	.111	.912	.175
	Accessibility	.854	.040	.816	21.246	.000	.102
	Perceived Trust	.023	.021	.024	1.093	.276	.323
	Perceived Risk	.022	.021	.016	1.077	.284	.639
	Digital Literacy	.098	.031	.096	3.206	.002	.166

Source: Authors' illustration based on SPSS results

According to the results multiple regression equation can be derived as below.

$$Y = -.487 + 0.072(\text{Perceived Ease Of Use}) + 0.003(\text{Perceived Usefulness}) + 0.854(\text{Accessibility}) + .023(\text{Perceived Trust}) \pm 0.022(\text{Perceived Risk}) + 0.1098(\text{Digital Literacy}) + \text{Error} \dots\dots\dots (4.2)$$

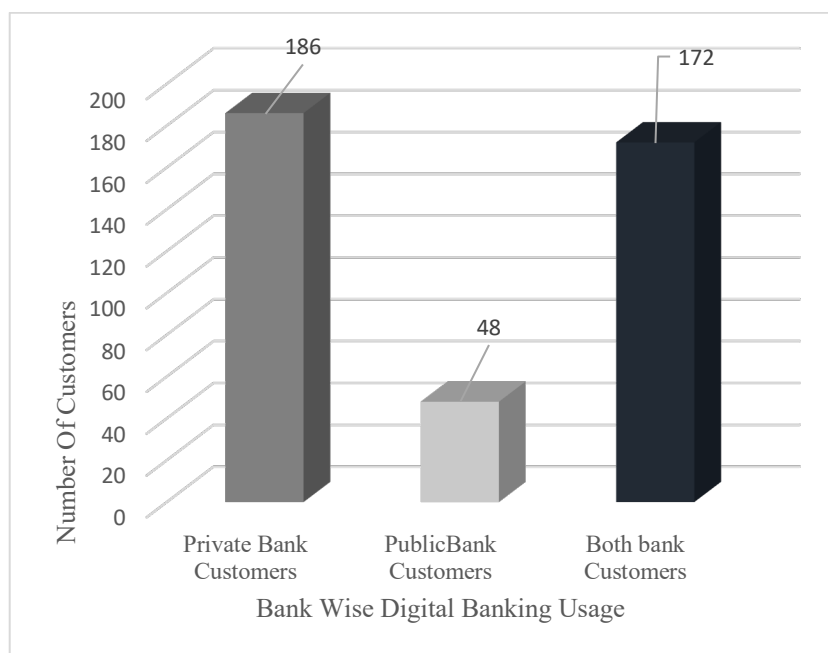
The overall study is conducted to investigate whether there is a relationship

between each independent variable of PEOU, PU, Accessibility, DL, PT, and PR to customer adoption and if there is a relationship between among to secondly, researchers focused on the research to check if there is an impact. An overall study was conducted with the urban and rural districts of Sri Lanka to recognize how each factor has affected digital banking use among Sri- Lankan banking customers, to ascertain the consequence of how customers have adopted digital banking platforms.

From referring to the former studies with previous literature these main six factors such as internet knowledge and internet access, perceived trust and risk, both perceived usefulness and perceived ease of use, and extraordinary service awareness like factors have gone with similar results, with another similar variable which has effected for internet banking (Mano et al, 2020).

From the results of PEOU, DL and accessibility have only impacted customer adoption research finds emphasizes as developing nations, utilizing digital banking platforms is essential in the ongoing world today. But the overall results indicate still in that rural areas people utilize the resources in low content.

**Figure 11: Private, Public and Both Private and Public Bank customers Digital bank Usage Variation**



*Source:* Authors' illustration based on SPSS results

Above mentioned bar chart in figure 11 emphasizes the variation of the digital banking platform usage. To differentiate the usage of private and public bank customer's adoption of digital banking platforms, researchers conducted the Chi-Square analysis to interpret the results and the above-mentioned figure 4 was created through Chi-Square SPSS output .186 responses from overall rural and urban areas that have adopted digital banking platforms in private banks and as a percentage of 45.8%. The study has been dominated by private banking customers who have adopted DB platforms. The results indicate that 172 respondents are using both private and public bank customer adoption for DB platforms as a percentage of 42.36% of the sample size. According to the least percentage, 11.82%percentage of public bank customers are utilizing digital banking platforms and the results indicate considerably low value compared to private bank digital banking platform usage of the customer.

## CONCLUSION

As the results interpreted, the third main independent variable which has impacted customer adoption is digital literacy” through the digital literacy as it has a significant positive impact towards customer adoption, (Premarathne & Gunatilake, 2016). These studies emphasize the positive impact of the digital literacy variable on customer adoption of digital banking platforms which parallel from present study. Because of the COVID- 19 pandemic situation the main reason behind the adoption has occurred because of the COVID-19 outbreak many bank organizations have widened their banking platforms through virtual banking as there were government-imposed curfew situations were eradicated and from this result, we can emphasize, from this COVID- 19 pandemic situation, majority of the banking people, those who even were not occupied even in Digital platforms have been digitalized by widening their digital literacy and adopted for digital banking (Ramli & Rahmawati, 2020).

However, compared to the other independent variables, information sharing has the lowest impact on the dependent variable. The cause of the COVID-19 pandemic may be the reason behind this. Most organizations have switched to virtual platforms because of the COVID-19 outbreak.

With the evaluation of the main findings of regression analysis the first variable PEOU, has a positive impact on the dependent variable (Sohail et al., 2021).As for similar studies Rajapaksha (2021), was elaborated on the positive relationship between customer adoption for DB platforms.

The overall results concluded major factors which affect customer adoption are perceived ease of use, digital literacy, and accessibility as they have a significant impact on customer adoption while perceived risk, perceived usefulness, and perceived trust, the final three independent factors we considered, have no appreciable influence on customers' use of digital banking services.

Researchers went with multiple linear regression and ANOVA with SPSS to validate the test after the correlation analysis was conducted. Overall, private bank consumers have accepted digital banking at a higher rate than public bank customers, and this is noteworthy because the value is substantial. While in both banks, PEOU, accessibility, digital literacy factors have a significant impact towards customer adoption with regression analysis impact finding results.

As a result, the aforementioned factors have a relative advantage when it comes to the use of digital banking, which has led to a considerable surge in customer adoption of these platforms during the post-COVID-19 epidemic. Additionally, it has influenced consumer adoption of digital banking.

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# Evaluate the Needs of the Generation Z (Post Millennial) Tourists' Which Can Lead the Sri Lankan Tourism Industry Towards the Rejuvenation Stage

R. A. Vansanden<sup>1\*</sup>, R. A. M. Madhuwanthi<sup>2</sup>, A.D. Dharmawansa<sup>3</sup>.

<sup>1\*</sup>Esoft Metro Campus, Sri Lanka,  
ruchira.esoft@gmail.com

<sup>2</sup>Esoft Metro Campus, Sri Lanka,  
mm.dharmawansa@gmail.com

<sup>3</sup> University of Wayamba Sri Lanka,  
asankad@wyb.ac.lk

## ABSTRACT

*Leisure classes have traveled for personal reasons, to see renowned sites, and to learn about other climates and cultures since the dawn of civilization. Because of its distinctiveness and strategic location, Sri Lanka is a well-known tourist destination. It is worth noting that all localities have seen significant volatility and dramatic drops in tourist numbers since 2019. Rapid changes in visitor arrivals from all tourism markets position Sri Lanka in the TALC model's latter phases. Quantitative study was conducted to identify what motivates Generation Z visitors to Sri Lanka. The data and the model have a stronger link. It concludes that the destination's uniqueness, customized services, affordability of the destination, safety of the destination, accessibility of the destination, entertainment of the destination, and sustainability of the destination have prompted generation z visitors to return to Sri Lanka. Deduction was used to establish hypotheses regarding common concepts, standards, and rules. The author conducted a data analysis survey. The author suggests a positivist quantitative study. For the study, the Author used a cross-sectional time horizon. The conceptual framework of the research was developed by the author in order to identify the components that contribute to Sri Lanka vacations and revisits. The sample will be taken from a diverse group of persons who have been or plan to visit Sri Lanka. The sample size was 384 people. To collect primary data, questioners were utilized. They were given to visitors who flew directly with Sri Lankan Airlines, to customer data bases with the permission of reputable and SLTDA-registered enterprises, and to travelers who had been in Sri Lanka for more than a week. Prior study papers, journal articles, published data, statistic reports, annual reports, government data sources, travel agencies and businesses, the internet, and so on were all examined by the author. The author predicts that the results will be applied to the broader tourist markets*

*business, benefiting the country's GDP and total foreign currency revenue and leading to a future phase of revitalization.*

**Key words: Generation-Z, Rejuvenation, Revisit, TALC-model, Tourism**

## **INTRODUCTION**

The leisured classes have traveled since the birth of civilisation to explore famous destinations and learn about other climates and cultures (Ward-Perkins et al, 2019). Sri Lanka's location and distinctiveness make it a popular tourist destination. Marco Polo visited Sri Lanka, then called Ceylon, and said, *"The traveler reaches Ceylon, the most beautiful island of its size in the world"* (SLTDA, 2022) Sri Lanka's golden beaches, exotic fauna, breathtaking terrain, and rich cultural past make it a popular tourist destination, according to the Sri Lanka Tourist Board. Sri Lanka's watery surroundings make it a great beach destination. Sri Lanka's history spans 3000 years. Kandy, Anuradhapura, the Dutch fort of Galle, Polonnaruwa, Sigiriya, the 5th century rock stronghold, Dambulla, the golden rock temple, the Horton plains, and the Singha raja rain forest are all world heritage sites (Embuldeniya and Rajapaksha, 2015). 83.2% of visitors came for pleasure in 2019, making tourism the third-largest foreign currency generator. 2019 tourism income were predicted at Rs. 646,362 million (US\$ 3,606 million) (SLTDA, 2019). Current service quality research and practice must include perceived worth (Ismail et al., 2009). The author conducted quantitative research of what motivates Generation Z visitors to Sri Lanka. Although the study was limited to Generation Z, the author expects that the findings can be used to the broader tourism markets industry to maintain and improve visitor arrivals to Sri Lanka, which will aid the country's GDP and total foreign currency income and lead to a future rejuvenation.

## **Problem Statement**

Rapid fluctuations in all tourist markets' arrivals and Sri Lanka leading towards the later parts of the TALC model as a destination can be identified as a major problem that Sri Lanka will face. According to SLTDA,2018 and SLTDA,2019 (Sri Lanka tourism development Authority) it is stated that it is noteworthy that all regions showed significant fluctuation and drastic drops in the number of tourist arrivals.

**Table 1: Tourist Arrivals by Region**

	Increase / (Decrease)			
	16/15	17/16	18/17	19/18
<b>North America</b>	15.9	6.1	23.0	(7.4)
<b>Asia &amp; Pacific</b>	14.4	3.1	3.5	(23.1)
<b>Europe</b>	14.8	4.8	20.8	(12.8)
<b>Middle East</b>	6.5	(11.2)	(25.1)	(38.4)
<b>Others</b>	0.4	8.1	26.0	1.5
<b>Total</b>	<b>14.0</b>	<b>3.2</b>	<b>10.3</b>	<b>(18.0)</b>

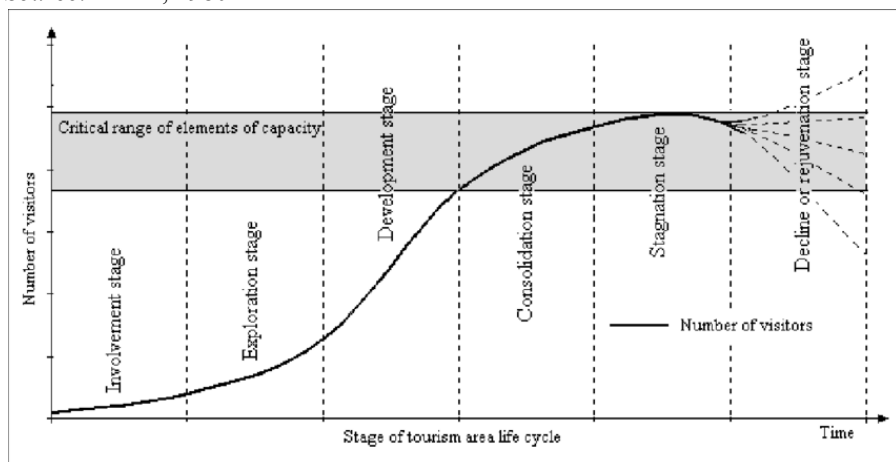
*Source:* Author developed based on SLTDA Annual Statistic report, 2018 and 2019

Europe, the largest source market, fell 12.8% in 2018, while Asia-Pacific fell 23.1%. The Middle East fell 38.4% and the Americas 7.4%. In 2018, regional markets fell 18% on average (SLTDA,2019). Europe kept the bulk of the market in 2019, but only gained 46.4% from 43.66% in 2018. (2.8 percent).

Butler established the tourist area life cycle (TALC) model in 1980, thinking the destination a commodity that changes according to market (tourist) demands (Butler, 2011).

**Figure 1: TALC Model**

*Source:* Butler, 1980



According to Butler, 1980, it is stated that there are 7 stages in the model.

**Table 2: Summary of the TALC Model**

<b>Stage.</b>	<b>Description.</b>
<b>Involvement.</b>	Cultural and environmental relevance drew few travelers. Insignificant social and economic impact.
<b>Exploration.</b>	The location's popularity grows. Local and tourism markets interact. Social and economic repercussions.
<b>Development.</b>	Tourism has become well-defined. Tourism has seen investments. Many visitors. Infrastructure changes a place's image.
<b>Consolidation.</b>	Big groups dominate much of the destination's tourism market. Tourist arrivals are smaller than in the past, although the destination still welcomes many.
<b>Stagnation.</b>	The destination's image is outdated, with immediate social and economic ramifications. Environmental damage is obvious. Re-visits are rare.
<b>Rejuvenation</b>	Avoiding the declining stage by establishing artificial appeal, such as casinos, or utilizing a previously unused natural resource might lead to this stage.
<b>Decline.</b>	The location has lost guests to newer attractions. Domestic tourism boosts revenue. Tourist attractions often close.

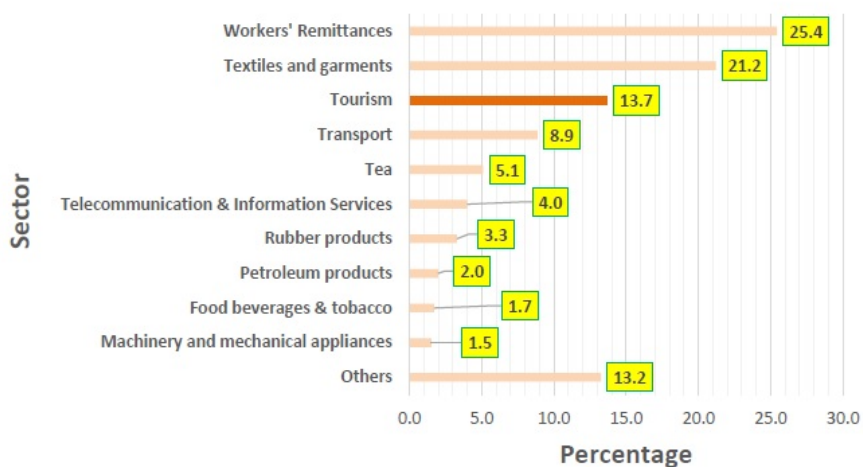
*Source:* Author developed based on Butler, 1980

According to the TALC model, the tourism industry of Sri Lanka is in between stages of development and consolidation. (Moramudali, 2018).

### **Significance of the research.**

Tourism contributes 5% to the GDP and 11% to the labor force. Tourism was the third largest source of foreign exchange earnings for the government in 2019, and 83.20 percent of visitors to the island in 2019 came for leisure-related reasons, such as vacation, sightseeing, etc. The anticipated tourist revenue for 2019 is Rs. 646,362 million (US\$ 3,606 million) (Lelwala and Gunaratne, 2008).

With this work, the author hopes to fill research gaps. The research might be used to establish strategies for increasing tourist arrivals in Sri Lanka, as well as to identify new product and service demands for passengers, travel agents, and businesses. The research findings might be used to sustain and increase *Source:* SLTDA, 2019



Source: SLTDA, 2019

**Visitor visits to Sri Lanka, which would benefit the country's GDP and foreign currency earnings.**

**Table 3: Destination Summary 2019**

Sri Lanka's international tourism population	1,913,702
Foreign currency gains	Rs. 646,362.3 million US\$ 3606.9 million
Contribution directly to GDP	4.3%*(2019 price)
Daily foreign currency receipts per tourist	US\$ 181.2
Standard length of stay	10.4 nights
Total international guest nights	19,902,501
The occupancy rate of graded lodgings	57.09%
Total employment generation	402,607
Direct employment	173,592
Indirect employment	229,015
Source tourists markets (Top siurcw)	France, China, India, United Kingdom, Germany

Source: Author developed based on SLDTA, 2019

According to Moramudali (2018), Sri Lanka is a consolidated destination since the tourism sector has a direct impact on the economy and local and multinational companies dominate much of the market. Tourist arrivals are lower than in the past, although the city still gets many tourists (Butler, 1980). Sri Lanka has a strong destination image, yet tourism will stagnate and diminish. Authorities must take actions to prevent the falling stage that follows stagnation and move into the rejuvenation stage by recognizing the desires of the next generation of visitors who wish to visit and return to Sri Lanka.

### **Objective of the Research**

To evaluate the facts that triggers the generation z tourists to revisit Sri Lanka.

### **Sub-Objectives**

- To evaluate the effects of uniqueness of the destination on revisits of the gen Z tourists.
- To evaluate the effects of personalized services on revisits of the gen Z tourists.
- To evaluate the effects of the affordability of the destination on revisits of the gen Z tourists.
- To evaluate the effects of safety of the destination on revisits of the gen Z tourists.
- To evaluate the effects of accessibility of the destination on revisits of the gen Z tourists.
- To evaluate the effects of entertainment of the destination on revisits of the gen Z tourists.
- To evaluate the effects of sustainability of the destination on revisits of the gen Z tourists.
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## **LITERATURE REVIEW**

### **Generation Z Tourists**

The oldest generation Z members, born in 1995, are 27 years old. Gen Z's desire of authenticity leads to increased free expression and sensitivity (Robinson and Schänzel, 2019). Generation Z will experiment with different ways to express themselves and establish their identities over time, not by a single stereotype (Francis and Hoefel, 2018). Generation Z does not

distinguish between online and offline interactions; they move between groups that promote causes by using technology's mobilization. Online communities are important to Generation Z because they allow people to organize around similar interests and ideals (Raslie, 2021). Generation Z is more practical and analytical than prior generations since it has access to so much information (Francis and Hoefel, 2018). Generation Z is less idealistic than millennials since they grew up under economic, environmental, and social catastrophes. Generation Z individuals favor regular employment over freelancing or part-time work because they value job security over a big wage (Singh and Dangmei, 2016). The global travel market reached USD 1.7 trillion in 2019, and Gen Z is influencing its growth. Gen Z is now the world's largest generation, accounting for 32% of the worldwide population. As a result, the worldwide economy, including its many industries, including tourism, is changing to meet Gen Z's needs (Vieira et al., 2020). Generation Z visitors are the most important future guests and travelers. This new generation differs from previous generations in many ways, especially when arranging holidays and travel (Dimitriou and AbouElgheit, 2019). In certain circumstances, Generation Z's choice to buy tourist items and services is influenced by rust, pricing, mobile and web technologies, online goods and services, and online experience. Less focus was placed on convenience, online ratings, tourism promotion, social networking, and cancellation (Vieira et al., 2020). Generation Z, born in the digital age, will revolutionize tourism and destinations. Mass tourism may not be competitive with modern tourist, according to some (Dwyer, Forsyth, and Spurr, 2004). As a result of the new norm, localities depending on obsolete mass tourism will find it harder to function economically in an atmosphere dominated by gen Z tourists. This demographic transformation may offer opportunities and issues for tourism and destinations (Bernini and Cracolici, 2015).

### **Reasons for Gen Z tourist revisits of a tourist destination.**

Personality traits are important for recurring visits to a tourist spot, especially if the place aims for renewal (Butler, 2011). Plog's typology can be applied to future developments in Sri Lanka because it is worth studying generation Z tourists' drive towards Sri Lankan culture, cuisine, nature, and adventure (Kodithuwakku, 2018). Because the approach analyzes the tourist's initiative towards the place, Plog's typology is an ideal tool for tourism destination design. (Cruz-Milan, 2018).

### **Uniqueness of the Destination which Triggers the Revisits of Gen Z Tourists.**

Most gen Z travelers like unique destinations and utilize social media to compare them (Dimitriou and AbouElgheit, 2019). Experience, knowledge, and skill gained through time have added to the destination's uniqueness. A pleasant experience makes a place distinctive and increases the competitive advantage by encouraging visitor return (Jensen et al, 2015). The diversified resources make it a desirable place to visit. Since limited natural resources reduce tourist attractiveness, uniqueness must be created to motivate tourists' travels and revisits (Dwyer and Kim, 2003). By understanding Gen Z visitors' cultural background, demographics, etc., societal influences, value systems, attitudes, and behaviors may be effectively preserved, as can social, cultural, and environmental links. improved overall Happiness and fewer complaints from tourists develop relationships and enhance their whole experience (Pearce, 2005).

### **Relationship Between the Personalized Services and the Revisits of Gen Z Tourists.**

Digitally savvy, outgoing, self-centered Generation Z tourists desire customization. Most tourists nowadays expect personalized information and recommendations (Lee and Mills, 2010). Marketers believe Travel and Tourism efficiently uses customization. This shows that a thriving, healthy market has room for growth. Personalization marketing in travel includes customized advice before or during booking (Sofronov, 2018). Niche tourism was formed in response to niche markets, which are groups of individuals with similar interests and demands (Stone, 2005). Self-sufficient niche tourists choose specialized activities to socialize and become cosmopolitans (Novelli, 2005). As globalization increased tourists' needs and wants, niche tourism grew (Stainton, 2020). Because niche tourism draws fewer tourists, it causes less environmental impact. These tourists spend more money and are interested in local culture and society. Niche tourism's tiny scale is its biggest drawback (Stainton, 2020). Market sectors like cultural tourism and event tourism may be segmented into micro niches like festive (culture) tourism and sport (event) tourism (Novelli, 2005).

### **Affordability of the Destination and the Revisits of Gen Z Tourists.**

Tourists' pleasure with a place's affordability has been shown to be an important component of destination satisfaction and a predictor of inclination to return. Some studies consider overall contentment with pricing to be a

component of destination satisfaction and give empirical evidence to support its significance in determining visitors' overall pleasure with a location (Chen & Funk, 2010). According to Eilat and Einav (2004), travelers to less developed countries are less price sensitive due to the low present price level, and they may choose the place based on value rather than price. Gen Z are 'informed consumers,' meaning they will regularly study and examine options before making a purchase choice. They are also significantly less loyal to certain companies, preferring to shop around for the best deal. Gen Z appreciates brand ethics and corporate responsibility even more than Millennials, and they are the generation most likely to make a purchase via social media (Bewicke, 2021).

### **Safety of the Destination and the Revisits of Gen Z Tourists.**

Safety is one of the most critical considerations affecting many visitors' travel habits (McCabe, 2009). It has been argued that the perception of danger is one of the most serious issues in global tourism since both visitors and local people' safety may be threatened (Scott, 2008). It is possible to define risk perception as a personal estimate of the danger of a potentially dangerous circumstance based on its severity and attributes (Moreira, 2008). Given that the pandemic is exceedingly damaging to one's health, many tourists are likely to be concerned about their safety while visiting places with many infected individuals. It is assumed that the host country would have a high reputation for safety, and visitors and their families will prioritize safety (Biodun et al., 2013). Over the years, crises like as terrorist activities, civil conflicts, and natural catastrophes have had an impact on tourism. The post-war tourism boom is a superb illustration of tourist contentment with Sri Lanka's promised health and safety (Kovari and Zimányi, 2011).

### **Accessibility of the Destination and the Revisits of Gen Z Tourists.**

Place accessibility refers to how accessible a certain place is in terms of services and infrastructure, as well as the amount of time and effort necessary to get there (Gehrke et al., 2020). The ease of access to a location is usually regarded as a critical element affecting travelers' travel choices (Hooper, 2015). Furthermore, the degree of accessibility has a significant influence on regional visitor flow and the success of the global tourism business (Marrocu and Paci, 2011). As a consequence, destinations and countries must address crucial issues with the perception and evaluation of accessibility and accessibility performance. Understanding the accessibility of a location may help destination managers and governments recognize visitor potential and execute necessary activities (Yen et al, 2021). Gen Z characteristics include

a lack of verbal communication, being selfish and independent, being impatient and impatient, and not enjoying the process of visiting and returning a site that emphasizes on accessibility (Pham and Nguyen, 2019).

### **Entertainment of the Destination and the Revisits of Gen Z Tourists.**

Entertainment activities and options are one of the components of a tourist destination's offering. It is also one of the primary variables defining the attractiveness and attraction of locations, as well as contributing to tourist satisfaction, which leads to return visits (Loi, 2009). According to Loi, 2009 it is stated that events which covers a major part in the entertainment of a destination not only provide visitors with entertainment options, but also serve as commercial platforms for numerous connected sectors and local communities.

### **Sustainability of the Destination and the Revisits of Gen Z Tourists.**

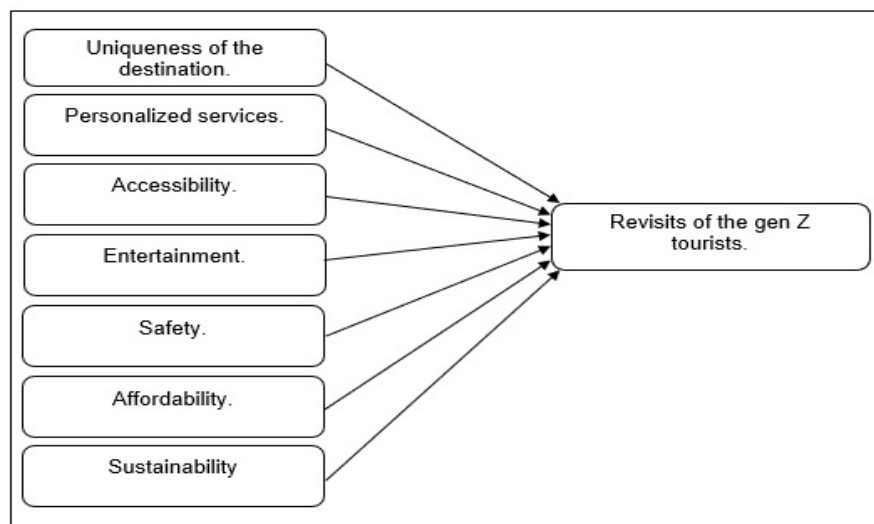
Attaining sustainable development objectives requires ensuring the coherence of three primary elements: economic growth, social inclusion, and environmental preservation, all of which are necessary for achieving individual and societal well-being (Szromek, Hysa, and Karasek, 2019). Sustainable tourism has been characterized as tourism that fully considers current and future economic, social, and environmental ramifications, as well as meeting the needs of visitors, the industry, the environment, and host communities (Koens et al, 2018). Tourists have a significant role in the development of sustainable tourism since their choices affect local economies, societies, cultures, and ecosystems (Jafari, 2001). In an ecological context, sustainability may be described as the future growth of the tourist industry having no detrimental impact on the sustainability of the ecosystem around tourism activities, and tourism operations can also be integrated with environmental protection initiatives (Sitepu et, al, 2020).

## **RESEARCH METHODOLOGY**

The philosophy of research is how data is collected, evaluated, and utilized. Positive realism, interpretivism, postmodernism, and pragmatism are the five major philosophies. The author investigated positivism because it allows researchers to utilize quantitative data to construct logical models (Majeed, 2019). Deduction was used to establish hypotheses regarding common

concepts, standards, and rules. Deductive investigations use existing concepts to construct hypotheses and test their validity. The quantitative method is used to analyze concepts and investigate causes and consequences (Apuke, 2017). Data collection and analysis approaches include experimentation, surveys, archival research, case studies, ethnography, action research, grounded theory, and narrative inquiry (Melnikovas, 2018). The author conducted a data analysis survey. According to Melnikovas (2018), temporal horizons specify the research period: cross-sectional or short-term studies need data at a certain point in time, while longitudinal studies gather data throughout time to compare. Cross-sectional research. The author used a positivist quantitative inquiry. According to Crossan (2003), positivism evaluates things quantitatively. A conceptual framework is a structure developed by researchers that describes the topic's natural growth and arranges dependent and independent factors. (Camp, 2001). The conceptual framework of the research was developed by the author in order to identify the components that contribute to Sri Lanka vacations and revisits.

**Figure 5: Conceptual Framework**



*Source:* Author developed

According to Kabir (2016), hypotheses provide explicit study goals so the researcher may focus on selecting a sample and linking facts and information to avoid diverting from the main aim. Author has 7 conceptual hypotheses.

**Table 4: Hypotheses**

<b>H1</b>	There is a relationship between uniqueness of the destination and the revisit of the Gen Z tourists
<b>H1<sub>0</sub></b>	There is no relationship between uniqueness of the destination and the revisit of the Gen Z tourists
<b>H2</b>	There is a relationship between personalized services and the revisit of the Gen Z tourists
<b>H2<sub>0</sub></b>	There is no relationship between personalized services and the revisit of the Gen Z tourists
<b>H3</b>	There is a relationship between accessibility and the revisit of the Gen Z tourists
<b>H3<sub>0</sub></b>	There is no relationship between accessibility and the revisit of the Gen Z tourists
<b>H4</b>	There is a relationship between entertainment and the revisit of the Gen Z tourists
<b>H4<sub>0</sub></b>	There is no relationship between entertainment and the revisit of the Gen Z tourists
<b>H5</b>	There is a relationship between safety and the revisit of the Gen Z tourists
<b>H5<sub>0</sub></b>	There is no relationship between safety and the revisit of the Gen Z tourists
<b>H6</b>	There is a relationship between affordability of the destination and the revisit of the Gen Z tourists
<b>H6<sub>0</sub></b>	There is no relationship between affordability of the destination and the revisit of the Gen Z tourists
<b>H7</b>	There is a relationship between sustainability of the destination and the revisit of the Gen Z tourists
<b>H7<sub>0</sub></b>	There is no relationship between sustainability of the destination and the revisit of the Gen Z tourists

*Source:* Author developed

The research is centered on what motivates generation z and post-millennial visitors to come and revisit Sri Lanka. The sample will be drawn from a mix of people who have visited or are eager to revisit Sri Lanka. According to SLTDA, 2019, 1,913,702 visitors arrived in 2019 and 39.6% were generation Z. Population: 757,826. According to Morgan's table, the sample size for

95% confidence and 5% confidence interval was 384. Writer Primary and secondary sources were used. Questioners were used to obtain primary data, which included questions on the hypothesis. They were distributed to, tourists who depart using Sri Lankan Airlines directly, to customer data bases with the consent of reputed and SLTDA-registered companies, and to tourists who have been in Sri Lanka for more than a week. Prior study papers, journal articles, published data, statistic reports, annual reports, government data sources, travel agencies and businesses, the internet, and so on were all examined by the author.

**Table 5: Operationalization of the Research**

Variable	Definition of the variable	Indicators	Measurement scale
<b>Uniqueness of the destination.</b>	Experience, knowledge, and skill gained through time have added to the destination's uniqueness. A pleasant experience makes a place distinctive and increases the competitive advantage by encouraging visitor return (Jensen, Lindberg, & Østergaard, 2015).	1. The uniqueness of nature will motivate my visit to Sri Lanka. 2. The uniqueness of the culture will motivate my visit to Sri Lanka. 3. The uniqueness of food and beverages will motivate my visit to Sri Lanka.	1 to 5 Likert Scale. 1. Strongly disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly agree
<b>Personalized services of the destination.</b>	Personalization marketing in travel includes customised advice before or during booking (Sofronov,	1. Personalized tour packages (hotels, transportation, transits etc.) will motivate my visit to Sri Lanka.	1 to 5 Likert Scale. 1. Strongly disagree 2. Disagree

	2018).	2. Personalized care and attention given to me will motivate my visit to Sri Lanka.	3. Nuetral
			4. Agree
			5. Strongly agree
		3. Letting me customize my visit will motivate my visit to Sri Lanka.	
<b>Accessibility of the destination.</b>	Place accessibility refers to a destination's facilities, infrastructure, and time and effort to get it (Gehrke et al., 2020). Accessibility influences tourists' travel decisions (Hooper, 2015).	1. Hassle free access into the country will motivate my visit to Sri Lanka.	1 to 5 Likert Scale.
		2. Hassle free reservation will motivate my visit to Sri Lanka.	1. Strongly disagree
		3. Easy access to transportation (in land and air, including transit) will motivate my visit to Sri Lanka.	2. Disagree
			3. Nuetral
			4. Agree
			5. Strongly agree
<b>Affordability</b>	Price satisfaction is considered a component of destination satisfaction in certain research, and empirical proof of its usefulness is provided	1. Price of the air tickets will motivate my visit to Sri Lanka.	1 to 5 Likert Scale.
		2. Price of the accommodations will motivate my visit to Sri Lanka.	1. Strongly disagree
			2. Disagree
			3. Nuetral
			4. Agree
			5. Strongly

	(Chen and Funk, 2010).	3. Price of the tour packages will motivate my visit to Sri Lanka.	agree
		4. Low prices for visiting Sri Lanka comparing to other countries will motivate my visit to Sri Lanka.	
<b>Sustainability of the destination.</b>	Achieving sustainable development goals requires ensuring the coherence of three primary elements: economic growth, social inclusion, and environmental preservation (Szromek et al, 2019). Sustainable tourism analyzes present and future economic, social, and environmental ramifications while meeting the needs of visitors, the industry, the environment, and host	1. Sustainable accommodation will motivate my visit to Sri Lanka. 2. Sustainable tourism activities will motivate my visit to Sri Lanka. 3. Visible sustainable tourism management of the destination will motivate my visit to Sri Lanka.	1 to 5 Likert Scale. 1. Strongly disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly agree

	communities (Koens et al, 2018).		
<b>Entertainment of the destination.</b>	Entertainment is a component of a tourist resort. It defines the appeal and attraction of areas and contributes to visitor satisfaction, which leads to repeat visits (Loi, 2009).	<ol style="list-style-type: none"> <li>1. Adventure activities will motivate my visit to Sri Lanka.</li> <li>2. Cultural and nature activities will motivate my visit to Sri Lanka.</li> <li>3. Clubbing, Events, Casinos, Shows will motivate my visit to Sri Lanka.</li> </ol>	<p>1 to 5 Likert Scale.</p> <p>1. Strongly disagree</p> <p>2. Disagree</p> <p>3. Neutral</p> <p>4. Agree</p> <p>5. Strongly agree</p>
<b>Safety of the destination.</b>	Safety influences many travelers' vacation choices (McCabe, 2009).  Visitors and their families will prioritize safety if the host country has a good safety reputation (Biodun et al., 2013).	<ol style="list-style-type: none"> <li>1. Safe environment for tourists will motivate my visit to Sri Lanka.</li> <li>2. Attention given to my personal safety will motivate my visit to Sri Lanka. (Hotels, transit, airports, transportation etc.)</li> <li>3. Attractive health and insurance coverages provided to me by the travel agents will motivate my</li> </ol>	<p>1 to 5 Likert Scale.</p> <p>1. Strongly disagree</p> <p>2. Disagree</p> <p>3. Neutral</p> <p>4. Agree</p> <p>5. Strongly agree</p>

			visit to Sri Lanka.	
<b>Revisits of the gen Z tourists.</b>	The push factor impacts tourism (Prayag and Hosany, 2014). Push reasons include escape, leisure, prestige, health, adventure, and social contact. Beaches, leisure amenities, and cultural attractions are pull factors (Uysal and Jurovski, 1994). Well-being, seeing new nations, a comfortable and warmer climate, etc. have prompted visitors to visit a place (Zhao and Gnanapala. 2011).	1.	Uniqueness of Sri Lanka will motivate my visit to Sri Lanka.	1 to 5 Likert Scale.
		2.	Personalized services will motivate my visit to Sri Lanka.	1. Strongly disagree
		3.	Accessibility will motivate my visit to Sri Lanka.	2.Disagree
		4.	Safety will motivate my visit to Sri Lanka.	3.Nuetral
		5.	Price will motivate my visit to Sri Lanka.	4.Agree
		6.	Sustainability will motivate my visit to Sri Lanka.	5.Strongly agree

*Source:* Author developed, survey data

The obtained data was structured in Microsoft Excel as Expectation, and the average was used for the final numerical data analysis in IBM SPSS (Statistical Package for Social Sciences) Software. The numerical data was statistically evaluated using the SPSS program to get a logical conclusion.

Ten research sample questionnaires were distributed for validity testing. The questioner was precise and simple to grasp. The participant has allotted sufficient time to answer questions. The author employed SPSS to assess the reliability of the research, which is the second quality indicator in a quantitative study. Cronbach's alpha ( $\alpha$ ) is a statistic used to assess the

reliability of a Likert-scale questionnaire (Drost, 2011). The author conducted this research in a generalizable way, so interested parties can utilize the approaches on a large population with comparable qualities to acquire favorable findings or use the data for decision making and strategic planning. The author aimed to conduct ethical research by telling participants the study's objective, stating where sensitive data will be held, and gaining agreement before using data. The research collected all personal information while keeping it confidential. After meeting the study's objectives, the acquired data was erased.

Time was the study's biggest constraint, outweighing all others. The researcher's sole reliance on the project exceeded time constraints. Due to personnel limits, the research must spend more man-hours on this project. Because the project's period is limited, the topic selection and potential future advancements are limited by time. Data access limits are hindering research because to the Covid-19 epidemic. Given the epidemic, collecting data from the general population was difficult. To collect data, online questionnaires were distributed. If the researcher followed the solutions for each obstacle, he or she could overcome the constraints and complete the investigation. Budget limit and money allocation were major financial restraints. Due to economic constraints, the selected construction approach did not meet the project's aims or quality standards. This hindered the project's progress. Due to the workload, the project budget was inadequate. To deal with these constraints, the researcher devised an efficient budget and only utilized money when necessary, or in accordance with the pre-planned budget, so that expenses did not exceed the pre-planned amount.

## **DATA PRESENTATION AND ANALYSIS.**

### **Demographic information.**

In the study, the author utilized demographic data such as gender, age, nation, educational background, and occupation. Despite the fact that the questionnaire was sent to Gen Z visitors from across the globe who had visited Sri Lanka before, only ten nations responded. The majority of participants were female (67%), with the remainder being male (33%). Sixty-seven percent of those who replied are between the ages of 30 and 39. The 18-29 age group accounted for 33% of all replies. Only 10% of responders have a high school diploma. 29% of respondents have a bachelor's degree, while 60% have a college diploma. 54% were working professionals. 25% were unemployed, while 21% worked for themselves.

## Reliability analysis.

To statistically examine the full data set, the author employed Cronbach's alpha reliability test.

**Table 6: Reliability Statistics**

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.971	.972	8

*Source:* IBM Corp.,2019, survey data

If Alpha is more than 0.5 and between 0 and 1, the data set is trustworthy, and the questioner's claims are reliable (Laerd, 2018). According to the table, alpha is 0.971, which is more than 0.500 and indicates that the inquiry may continue.

## Correlation Analysis

**Table 7: Correlations**

		Uniqueness	Personalization	Affordability	Safety	Accessibility	Entertainment	Sustainability	Revisits
Uniqueness	Pearson Correlation	1	.223**	.359**	.232**	.178**	.229**	.155**	.184**
	Sig. (2-tailed)		.000	.000	.000	.000	.000	.002	.000
	N	386	386	386	386	386	386	386	386
Personalization	Pearson Correlation	.223**	1	.242**	.231**	.531**	.969**	.656**	.582**
	Sig. (2-tailed)	.000		.000	.000	.000	.000	.000	.000

	N	38 6	38 6	38 6	38 6	38 6	38 6	38 6	38 6
Affordability	Pearson Correlation	.359**	.242**	1	.810**	.293**	.272**	.254**	.298**
	Sig. (2-tailed)	.000	.000		.000	.000	.000	.000	.000
	N	38 6	38 6	38 6	38 6	38 6	38 6	38 6	38 6
Safety	Pearson Correlation	.232**	.231**	.810**	1	.234**	.215**	.271**	.268**
	Sig. (2-tailed)	.000	.000	.000		.000	.000	.000	.000
	N	38 6	38 6	38 6	38 6	38 6	38 6	38 6	38 6
Accessibility	Pearson Correlation	.178**	.531**	.293**	.234**	1	.551**	.668**	.984**
	Sig. (2-tailed)	.000	.000	.000	.000		.000	.000	.000
	N	38 6	38 6	38 6	38 6	38 6	38 6	38 6	38 6
Entertainment	Pearson Correlation	.229**	.969**	.272**	.215**	.551**	1	.649**	.581**
	Sig. (2-tailed)	.000	.000	.000	.000	.000		.000	.000
	N	38 6	38 6	38 6	38 6	38 6	38 6	38 6	38 6
Sustainability	Pearson Correlation	.155**	.656**	.254**	.271**	.668**	.649**	1	.713**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000
	N	38 6	38 6	38 6	38 6	38 6	38 6	38 6	38 6

	Sig. (2- tailed)	.00 2	.00 0	.00 0	.00 0	.00 0	.00 0	.00 0
	N	38 6	38 6	38 6	38 6	38 6	38 6	38 6
Revisits	Pears on Correl ation	.18 4**	.58 2**	.29 8**	.26 8**	.98 4**	.58 1**	.71 3**
	Sig. (2- tailed)	.00 0	.00 0	.00 0	.00 0	.00 0	.00 0	.00 0
	N	38 6	38 6	38 6	38 6	38 6	38 6	38 6

\*\* . Correlation is significant at the 0.01 level (2-tailed)

*Source:* IBM Corp.,2019, survey data

All variables have a positive correlation and the P- Value = 0.000. Sustainability, and Accessibility have the highest link with revisits, while Uniqueness has the least. Uniqueness of the place has a weaker link than other independent variables (IV), but lenience towards +1 demonstrates better correlations to gen Z visitors' revisits (DV). All the IVs indicating a greater association as it is permissive towards +1. It shows that uniqueness, customized services, accessibility, affordability, safety, entertainment, and sustainability impact gen Z visitors' revisits.

## Multiple Regression Analysis.

### Model Summary

**Table 8: Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.990 <sup>a</sup>	.980	.980	.11171
a. Predictors: (Constant), Sustainability, Uniqueness, Safety, Entertainment, Accessibility, Affordability, Personalization				

*Source:* IBM Corp.,2019, survey data

According to the table, the P-value = 0.000 <  $\alpha$  = 0.01 and the model is significant. The modified R<sup>2</sup> value is high (0.980), indicating that the data and model have a stronger link. The model explains 98% of the overall

variability in Revisits, and the data match the model.

## ANOVA

**Table 9: ANOVA Table**

ANOVA <sup>a</sup>						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	229.907	7	32.844	2631.902	.000 <sup>b</sup>
	Residual	4.717	378	.012		
	Total	234.624	385			

a. Dependent Variable: Revisits

b. Predictors: (Constant), Sustainability, Uniqueness, Safety, Entertainment, Accessibility, Affordability, Personalization

Source: IBM Corp.,2019, survey data

According to the ANOVA table, F-value gets 2631.902 at P-value =  $0.000 < \alpha = 0.01$ . This evidently proves that Sustainability, Uniqueness, Safety, Entertainment, Accessibility, Affordability, Personalization of the destination are predictor of Revisits of the gen Z tourist. Thus, the model can be considered as correct and reliable enough to use in the study. Furthermore, the null hypotheses can be rejected as the F statistics shows.

## Coefficient.

**Table 10: Coefficient**

Coefficients <sup>a</sup>								
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	- .46	.058		- 8.01	.000	-.579	-.351

		5			0			
	Uniqueness	.021	.010	.002	.2140	.003	-.017	.021
	Personalization	.331	.035	.300	9.570	.000	.263	.400
	Affordability	-.270	.017	-.022	-1.622	.002	-.059	.300
	Safety	.099	.018	.039	2.997	.003	.019	.099
	Accessibility	.965	.011	.922	90.578	.000	.944	.986
	Entertainment	-.288	.034	-.264	-8.358	.000	-.356	-.220
	Sustainability	.073	.012	.066	5.860	.001	.049	.098
a. Dependent Variable: Revisits								

Source: IBM Corp.,2019, survey data

The beta coefficient ( $\beta$ ) for uniqueness is 0.021. This figure shows that there is a low positive relationship between uniqueness of the destination and the revisits of the Gen Z tourists. Furthermore, it describes that the 100% change in the uniqueness of the destination will increase 2% the revisits of the Gen Z tourists if the other IVs are constant. The beta coefficient ( $\beta$ ) for personalized services is 0.331. This figure shows that there is a moderate positive relationship between personalized services of the destination and the revisits of the Gen Z tourists. Furthermore, it describes that the 100% change in the personalized services of the destination will increase 33% the revisits of the Gen Z tourists if the other IVs are constant. The beta coefficient ( $\beta$ ) for affordability is -0.270. This figure shows that there is a low negative relationship between affordability of the destination and the revisits of the Gen Z tourists. Furthermore, it describes that the 100% decrease in the affordability of the destination will decrease 27% the revisits of the Gen Z tourists if the other IVs are constant. The beta coefficient ( $\beta$ ) for safety is

0.099. This figure shows that there is a low positive relationship between safety of the destination and the revisits of the Gen Z tourists. Furthermore, it describes that the 100% change in the safety of the destination will increase 10% the revisits of the Gen Z tourists if the other IVs are constant. The beta coefficient ( $\beta$ ) for accessibility is 0.965. This figure shows that there is a high positive relationship between accessibility of the destination and the revisits of the Gen Z tourists. Furthermore, it describes that the 100% change in the accessibility of the destination will increase 96% the revisits of the Gen Z tourists if the other IVs are constant. The beta coefficient ( $\beta$ ) for entertainment is -0.288. This figure shows that there is a low negative relationship between entertainment of the destination and the revisits of the Gen Z tourists. Furthermore, it describes that the 100% decrease in the entertainment of the destination will decrease 28% the revisits of the Gen Z tourists if the other IVs are constant. The beta coefficient ( $\beta$ ) for sustainability is 0.073. This figure shows that there is a low positive relationship between sustainability of the destination and the revisits of the Gen Z tourists. Furthermore, it describes that the 100% change in the sustainability of the destination will increase 7% the revisits of the Gen Z tourists if the other IVs are constant.

### **Regression Equation**

A regression equation was created using the Coefficient table. It explains the relationship between the independent and dependent variables.

$$Y = (a_0 + b_0x_0) + (a_1 + b_1x_1) + (a_2 + b_2x_2) + (a_3 + b_3x_3) + (a_4 + b_4x_4) + (a_5 + b_5x_5) + (a_6 + b_6x_6)$$

## **CONCLUSION AND RECOMMENDATION**

### **Conclusion**

The research study was conducted to evaluate the needs of the generation Z (post millennial) tourists' which can lead the Sri Lankan tourism industry towards the rejuvenation stage. The null hypothesis was rejected due to the p value = 0.000 (Anova table). There is a stronger relationship between the data and the model. 98% of the total variability in Revisits is explained by model and the data fit the model. It concludes that the uniqueness of the destination, personalized services, affordability of the destination, safety of the destination, accessibility of the destination, entertainment of the destination, sustainability of the destination has triggered the generation z tourists to

revisit Sri Lanka.

According to the regression analysis it concluded that the major portion of the gen Z tourist revisits are motivated by the accessibility of the destination. Similar to the results of Hooper (2015), Pham and Nguyen (2019), Yen et al, (2021), and Marrocu and Paci (2011), the results indicates that the tourists from all the major tourist regions have been attracted towards Sri Lanka since it is highly accessible as the positioning of the island and the means of access to the country. According to the study it concludes that the minor portion of the Gen Z revisits being explained by the uniqueness of Sri Lanka as a destination matching the previous studies associated to the uniqueness of the destination. According to Jensen et al., (2015) and Dimitriou and AbouElgheit, (2019), the vast majority of gen Z tourists choose unique places and use social media to compare them, and a positive tourist experience distinguishes a location and boosts its competitive edge by promoting repeat visits. It concludes that the decrease in entertainment and the affordability of the destination negatively affect the gen Z revisits. It is concluded that the results of the study on entertainment and affordability aspects on gen Z revisits proves the previous researchers findings are similar as according to Loi (2009), is entertainment diversions and opportunities one of the main factors defining the desirability and attraction of locations, as well as contributing to tourist satisfaction, which results in repeat visits. It has been shown that a destination's cost is a crucial predictor of visitors' propensity to return (Chen and Funk, 2010). According to Eilat and Einav (2004), because of the current low-price level, gen Z visitors are less price sensitive while visiting less developed nations, and they may select a place based on value rather than price. Despite the fact that personalized services account for a smaller proportion of gen Z revisit purposes, the findings are consistent with previous studies conducted by Lee and Mills (2010) and Sofronov (2018), which show that digitally savvy, outgoing, self-centered generation Z tourists desire customization. It concludes that the research has a number of management implications. First, the research may aid managers of destination organizations by enhancing their awareness of the impacts of gen Z tourists on tourist revisits, allowing them to recognize the age effects in the context of destination marketing. Second, tourism officials may comprehend the significance of the accessibility in determining visitor satisfaction. By analyzing the existing situation of visitor satisfaction in Sri Lanka in relation to gen Z tourists, tourism experts may take steps to improve satisfaction levels in order to increase repeat visits.

## Recommendation

Sri Lanka's tourism industry is developing and consolidating, and a distinct tourism market has emerged as investments in the tourist industry to handle a large number of visitors and the installation of infrastructure transform the picture of the destination on a regular basis, and the destination image is well established. To obtain a competitive edge in a global market, Sri Lanka's tourist sector has not adopted a branding and trademark system (Nishantha, 2020). Branding is used to advertise Sri Lanka. According to Smithson (2015), branding is a marketing process in which a company develops a distinguishing name, symbol, or design. Smithson believes that branding is important because it creates a lasting impression on consumers and educates them about the firm. Sri Lanka may focus on branding via events since events that play a key role in a destination's entertainment not only give visitors with entertainment options, but also serve as a business strategy for a variety of linked enterprises and community groups (Loi, 2009). Because Gen Z values brand ethics and corporate responsibility even more than Millennials and is the most likely of any generation to purchase via social media (Bewicke, 2021), internet advertising is recommended for motivating gen Z visitors to return. Sri Lanka has the potential to promote personalized services (niche tourism), accessibility, affordability, safety, entertainment, and long-term sustainability. This research was conducted on a single gen Z visitor and might be applicable to a tourist market country.

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# Virtual reality in Wildlife Tourism in Sri Lanka: Case of Yala National Park

<sup>1</sup>M.T. Pathirana, <sup>2</sup>Anushka Siriwardana, <sup>3</sup>C. K. De Silva

<sup>1,2,3</sup>Edith Cowan University

## ABSTRACT

*Virtual tourism is a new trend in the developing tourism industry. Within textual tourism virtual reality offers a range of convenience, sustainability, and potential applications. These benefits are gained greater attention from tourism decision-makers and academics. Application of the virtual reality to tourism aspects in Sri Lanka tourism is still at a very marginal level. Therefore, the benefits of the technological development were unable to grab tourism in Sri Lanka. Among the benefits, the support for sustainable tourism is one of the significant benefits. Yala National Park is one of the main tourist attractions in Sri Lanka tourism and that received the highest number of visitors to any national park in Sri Lanka. The park is experiencing challenges toward the sustainable aspects due to this high involvement of tourism activities. This observational paper is expected to provide suitable recommendations on applying virtual reality as a technological solution to face sustainable tourism challenges. With the development of social media usage in Sri Lanka, the implementation of virtual tourism activities and promoting Sri Lanka using virtual tourism elements in social media is not challenging. It is mentioned that authentic virtual reality is the most applicable solution to remain at the same level of attraction and to gain sustainable tourism in Yala National Park. Suitable recommendations were provided after analyzing the Yala National Park context. As virtual reality is further penetrating Yala National Park tourism activities new challenges will emerge. These will be the future research perspectives for smooth operations.*

**Keywords:** Yala National Park, Virtual tourism, Virtual reality

## INTRODUCTION

Over the years, Sri Lanka's tourism sector has experienced rapid growth, and the country has seen a surge in visitors in recent years, with over 2.3 million visitors visiting there in 2018. SLTA, 2019; Sri Lanka Tourism Development Authority. As a result, tourism was the third-largest source of foreign exchange earnings in 2013 and 2012, contributing 5.2 percent to the nation's overall foreign earnings (Welgamage & Perera, 2015). The nation is now very marketable on social media platforms thanks to its recognition as a top tourism destination.

In line with other popular travel locations, Sri Lanka Tourism has also

broadcast virtual tours that highlight the local wildlife. The business sector and the Sri Lanka Tourism Promotion Bureau (SLTPB) worked together to live-stream the island nation's national parks, exhibiting unusual species and natural habitats (Business Traveler, 2020). This effort covered national parks like Yala, Minneriya, Kaudulla, and Udawalawe. Travelers could take in breathtaking views of wildlife, including birds, bears, elephants, crocodiles, and leopards, as well as the amazing behavior and movements of these animals. The experiment was expanded to eight one-hour-long wildlife live video sessions. These live streaming events were broadcast on social media sites including YouTube, Instagram, Twitter, and Facebook, as well as being pre-promoted on these same sites. broadcast media were used for telecasting when also done to reach a larger audience

Virtual tours are not currently being used as a source of method in Sri Lanka tourism. Considering Sri Lanka, these virtual tours are presented as a promotional tool. Though, according to research at the Medical College at Augusta University in Georgia, a new sophisticated virtual reality technology utilizing mathematical methods along with streaming video with previously taken pictures and Videos of tourist attractions could be useful. While thinking advantages of virtual travel exists a generalization regarding virtual tourism is that this travel industry does not offer economic benefits, such as physical travel does (Tourism Teacher, 2020) Even if, from the views of both tourists and service providers, we would somewhat profit from the economic side. In developing nations like Sri Lanka, tourism may be one of the potential foreign exchange-generating areas. Through digital interviews with several tourists, it has been determined that virtual tours are more affordable, healthier, and safe because they can be completed from the comfort of home and because they cut down on travel time to the locations.

Virtual tourism should primarily be utilized as a marketing tool to pique interest in travel and attract potential clients. By piquing viewers' interest in travel, virtual tours are quite likely to speed up the return of actual travel. Additionally, this technology keeps people secure and comfortable in demanding situations where they are confined to their homes. These were made clear by the information available, and the remarks made by those who participated in Sri Lanka's couch safari. The virtual tours of Sri Lanka that are now available hardly ever make use of VR technology. Private businesses like hotels do their best to market their establishments by offering brief virtual reality tours.

## **Virtual Reality as a Tool for Virtual Tourism**

Virtual reality (VR) is frequently explained as a technique that uses a 3D world that has been created by a computer. Navigating this virtual environment frequently results in the real-time reproduction of one or more of the user's five senses. engagement with it (Gutierrez et al., 2008). Physical involvement and mental presence are also offered in the VR experience. The tourism sector's marketing and promotion segments have been utilized the most. through the use of visual imagery (Aziz & Zainol, 2011). The non-tangible attributes of a service, tourism consistently serves as a reminder to marketers that they must continue to invent new visual imagery formats to promote a good location image (Griffin et al., 2017).

As a helpful instrument utilized by marketers in creating the VR is used to convey feelings and sensations that have an impact on tourists and consumers. Due to its capacity to produce the stressed sensory and emotional experience. The advantages of VR for businesses engaged in destination marketing can be found in the method by which marketing messages are directed at particular markets while attracting the attention of attracting the interest of potential visitors and assisting with the identification of appropriate aspects Basically, offer incentives for those who use VR and raise awareness of it. advancement regarding the methods used to make travel decisions in the future (Huang et al., 2013). According to research, virtual tourists can easily satisfy their travel needs under the following prerequisites: taking into account the emotional and hedonistic experiences, Visitors to virtual tourist places may be able to improve their virtual world, and impressions are presented as a source of insightful data.

Virtual reality is regarded as a highly helpful instrument in the development of tourism policies and planning procedures (Cheong, 1995). The capacity of VR to generate realistic and usable virtual settings frequently assists tourist planners in their analysis of potential advancements in the industry. VR technology can help with tourism planning and management because it has special testing capabilities (Sussmann & Vanhegan, 2000). The development of management strategies, which include moving the burden from regions with heavy use to those with low use, includes analyzing visitors' patterns of space, time, and place. 3D visuals are fantastic resources for this (Lew & McKercher, 2005). In addition, as VR technology advances, the entertainment sector has discovered a method to these developments are highly helpful for marketing entertaining tourist destinations (Gutierrez et al., 2008)

The concept of VR entered the market in the 1990s with the gaming industry. VR is computer generated 3D simulation that allows tourists to engage in a real and physical way through sensors. This technology is routed as one of the main technology to impact the development of the tourism industry (Tussyadiah et al., 2017). Virtual traveling is changing the traveling behavior of the modern tourism industry with wider aspects and at a macro level. Digital content can give more interesting views in most cases with so much of added benefits for a traveler such as saving time and cost. This technology has been identified as a substitute for the travel experience. Adding more, this is a multi-sensory travel experience for tourists to experience without traveling (Shaikh et al. (2018). Tourists travel seeking excitement or newness in their life; therefore, VR should be able to add a lifetime memory that could be shared, recalled, and relived (Schaffer, 2018).

Though it was known to be an option for elderly people and disabled people virtual tourism broadens the tourism horizons in many aspects. The traditional tourism model is moving a larger number of tourists moving from one destination to another with higher threats to social and environmental aspects. Virtual visitor management may regenerate the tourism destinations into more sustainable, eco-friendly, inclusive, and resilient compared to the existing ways of traveling. Virtual tourism prevents cultural commodification and helps to sustain the authenticity of the local cultures. In addition to this, virtual visitation is allowing tourists to visit restricted or remote areas that are not allowed to visit in any form (Schaffer et al. 2018). With these aspects, VR is an option for the visitor to experience nature more sustainably while assisting in the regenerating aspects of tourism. Agreeing with Guttentag, (2010); and Violante et al., (2019) VR technology can persuade the customer journey to have a worthy visit to the destination.

Among two success stories, Thomas Cook travel agency introduced VR by partnering with Samsung to promote several destinations and they were successful by gaining a 40% return on investment within three months (Graham, 2016). These were further applied by Marriot hotels in 2015, Qantas Airlines in 2016, and Japan-based First Airlines in 2018 to grab the attention of the potential market by creating their dream vacation at home. VR was applied by Uluru Kata Tjuta National Park Australia to allow virtual visitors to experience a dynamic 360-degree visualization of the park with all its features in the park. Park management was able to include audio experience with sounds effect to feel the real-time atmosphere of the park (Gegung, 2021).

Digital transformation is changing the communication space between businesses and consumers (Saheb et al., 2021). Virtual tourism has emerged as an alternative to physical tourism, providing a better preview of physical destinations and attractions (Pestek & Sarvan, 2020). Virtual tourism has emerged as a potential way to transform the value-added offering of tourism. Virtual reality (VR) is interactive and believable place navigation. VR technology brings new opportunities to the tourism sector (Kaushal & Srivastava, 2021). VR is changing the way travelers experience their destinations. Virtual tourism is the future of tourism, revolutionizing the consumer experience at affordable prices. Therefore, there is a need to delve deeper into existing research and future possibilities. Previous researchers have pointed out that technology is a key factor in future trends in tourism (Bowen & Whalen, 2017). The traction of virtual tourism has been accelerated by the pandemic (Korstanje & Clayton, 2012). Researchers also predicted strong growth in virtual tourism with cooperation among international operators to use technology to expand their presence in developing countries (Sanjeev & Birdie, 2019). The existing literature highlights the role of technology in facilitating tourism in many ways, and consumer reviews on social media have become a powerful tool for influencing travel destination choices (Sahoo et al. Yadav et al., 2021, Verma et al., 2021); Kitsios et al., 2022). Virtual and augmented reality are also generating traction in shaping future trends (Yung & Khoo-Lattimore, 2019; Mohanty et al., 2020). Previous researchers have referred to technology as a key driver of future tourism, including virtual tours, but have not addressed a comprehensive review involving mapping of scientific achievements and analysis of intellectual constructs.

### **Development of the Social Media**

Social media is a tool that plays a significant role in attracting potential visitors to digital tourism activities. Emerge of social media and the wide spread of the Sri Lanka tourism brand name in the social media network is a plus point to implementing virtual tourism in Sri Lanka. In Sri Lanka, the use of online social networking is growing, and Facebook has emerged as the most well-known and interesting social media platform (Thuseethan & Kuhanesan, 2014). Sri Lanka has a total population of 21 plus million people, with 6.26 million active Web users and 4.9 million active social media users. According to Facebook's usage analysis, there are 4.9 million active users every month, with 86 percent of them accessing the site via a mobile device. Furthermore, it was discovered that 49% of Facebook users log on every day. Further insights reveal that while 70% of Facebook profiles are still male,

30% of them are female (Simon, 2017). Additionally, the social media stats as of 2019 (Global Stats) June, Facebook had 82.06 percent of the user base in Sri Lanka, making it the country's most popular social networking site. One-fourth of online social media users follow their preferred brands or products on social media. Eighty percent of them like or follow business or brand pages on Facebook. As a result, having a Facebook presence helps brands be found and linked (Pinto, 2017).

According to the most recent data, due in large part to the availability of various connection choices like mobile, broadband, and dial-up, Internet penetration in Sri Lanka climbed by 30% in 2016 and the number of Internet users surged to 6.1 million. This has a significant impact on Sri Lankans' daily lives, and numerous online activities have expanded, especially the use of social media and online shopping (Colombo Digital Marketers, 2017).

On the Web 2.0 platform, there are a variety of Internet-based apps known as social media. Internet users can engage, communicate, and form relationships thanks to such a medium (Kaplan & Haenlein, 2010). As a result of recent advancements in information and communication technology, which permit the significant use of the transferring and sharing, reusing and storing, and production of knowledge, tourism, a highly knowledge-based business, has been created. Another information-intensive industry is tourism. Therefore, it is crucial to track changes in consumer culture and technology that affect how easily accessible and distributed outdated travel information is (Xiang & Gretzel, 2010). Social networking platforms have recently become quite important in the marketing and promotion of tourism across the globe. Social media do indeed help people to interact with one another based on their shared interests. Additionally, it has changed how people communicate, especially tourists (Litvin, Goldsmith, & Pan, 2008). Nowadays, social media can be used by travelers to choose a place, particularly leisure travelers. This phenomenon has, altered how people think and make decisions. The tourism sector should think about how people use social media and develop strategies to spread the word about online content. Hotels can communicate with their clients via websites like Flickr, Facebook, YouTube, and Twitter, where they can exchange information, change their offerings, or develop their brands (McCarthy, Stock, & Verma, 2010). Additionally, social media platforms like the online travel community have a big impact on internet marketing and electronic commerce.

## **Yala National Park**

Wildlife tourism in Yala National Park is a major tourist attraction in Sri Lanka tourism. YALA NATIONAL PARK is in a remote area and to the visitors, the experience is very unique, and need specific advice on how to be safe and how to stay within the park restrictions (Buultjens et al, 2005). Wildlife tourism operators' existing practices are limited to operating safari activities in the park daily (Gnanapala, A., & Jayalath, 2020). Due to this nature, visitor satisfaction is highly dependent on the customer service provided by safari operators (Gnanapala, A., & Jayalath, 2020). This includes the quality of the vehicle, level of knowledge of the tour guide, and other services at the park entrance. This influence the tour operators to gain word of mouth to have economic sustainability. However, this practice had led the entire traditional model to a threat to the Yala National Park animals, environment, and visitors (Gnanapala, A., & Jayalath, 2020). Adding more, tourism operators and visitors both are facing a range of challenges due to the nature of the tourism services at the Yala National Park. Overcrowded with the tourism operators and creating many threats to wildlife, no proper visitor information available, lack of facilities in terms of infrastructure is weak, informal and illegal tour guiding and safari operations are common, and oversupply of the tour services are the major challenges that Yala National Park is currently facing (Weerasinghe et al, 2003). In addition to that agreeing with Guttentag (2010) they have mentioned the host community members who are involved in wildlife tourism exactly would face an economic sustainability risk with the rising challenges from nature. To secure their economic perspectives, virtual visitor management should develop to support the host communities as well (Weerasinghe et al, 2003). There is a need for a sustainable solution with the help of regenerative tourism in Yala National Park (Weerasinghe et al, 2003).

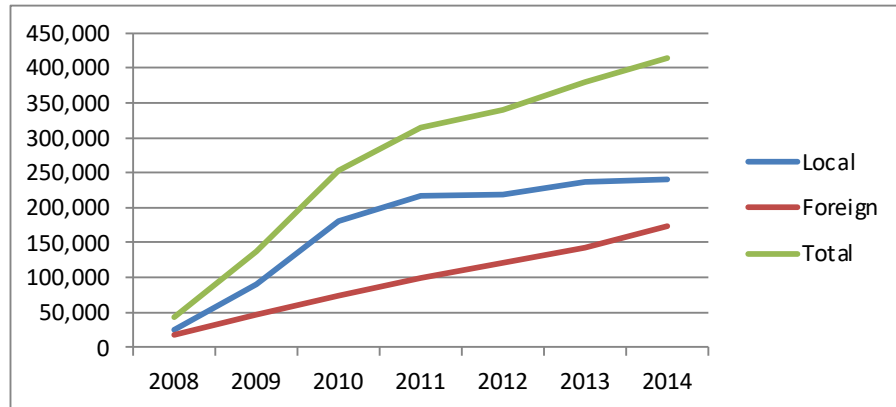
## **Yala, Safari, Virtual Tourism, and Strategic Analysis**

### **Context: Yala Overcrowded and Environmental Threat:**

Yala National park is among the major tourist attraction, where more than 400,000 local and foreign tourists visit the park annually. Vehicular congestion is one of the critical problems that was experienced in the park during peak hours of the day, during peak seasons. This had disturbed the park environment and wildlife. Yala National Park is among the hotspot for both local and foreign tourists. Since 2009, a drastic increase in visitor arrivals had been reported. 413,434 visitors visited the park in 2014, while a total of 431,468 tourists visited the park from Jan to Oct in 2015. During the

same period, out of the total visitors, 55% (243,614) were locals while the rest was foreign tourists.

**Figure 1: Visitor Attraction to Yala National Park (2008 – 2014)**

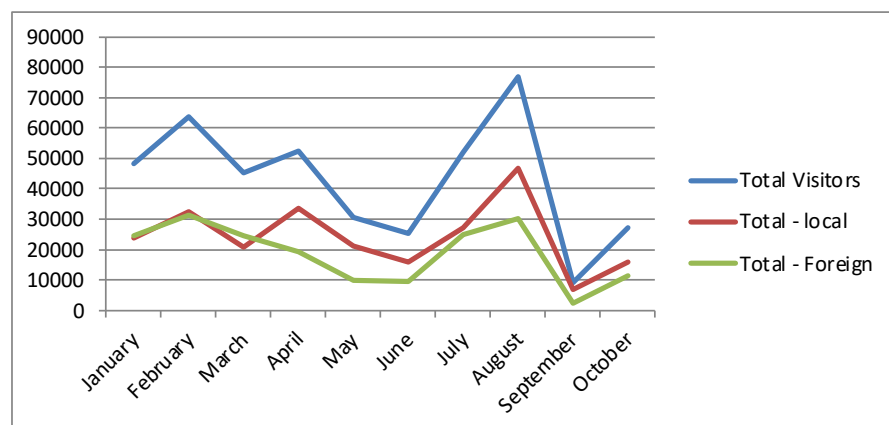


*Source:* Wildlife Department of Sri Lanka (2015)

In considering the seasonal dynamics, a higher number of visitors is attracted in several months of the year with the highest total visitation recorded in the month of August, while the lowest reported in September. The period from January - June reported a fluctuating pattern, with increases in February and April months, while drops in other months. The local school holidays during April and August can be seen as the probable causes for the said trend.

A total of 68,441 vehicle entries are also recorded during the above period. Average visitor-vehicle ratio during the period is between 5-6 persons per vehicle.

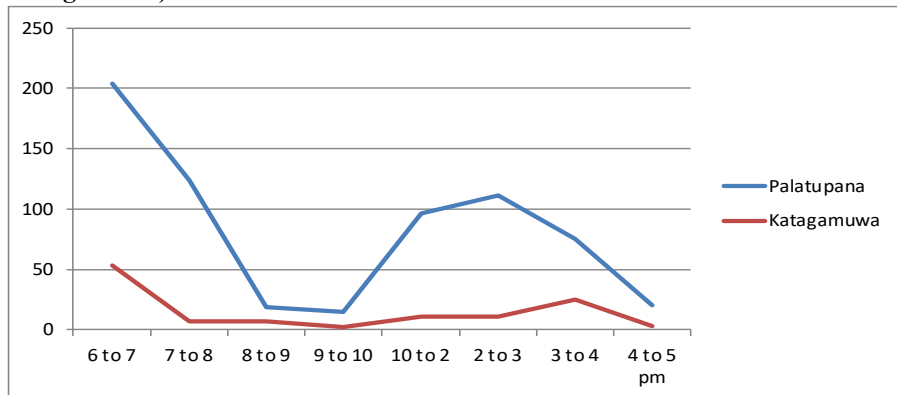
**Figure 2: Visitation Trends to Yala National Park (Jan- Oct 2015)**



*Source:* Wildlife Department of Sri Lanka (2015)

Further following observations were made during the two-day field traffic study conducted in two entrances – Palatupana and Katagamuwa. It was evident that peak times of the day are 6- 8 am and 2 – 3 pm. A long queue was observed during the morning, almost 228 vehicles entered during the period of 6-8 am from the Palatupana entrance – a general average of two vehicles per minute, whereas at around 6 am it was more than five vehicles per minute. This creates huge panic in the mornings, not only at the park entrance but also inside the forest.

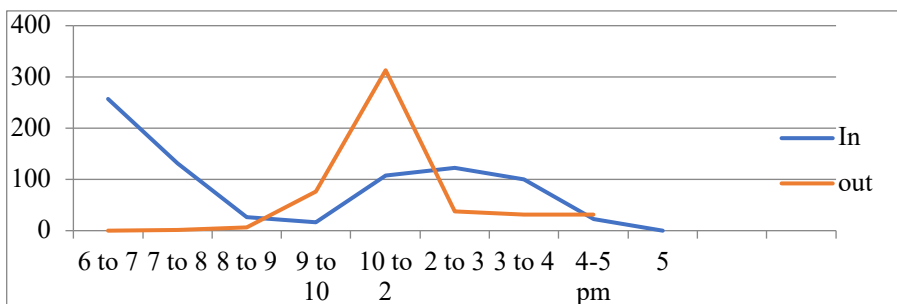
**Figure 3: Vehicle Entering Pattern from Two Entrances (Palatupana and Katagamuwa)**



*Source:* Traffic survey on Yala National Park for Department of Wildlife and Conversation;2015 (unpublished)

In looking at the total vehicle in-out of the pattern from the park, the following pattern is observed (figure 06).

**Figure 4: Vehicle In-Out from Both Entrances**

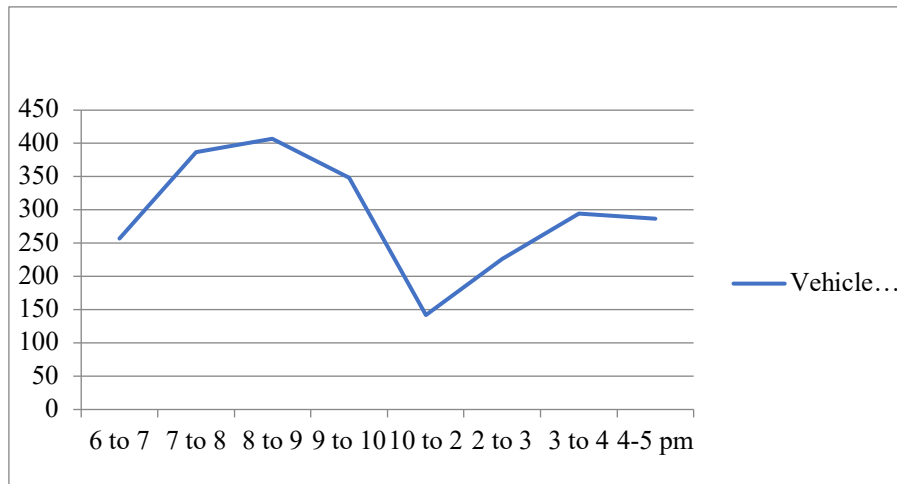


*Source:* Traffic survey on Yala National Park for Department of Wildlife and Conversation;2015 unpublished)

This leads to another interesting fact. It is found that during the park opening hours' an average of 290 -300 vehicles were found inside the forest. The facts further reveal that between 350 – four hundred vehicles were inside the park

from 7 am – 10 am. Or even compare this against the other parks in the world).

**Figure 5: Number of Vehicles Inside the Park – on an Hourly Basis (based on the study)**



*Source:* Traffic survey on Yala National Park for Department of Wildlife and Conversation;2015 (unpublished)

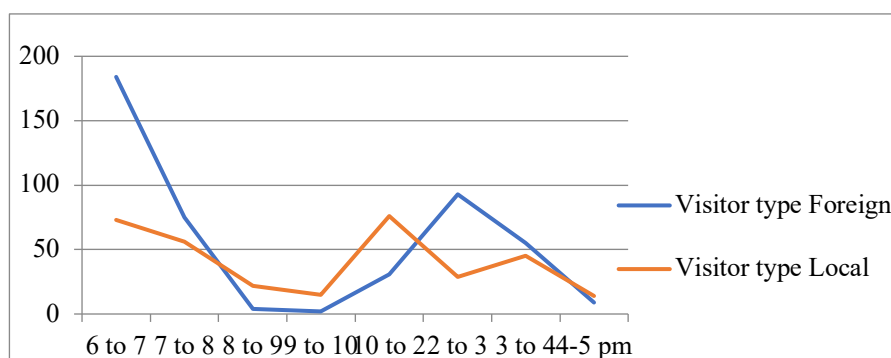
In looking at the types of vehicles that entered the park, the following facts are revealed.

1. 95% of the vehicles entering the park are safari jeeps, while 5% are private vehicles.
2. It was observed most of the foreign visitors had entered the park between 6-9 am and 2-4 pm. Very low foreign tourists arrival had been observed between 9 am- 2 pm. In contrast, comparatively more local tourists entered between 6-7 am and between 9-2 pm (figure 08).
3. 76% of the vehicles entering the park carry, between 0-6 passengers (including the drivers). 20% of the vehicles are carrying between 7-12 passengers and only 4% of the vehicles carry more than 12 passengers (those are predominantly carrying local tourists comprised of school children and pilgrims).
4. It was also observed that vehicles carrying more than 12 passengers are usually entering during less few times (10- 12 pm)
5. The type of vehicles (vehicles make) is another interesting fact that was recorded during the study (figure 09). Almost 60% of the

vehicles entering the park are Mahindra vehicles, while 10% were Toyota vehicles. Mitsubishi and Land rover vehicles are reported as 8 % each. The other vehicles (Comprised mainly of Leyland buses and minibuses) were 13%.

6. In looking at this from an environmental perspective, it was experienced that Mahindra vehicles comparatively generate higher noise and vibration compared to the other vehicles make. Therefore, this may be able to cause additional environmental pollution and threat to the park.

**Figure 6: Type Visitors Arriving on Different on Hourly Basis**



*Source:* Traffic survey on Yala National Park for Department of Wildlife and Conversation 2015 (unpublished)

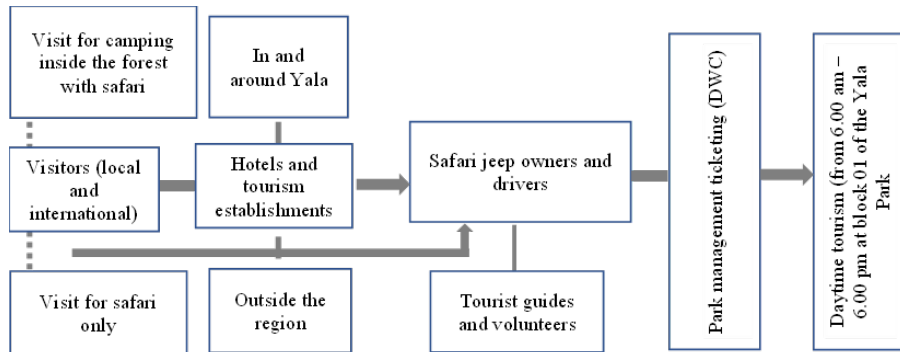
**Stakeholders and their Interests** Stakeholders - economic sustainability?: (Safari operators - transport providers and guides, accommodation hotels, government authority) The stakeholder groups involved in the tourism sector in Yala involve; the wildlife department – park management and protection of wildlife; hoteliers and other tourism establishment owners – both in the region and across the country; safari jeep operators and their union; safari jeep drivers and their union; tourists guides; experts, researchers, and professional institutions; and local and international media. This is similar to the stakeholder groups in the tourism sector in protected areas (Mannetti et al., 2019).

The interests of most stakeholders including the park management are weighed on income generation than the management. This resulted in less concern over the conservation and protection of wildlife, which Indeed serves as the main attraction.

**Current Business Strategies of Safari Tourism (with theories):** Current business strategies at Yala forest reserve. The current safari business strategy

solely depends on daytime safari activities carried out in block 01 of the Yala forest reserve.

**Figure 7: Existing Business Strategy**



*Source:* Authors compiled industry observations

What are other business strategies available for the Yala forest reserve?

1. Considering the wildlife tourism industry in the African region, night time Safari can be the simplest extension of the current business model of the safari industry (Manrai et al., 2020). This may involve the same framework with additional amenity provision for camping, with current park management and/or private sector involvement. over the years this is considered an option and hindered due to regulatory perception-related dated barriers.
2. Forward and backward integration between different stakeholders in the industry: This was a very common move seen with local hotel establishments, entering into the safari industry and safari jeep owners with long-term experience in backward integration by hotel establishments/ accommodation.
3. Relayed diversification with virtual tourism

Why a diversification of current business strategy is important: The diversification of current business strategy in the safari business is crucial in considering the:

- a) Protection and conversation of fauna and flora of the nature reserve:  
As shown earlier, the number of vehicles during the peak hours<sup>103</sup> resulted in severe disturbance to the forest reserve

<sup>103</sup> Peak hours in this case refer to 6.00 – 8.00 am in the morning and 3.00 – 6.00 pm in the evening where abundance of wildlife is seen in the reserve

- b) Current instability of the country resulted in decreasing number of tourists arrivals which directly affects the revenue of park management and other stakeholders in the safari business
- c) Import restrictions limit the continuous maintenance of safari vehicle feet; this can lead to the safety and comfort of safari riders
- d) Shortage of fuel, which also limits the number of trips a safari vehicle
- e) To ease the competition/rivalry between key stakeholder groups in the industry (by purely adapting the same business strategy)

**Strategic Analysis:** Opportunities and threats of virtual tourism at Yala forest reserve is essential to identify the window of opportunities to implement VR.

**Table 1: Opportunity and Threat analysis for Yala National Park**

Opportunities	Threats
Digital infrastructure: The current internet and mobile coverage in Sri Lanka	Current awareness and perceptions among stakeholders on virtual tourism including the park management
Mobile and internet penetration and usage among the society/local stakeholders	Current local knowledge of virtual tourism among stakeholders
Recent global demand for virtual tourism (with the pandemic and travel restrictions)	Lack of established norms and practices on conducting virtual tourism for wildlife
Advancement of online payment gateways and trust among users	Current local knowledge of virtual tourism among experts and professionals
Unused blocks of the Yala forest reserve for tourism activities (currently safari activities are limited to block 01)	Access and availability of other devices to ensure
	Current legal framework and regulation related to park management and wildlife conversation

Wildlife tourism in Yala National Park includes a significant amount of time and money for visitor satisfaction and safety (Perera, K. L. P. M., & Femando, 2018). The animals in the Yala National Park are fascinating and unique even if it is through a camera lens (Hamzayini, P., & Fernando, 2021). Technological development opened new dimensions for the world tourism and hospitality sector (Roberts et al, 2017). There can be options of a

complete distraction for your mind from the daily online visitors to experience the national park. Development practices and studies indicate technology provides more opportunities to engage with the visitor in wider aspects (Roberts et al, 2017). Further (Roberts et al) 2017 mentioned technological development in tourism is evolving and focusing more on the enhancement of the user experience. Virtual reality (VR), augmented reality (AR), virtual traveling, and big data are flourishing in the tourism industry opening many windows of opportunities (Yung, R., & Khoo, 2019). Among these technologies, VR plays a significant role as mentioned above (Cannavo and Lamberti, 2020).

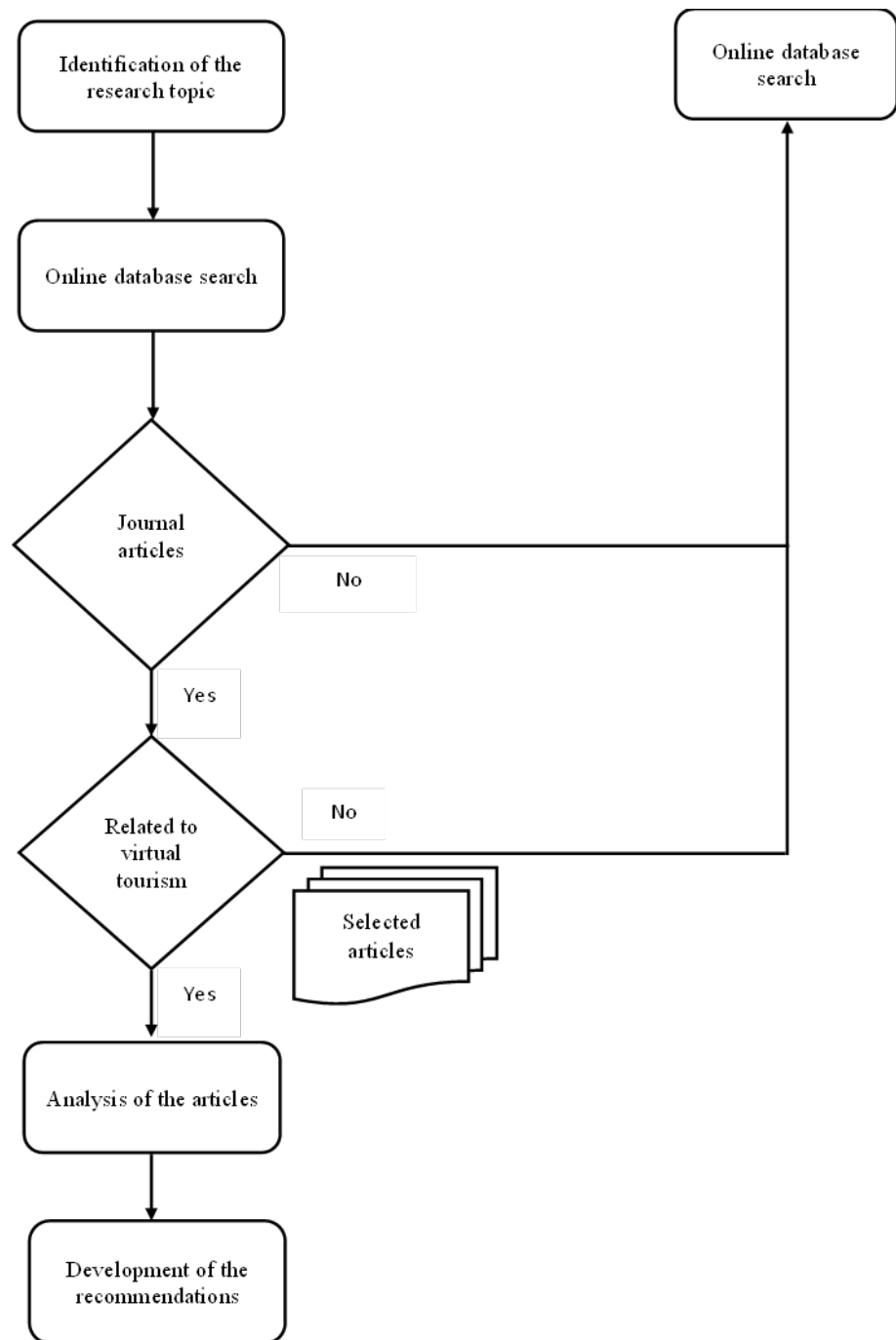
Introduction of the virtual traveling to Yala National Park will be assisting the all the stakeholders to move to the next level of operations and experience (Hamzayini & Fernando, 2021). A significant level of mainstream adaptation of these virtual visitor management techniques is appropriate especially for Yala National Park to avoid the sustainability and regenerative issues the park is right now facing (Hamzayini & Fernando, 2021). Adding more, these visitor management techniques may assist to open new avenues of tourism with new revenue opportunities for all the stakeholders as well (Hamzayini & Fernando, 2021).

In this article, the authors would like to provide the recommendation to implement the VR wildlife tourism option to provide benefits to the tourism service providers and visitors. The future of tourism is now directly linked to computerization and digitalization that enable many tangible and intangible benefits. The goal of this article is to identify the direction that is needed to form virtual tourism to the Yala National Park and its impact on sustainability for the park.

## **METHODOLOGY**

This concept paper is a desktop-based observational research paper. Through this researchers were able to locate the specific research aspects through observations. This process of identifying the aspects led to developing the themes by analyzing the qualitative data without subjecting the data to statistical procedures.

**Figure 8: Review Methodology Flow Chart**



## **FINDINGS AND RECOMMENDATIONS**

### **Introducing Virtual Reality to the Yala National Park**

In most wildlife tourism cases, VR has been applied as a marketing tool to attract visitors to the site (Potter et al, 2016). VR assisted them to capture the site convincingly and memorably to encourage purchase decisions (Potter et al, 2016). One of the key factors to encourage the purchase decision is the “being there” feeling that generates in the potential visitors’ minds and feel of real-time experience after the purchase of the VR to the site (Potter et al, 2016).

The most recommended VR for the Yala National Park is 360 VR tourism (Alamanda et al, 2021). This is a development of the experience using real-world images, audio, and videos rather than focusing on computer-generating imagery (Mabrook & Singer, 2019). Simulations would be added as an alternative product, but not as the main product. The development of 360 VR can develop in two different file types (Mabrook & Singer, 2019). To facilitate the majority of the potential visitors and to encourage the usage of social media most recommended file type is the Monoscopic VR tourism videos. These are the types of videos that could be able to view by any device and that can be shared easily on social media. This will be facilitating the targeted visitors to the Yala National Park to view the park without a physical visit to Sri Lanka (Mabrook and Singer, 2019). However, stereoscopic videos required a specific set of equipment to view the experience. These options could be developed at the Yala National Park itself with the equipment if visitors wish to have an immersive travel experience without visiting the physical park (Hamzayini and Fernando, 2021; Gegung, 2021).

The second development option is the development of VR tourism photography (Walmsley and Kersten, 2020). Yala National Park is world famous for the largest number of leopards (Wickramarachchi and Gunawardena, 2012). In addition to that sloth bears, Asian elephants, toque macaque, fishing cats, painted stork, and many more species are visible at the park (Guanapala and Jayalath, 2020). VR tourism is developing 360 photos of those animals same as a video but still images. With this, visitors can have closer look at the animal with a 360 view which is not visible during a physical visit to the park. This further enables the visitor to experience all the animals with this view which is not possible in a physical visit (Bin and Bin, 2010).

The development of VR in Yala National Park includes three major aspects

(Kim et al, 2020). VR travel experience, VR and linking to the social media and VR link to other facilities to the park or Sri Lanka tourism (Kim et al, 2020). Travel experience should be real as possible to the visitor as an alternative travel option (Kim et al, 2020). This experience should be unique, affordable, memorable, and shareable (Kim et al, 2020). The development of technology should be feasible for the stakeholders as well to maintain long-term sustainability in this solution where everyone benefits (McCabe et al, 2012). The link to the social media and usage of Google, Facebook, and other social media platforms to promote the Yala National Park in VR is essential to be successful in this implementation (Lo and Cheng, 2020). Furthermore, there should be a mechanism to enable travel agencies to get access to this VR of Yala National Park to promote SL tourism to stand out from the crowd and to promote other destinations in Sri Lanka tourism to get more arrivals (Huang et al, 2013). For economic sustainability of these kinds of technological development remains when the revenue methods are stable at other sites.

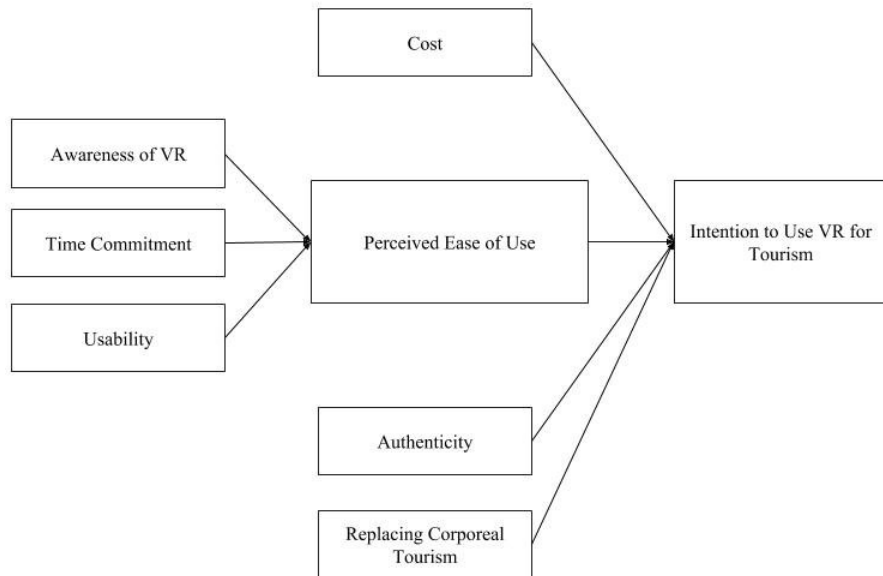
As per the recommendations by Kim et al (2020) development and the delivery of the authentic experience is the key factor for the commercialization of the VR activities at the Yala National Park. Further, they have indicated cognitive response of the visitors makes the VR more economically sustainable.

VR is the most applicable sustainable alternative to real-time travel to Yala National Park (Potter et al, 2016; Subawa. et al, 2021). However, as pointed out by Lehdonvirta (2009) virtual traveling along with VR needs to meet the visitor's needs the same as real-time traveling. Though it is hard to create an identical travel experience to the real-time traveling to the Yala National Park, it creates it is kind of travel experience with differentiated characteristics (Bogicevic et al, 2019). Such as experiencing the same past in the future which is impossible in conventional traveling (Verma et al, 2022). With this following implementation, recommendations were identified that apply to the Yala National Park.

### **Implementation of the Virtual Reality at the Yala National Park**

Yung and Khoo-Lattimore (2017) indicated in their systematic review the challenges toward the adaptation of VR in tourism services. Since the Yala National Park already facing sustainable challenges due to the nature of the physical tourism activities suitable implementation recommendations were provided in the following sections.

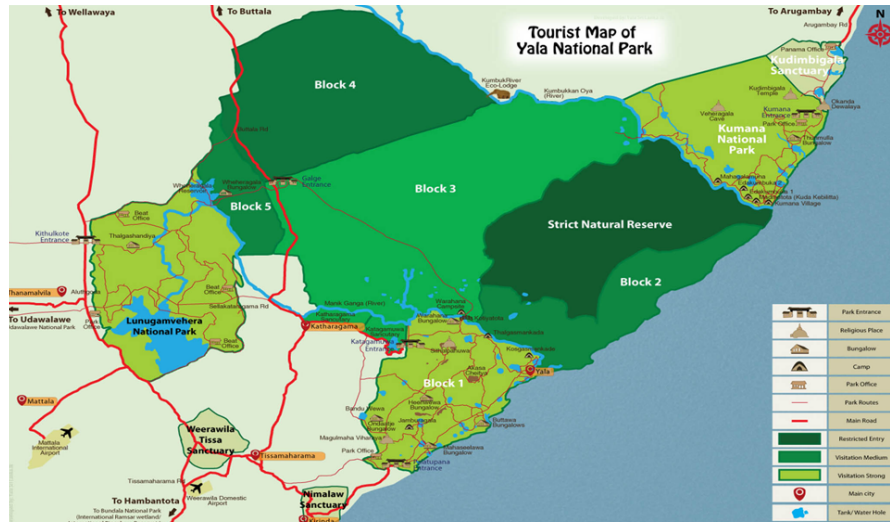
**Figure 9: Conceptual Model of Challenges to VR Adoption**



*Source:* Yung and Khoo-Lattimore (2017)

**Authentic VR content:** As the main selling and attractive factor VR content should focus on authentic content and authentic experience (Kim et al, 2020). The content needs to include genuine and unique elements of the Yala National Park to experience the authentic Yala National Park (Kim et al, 2020). Yala is known for 44 varieties of mammal and 215 bird species. However main attractions of Leopard, Asian elephant, and Sri Lankan sloth bear need to be the main focus to develop the content. The three major entrances that are Palatupana, Katagamuwa, and Galge need to be the main virtual tour packages (Aththanayaka et al, 2019). Based on these entrances, blocks 1, 2, 3, 4, and 5 would be covered in the package. Block 1, which got the highest visitation could be the main attraction, however, with the inclusion of all the animals and viewing points, the other blocks could get attracted, visitors.

**Figure 10: Map of Yala National Park**



*Source:* Aththanayaka et al, 2019

Furthermore, the content needs to include features that may support enjoyment, emotional attachment to the experience, and smooth flow of the content (Wagler and Hanus, 2018). This content should offer amusement and happiness to the potential visitor.

**Technology:** Technology and its sustainability is the key pillar for the successful implementation of VR in Yala National Park (Beck et al, 2019). The proposed experience should include videos and audio so that visitors can experience the Yala National Park from any type of digital device. This should be able to give a simple message of visiting Yala National Park in real-time using the smartphone at any time and from anywhere in the world (Beck et al, 2019). This technology could include real-time videos as a replacement for the 3D atmosphere.

As a future focus data mining, handling big data, digital demand forecasting, and augmented realities could apply to the Yala National Park along with the VR and transformative view of virtual tourism (Olshannikova et al, 2015; Yung and Lattimore, 2017).

**Handling Stakeholders:** Yala National Park is considered a tourism ecosystem that exists with a network of stakeholders (Gnanapala and Jayalath, 2020). A proper governing structure and a monitoring system should establish and manage the stakeholders (Presenza and Cipollina, 2010). This would include accommodations that market the Yala National Park, transport, and service providers to Yala National Park, and online

marketplaces. The existing business models of those stakeholders should include VR as one of the business model elements and to get benefited from that. It is expected to minimize the social and environmental sustainability issues by involving the stakeholder in this virtual traveling system while securing them with an additional revenue stream (Pencarelli, 2020).

**Adding Information:** VR experience should include an opportunity to get information about the wildlife experience in the Yala National Park. This interpretive information could be focused on wildlife-related information, park entrance information, and other service information in verbal and text format. Among those wildlife recognition and interpretation plays an important and significant role (Ham and Weiler, 2012). The VR should have application support for this task. With this information, visitors will be able to interact with the VR experience and their attention will remain at the same level (Sotohy, 2020).

**Physical Setting:** This alternative visitor experience should be much more comfortable than a physical visit to the Yala National Park and the viewing experience should be the same as the physical visit (Firoiu and Croitoru, 2013). Therefore, if the VR facilities are available on-site at the Yala National Park the physically setting should be accommodating the visitors with an adequate level of facilities. Such as the move the head and body along with the VR app to interact with the VR environment (Firoiu and Croitoru, 2013).

**Support:** The support is included with the range of assistance to the different demographics of the visitors. As Yala National Park has a wide diversity in visitor demographics in terms of age, language, technical capabilities, and understanding (Arachchi et al, 2017). The proposed VR would require support to cater to these different levels of knowledge and expectations (Yung et al, 2021).

**Development of the Experience Packages:** Yala National Park visitor statistics indicate that there are different types of visitors. Such as short visits, long visits, family trips, photography tours, and adventure tours (Arachchi et al, 2017). The development of the VR experience should cater to this demand and should be able to focus on future demand (Soava, 2015).

### **Achieving Sustainable Tourism**

Innovation and creativity are important strategic implementations to retain and gain global competitiveness in the tourism field as a country (Rodríguez-Díaz and Pulido-Fernández, 2019; Voronkova, 2018). More the Yala National Park include the local communities in the tourism services

innovatively, collaborating with all the tourism service providers and other elements, opening up equal opportunities, and diversifying the facilities are assisting the Yala National Park to sustain (Gnanapala, and Jayalath, 2020). With the development and introduction of VR in the Yala National Park, the experience and services will be rejuvenated (Jude and Ukekwe, 2020). Meantime, proactive actions to face the global business environment challenges are essential. Therefore, VR will be able to develop a unique market position compared to other national parks locally and internationally (Sánchez et al, 2021; Kask, 2018). It is expected to change the disruptions that have occurred in this industry and lead toward economic sustainability and environmental sustainability (Hofman et al, 2021).

## CONCLUSION

Based on the site visit and with the identification of the challenges at the Yala National Park there is a potential to apply VR technology as one of the main alternatives for tourism operators to add an experience for the visitors with the technology. Adding more, this may help to increase visitor engagement to the Yala National Park in diverse markets that are not getting accessed by Sri Lanka tourism. It could give the tourism operators to add revenue methods while approaching sustainable and regenerative tourism at Yala National Park.

Virtual visitor management to the Yala National Park is instrumental in addressing all the challenges faced by Yala National Park. However, virtual tourism is a successful tool to manage the sustainability issues at the park. With the wider development and the application of the VT to the Yala National Park positive image will be able to develop in the visitors leading to economic development with the growing numbers of visitors virtually. This helps Yala National Park to focus more on social and environmental sustainability with regenerative aspects. This is more practice-oriented with the enhancement of technological development. this digital economic aspect needs to be more people-oriented to get the real value of the VT.

Finally, the implementation of VR at the park will be adding benefits to stakeholders in the Yala National Park. Such as VR will be utilized as a promotional tool for the hotels to attract the target audience or to add extra revenue to the hotels. Moreover, an increase in the number of visits to the region or the country means the economic sustainability of the industry.

Future research perspectives are implementing the research work to other

tourist sites in Sri Lanka that are facing sustainability issues and doing a comparison of the success of those.

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# **Impact of Corporate Social Responsibility Practices on Sustainable Performance of Selected Commercial Banks in Colombo District of Sri Lanka**

Y. Ramya<sup>1\*</sup>, N. Thevanes<sup>2</sup>

*<sup>1\*</sup>Graduate, Trincomalee Campus, Eastern University, Sri Lanka*

*ramyayogaraja@gmail.com*

*<sup>2</sup>Lecturer, Department of Business and Management Studies, Trincomalee Campus, Eastern University, Sri Lanka*

*nadesthev@gmail.com*

## **ABSTRACT**

*This study aims to examine the impact of Corporate Social Responsibility (CSR) Practices on the sustainable performance of banks. To achieve the study objectives, primary data were collected from 155 employees of selected commercial banks that is operating in the Colombo district of Sri Lanka. This study has used the stratified random sampling method and the unit of analysis was individual employees. The simple regression analysis was used to test the research model. The findings of the study revealed that there is a high level of CSR practices implemented in the selected commercial banks and the sustainable performance of surveyed banks was recorded at in high level. Moreover, the findings of the study suggested that CSR practices have a significant and positive impact on the sustainable performance of Banks. This study suggested banks need to focus more on the implementation of CSR practices to ensure banks' sustainability.*

**Keywords:** CSR, Sustainable Performance, Banks, Sri Lanka

## **INTRODUCTION**

According to the World Commission on Environment and Development (WCED, 1987, p. 43), sustainable Development is a development that meets the needs of the present without compromising the ability of future generations to meet their own needs. In this context, the sustainable development goals (SDGs) were born at the United Nations Conference on Sustainable Development in Rio de Janeiro in 2012. Many countries in their development agendas are now focusing on sustainable development goals and how they will improve lives while protecting the planet over the next fifteen years. In order to respond to this issue, organizations and individuals

are increasingly required to show their commitment and active participation in achieving sustainable development goals. In this setting, a rising number of organizations seem eager to report their performance in terms of economic, social, and ecological sustainability (Schaltegger & Wagner, 2006). In this scenario, a considerable number of Sri Lankan organizations demonstrate their committed efforts to organizational sustainability to contribute to the sustainability agenda of Sri Lanka. Additionally, a number of Sri Lankan organizations began posting their sustainability reports to reveal their concern for sustainability.

In this sense, Sri Lankan banks pay more attention to sustainability at the top of their agenda to extend their committed efforts towards sustainable development. Further, the banks' adaptation of sustainable practices is emphasized by the Central Bank of Sri Lanka through a mechanism named the Bank Sustainability Rating Indicator (Central Bank report, 2021). In order to respond to this issue, banks are implementing sustainable practices such as green banking, sustainable finance etc. which have the capacity to equally contribute to the economic, social and environmental performance of banks. In addition, an increasing number of Sri Lankan banks are reporting their economic, social and environmental performance in their reports to prove their commitment towards sustainability. Further, several local and international institutions recognized the Sri Lankan banks' efforts towards sustainability by providing awards. Based on the evidence, it is possible to conclude that Sri Lankan banks are focusing more on sustainability.

Sustainability is often associated with corporate social responsibility (Heizer et al. (2017)). Thus, banks are in strong necessity to focus more attention on implementing CSR practices to ensure organizational sustainability. In addition, banks are emphasized to extend towards CSR practices to ensure their economic, legal, ethical and philanthropic responsibility. Commercial banks in Sri Lanka may abide by the requirements for CSR practices as imposed by the country's central bank (Central bank report, 2021). According to Heizer et al. (2017), CSR is treated as managerial decision-making that considers environmental, societal, and financial impacts. In this context, most of the studies linked the relationship between CSR practices and economic performance (e.g., Chang, 2009, Sandaruwan & Ajward, 2017; Abeysinghe & Basnayake, 2015). Banks need to consider more on environmental and social performance in addition to economic performance to ensure organizational sustainable performance. In this sense, Henao, et al. (2019) revealed that CSR practices significantly contribute to improving the environmental and social performance of organizations. However, only a few

studies liked the relationship between CSR practices and social performance (e.g., Abeysinghe & Basnayake, 2015) and environmental performance (e.g., Ramadhan et al., 2019). Only a few studies conducted particularly the quantitative empirical examination of CSR practices and their impact on sustainable performance, which includes economic, social and environmental performance dimensions (e.g., Li et al., 2022). In addition, most of the studies in this area were conducted in an international context. Prior Sri Lankan studies neglected the relationship between CSR practices and sustainable performance. In addition to that, there is a contextual gap observed regards to the relationship between CSR practices and sustainable performance in the banking industry in the Sri Lankan context.

Based on the above background researchers would like to conduct this study to fill the empirical and contextual gaps regards to the impact of CSR practices on sustainable performance in selected banks in the Colombo district of Sri Lanka. According to that, this study's problem statement is "Do CSR practices impact the sustainable performance of selected commercial banks in Colombo district".

### **Research Questions**

This research is conducted based on three research questions. These questions have been constructed based on the problem statement of this study. The research questions were constructed to analyse whether CSR practices have a positive and significant relationship with sustainable performance. The research questions are,

1. Do CSR practices positively and significantly related to the economic performance of banks?
2. Do CSR practices positively and significantly related to the social performance of banks?
3. Do CSR practices positively and significantly related to the environmental performance of banks?

### **Research Objectives**

This research contains three objectives. All these objectives have been constructed based on the research questions. The objectives are aimed to examine the relationship between CSR practices and economic performance, social performance, and environmental performance. The research objectives have been constructed as follows:

1. To examine the relationship between CSR practices on economic performance in selected commercial banks.

2. To investigate the relationship between CSR practices on social performance in selected commercial banks.
3. To examine the relationship between CSR practices on environmental performance in selected commercial banks.

## **LITERATURE REVIEW**

### **Corporate Social Responsibility (CSR)**

CSR has become a cult term' (Emmot, 2002). Contemporary organizations are paying more attention to corporate social responsibility to gain a competitive advantage. CSR has recently been the subject of increased academic attention. Despite much discussion of the idea of corporate social responsibility (Kitzmueller & Shimshack, 2012), neither an agreement on its definition nor a method for assessing CSR at the level of a specific organization exist. Carroll (1988) suggests that CSR is defined as the economic, legal, ethical and discretionary demands that society places on business. CSR means that a corporation should be held accountable for any of its actions that affect people, communities and the environment in which those people or communities live (Frederick et al., 1992). Corporate social responsibility means different things to different people. CSR is defined as the balanced integration of social and environmental considerations into business decisions and operations (Strandberg, 2009). Companies over and above their legal obligations towards society and the environment (European Commission, 2011) define CSR. Aguinis (2011) referred to CSR as the "context-specific organizational actions and policies that consider stakeholders' expectations and the triple bottom line of economic, social, and environmental performance". According to social responsibility is the managerial obligation to take action that protects and improves both the welfare of society as a whole and the interests of the organization. Daft (2014) defined corporate social responsibility as management's obligation to make choices and take actions that will contribute to the welfare and interests of society, not just the organization. CSR is the business self-regulatory approach that aims to contribute to social and ecological goals while performing business activities (Shahzad et al., 2020). Based on the above definitions, researchers defined corporate social responsibility as the set of policies, practices, and systems to fulfil the expectations of stakeholders. Corporate social responsibility efforts over have to target the stakeholders connected with the organization. In this context, organizations need to fulfil their duties and responsibilities perfectly

to fulfil the expectations of stakeholders. For instance, businesses should place more emphasis on offering customers high-quality products than on giving them donations. However, the majority of businesses use CSR as a marketing strategy to boost sales.

### **Sustainable Performance of Organization**

A sustainable organization is an organization that can meet its present needs without compromising the ability of future generations to meet their needs. In building a sustainable organization, management should strive to make the organization sustainable in three areas: the economy, the environment, and society (Certo and Certo, 2009). The following definitions for the economic, social, and environmental performance of sustainable organizations are provided to achieve the study objectives:

**Economic performance:** Economic performance of an organization relates to its profitability and growth (Judge and Douglas, 1998).

**Social performance:** Social performance is an integral component of the operations of a company whereby it voluntarily contributes to society in terms of economic, environmental, ethical and social investment (Kanji and Chopra, 2010).

**Environmental performance:** Environmental performance is the extent to which the organization is eco-friendly and environmentally responsible (Magnus et al., 2012).

### **The Relationship between CSR Practices and Economic Performance**

It has been widely noticed that modern organizations place a higher priority on economic performance than they do on social and environmental performance combined since it is crucial to ensuring the survival and expansion of organizations as well as meeting stakeholders' expectations (Opatha, 2019). In this sense, several studies stated the relationship between CSR practices and economic performance (e.g., Al-tuwaijri et al., 2004; Burnett & Hansen, 2008; Erhemjamts and Venkateswaran 2013; Rodgers et al., 2013; Kim et al., 2018; Petrenko et al., 2016; Wang and Choi, 2013) revealing that being socially responsible improves profitability. Modern businesses employ CSR approaches as a strategic tactic to win over the public's support for their presence in international marketplaces, enabling them to maintain a competitive advantage by exploiting their social contributions to provide a subliminal level of promotion (Fry et al., 1982). Engaging in CSR activities may strengthen the business reputation of all organizations (Bahta et al., 2020). Thus, organizations can attract and retain

socially responsible customers through their social reputation that can be gained through the implementation of CSR practices (Kanji and Chopra, 2010). Further, socially responsible organizations can hire a motivated and skilled workforce through their good employer branding which highly supports enriching employee productivity (Nyborg, 2014). This trend ultimately leads to superior economic performance. CSR has been shown to boost firm profits and enhance overall firm performance if it enables (1) lower production (environmental) costs, (ii) product differentiation through price discrimination mechanisms that benefit the socially responsible firm, or (iii) innovation in both managerial and technological advancement (Crifo & Forget, 2015). Newman et al. (2020) found a positive relationship between CSR adoption and firm efficiency. A study conducted by Vishwanathan et al. (2020) identified four major mechanisms explaining how CSR positively affects economic performance: (1) enhancing firm reputation, (2) increasing stakeholder reciprocation, (3) mitigating firm risk and (4) strengthening innovation capacity. According to the above literature, this review establishes that CSR practices have a positive relationship with the economic performance of organizations as the first hypothesis of this review:

*H<sub>1</sub>: There is a positive relationship between CSR practices and the economic performance of organizations*

### **The Relationship between CSR Practices and Environmental Performance**

Environmental protection is a big obligation that falls under the purview of organizations. As a result, businesses are increasingly paying much more attention than in the past to managing and protecting the environment (Renwick, Redman, & Maguire, 2013). The environmental performance of the organizations is further highlighted by heightened regulatory pressures and public environmental concerns (Banerjee, 2002). According to Miles and Covin (2000), the environmental performance of a business enhances its reputation and goodwill. Businesses only have direct obligations to people, but carrying out these obligations occasionally necessitates taking specific environmental measures, such as not polluting the environment or dumping harmful waste. According to the latter view, business would be said to have an ethical responsibility in addition to legal responsibility to the natural environment. In this sense, organizations are paying great attention to environmental-related corporate social responsibility activities (Thevanes and Arulrajah, 2016), which is highly supported to enhance the organization's environmental performance. The drivers of increasing the

environmental performance of organizations include the implementation of environmentally related CSR activities such as greenhouse gas (GHG) emission, waste reduction, energy consumption, recycling, and preservation of natural resources including air, water, and land. According to Anser et al. (2018) contributes to organizational image and improves environmental sustainability through their environmentally related CSR activities. Green banking is becoming an urgent need for banks to eliminate or reduce environmental degradation (Shaumya and Arulrajah, 2016). Further, researchers identified four types of green banking practices of Sri Lankan banks namely employee-related practices, customer-related practices, daily operation-related practices and bank policy-related practices that are highly fruitful in improving the environmental performance of banks. Thus, green banking initiatives can be considered as environmentally related CSR practices of the banks. The active role of CSR has inserted a significant effect on the environmental performance of organizations. CSR implementation motivates business management to provide a pollution-free environment by employing renewable energy resources, eco-friendly raw materials, and processes that may cause minimum waste. In an eco-friendly environment, the employees can have good health and work more efficiently, sustaining the firm's economic activities (Li et al., 2022). Thus, the efficient implementation of CSR brings enhancement to the environmental performance of the organization. Based on the above arguments it is possible to conclude that CSR practices have a positive relationship with the environmental performance of organizations as the second hypothesis of this review.

*H<sub>2</sub>: There is a positive relationship between CSR practices and the environmental performance of organizations.*

### **The Relationship between CSR Practices and Social Performance**

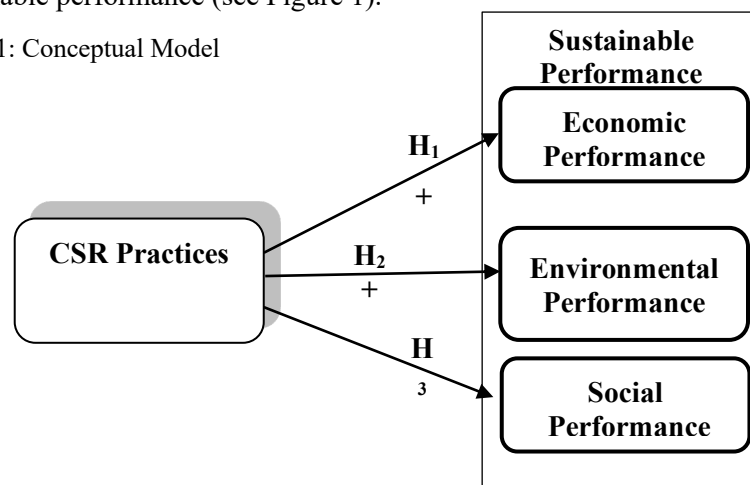
In recent days, laws and other public initiatives are emphasizing industries to improve ethical business practices, processes and actions. In this context, organizations are needed to be socially responsible to save the lives of people. In this sense, CSR is treated as an integral component of the operations of a company whereby it voluntarily contributes to society in terms of economic, environmental, ethical and social investment (Kanjilal and Chopra, 2010). Further researchers revealed that good CSR is about a company maximizing its positive impact on society while at the same time maximizing its returns. In a nutshell, CSR is all about a corporation contributing positively and giving back to society. The above argument clearly revealed the direct

relationship between CSR practices and social performance. CSR practices (e.g., improving employment conditions and/or banning child labour in countries that do not respect human rights, protecting the environment and investing in abatement equipment to reduce the carbon footprint, developing partnerships with NGOs, or providing funds to charity, and so on.) can enhance the positive impact on society and mitigate the negative impact on society (European Commission, 2001). In addition, CSR enhances a company's social performance as well as its financial and non-financial performance and fosters a culture of health and safety at the workplace and in society at large (Kanji and Chopra, 2010). It has been discovered that a company's involvement in the community through charitable donations, not-for-profit projects, involvement in social causes, and employee volunteerism improves its reputation among stakeholders and functions as a crucial asset in times of crisis (Al-Shammari et al., 2022). Organizations need to care for the communities in which they operate, they need to consider more on maximizing the positive impacts on the communities and mitigating the negative impacts on society. For instance, banks may provide employment opportunities to people who are situated around the factories. Further, they may focus more on implementing proper waste management practices to reduce the negative impacts on society. Based on the above arguments it is possible to conclude that CSR practices have a positive relationship with the social performance of organizations as the third hypothesis of this review:

*H<sub>3</sub>: There is a positive relationship between CSR practices and the social performance of organizations.*

Hence, based on the review, this paper proposes a conceptual model that shows the relationships between CSR practices and the organization's sustainable performance (see Figure 1).

Figure 1: Conceptual Model



## **METHOD**

### **Sampling and Data Collection**

The proposed model was tested in the selected commercial banks of the Colombo district in Sri Lanka. Using a quantitative method, empirical data for the current study were collected from selected licensed commercial banks in the Colombo district of Sri Lanka. The total population of this study was all employees in selected licensed commercial banks in the Colombo district of Sri Lanka. Out of these, 155 employees were selected as a sample to conduct this research by using a stratified random sampling method, because to assure the representation of employees belonging to different groups in the selected banks.

The performance of the employees will determine whether the banks are successful or unsuccessful. Without the involvement and dedication of the workforce, implementing CSR practices becomes unrealistic. Therefore, focus more on encouraging employee engagement and active participation. Bank websites and reports also feature information about their CSR initiatives and sustainability successes. Therefore, the CSR practices of the banks are known to all of the employees. Therefore, employees are considered as the unit of the analysis for the study.

This study depends on primary data. The data of this study were collected from the respondents through a structured questionnaire. The questionnaire contained questions relating to team orientation and team performance.

### **Measures**

All constructs were measured with multiple items developed and tested in previous studies. Each item was measured on a five-point Likert-type scale anchored by 'strongly disagree' and 'strongly agree' response options.

This study has used an instrument adapted from past research works of Pérez et al. (2013). This instrument can be used to measure the CSR practices that consist of twenty-two question items. This instrument had a Cronbach's alpha of 0.932 which is higher than 0.70. Hence, this instrument had good reliability. To measure the sustainable performance of the organization, 11 question items were used from past research works of Abdul-Rashid et al. (2017). The instrument had a good degree of reliability with a Cronbach's alpha of 0.929.

## **Data Analysis Techniques**

Correlation analysis was conducted to examine the relationship between the variables (Jahangir & Begum 2008). According to Sekaran (2000), the correlation coefficient value ( $r$ ) ranges from 0.10 to 0.29 is considered weak, from 0.30 to 0.49 is considered medium and from 0.50 to 1.0 is considered strong. However, according to Field (2005), correlation coefficient should not go beyond 0.8 to avoid multicollinearity. The correlation matrix shows that multi-collinearity does not threaten the validity of the data. Regression analysis is a statistical tool for the investigation of impact of variables. R squared is a statistical measure of how close the data are to the fitted regression line. It is also known as the coefficient of determination. The definition of R squared is the percentage of the response variable variation that is explained by a linear model. Thus, regression analysis was used to examine the impact of CSR practices on economic, environmental and social performance.

## **FINDINGS OF THE STUDY**

### **Profile of the Respondents**

In the survey, out of 155 employees, 52.4% are banking assistants, 17.3% are holding the post as officers and 30.3% are employed as banking trainees. The gender distribution of the respondents is 54.1 percent males and 45.9 percent females. The results revealed that the respondents are young, with 47.8 percent between 21 and 30 years. In terms of the educational background of the respondents, 65.5% of the respondents have the qualification of advanced level and 34.5% of the respondents are degree holders. The results also revealed that 25.5 percent of respondents have work experience below 2 years, 29.3 percent of the respondents have work experience between 2 and 5 years and 45.2 percent of the respondents have experience above 5 years.

### **Correlation Analysis**

Table 1 displays the correlations and descriptive statistics for all variables tested in the study. The descriptive statistics of the study suggest that there are high levels of CSR practices implemented by the banks. The results also imply that economic, environmental social performance of the banks are at high level with mean scores from 3.85 to 4.02 out of 5. Correlation analysis illustrates that CSR practices have a strong positive correlation with economic, environmental and social performance.

**Table 1: Descriptive Statistics and Correlation Matrix**

Variables	Mean	SD	1
1 CSR practices	4.09	1.01	
2 Economic Performance	3.85	0.92	0.769
3 Environmental Performance	3.92	0.87	0.717
4 Social Performance	4.02	0.86	0.665

Notes: N=155, \*\*Correlation is significant at the 0.01 level (2-tailed),  
\*Correlation is significant at the 0.05 level (2 tailed)

Source: Survey Data

## Testing of Hypotheses

Simple regression analysis is used to test the proposed model.

### Test of Hypothesis 1

*Hypothesis 1: There is a positive relationship between CSR practices and the economic performance of organizations.*

**Table 2: Model Summary of Impact of CSR practices on Economic Performance**

Model	R	R square	Adjusted R Square	Std. Error of the Estimate
1	.769 <sup>a</sup>	.591	.588	.47527

a. Predictors: (Constant), CSR practices

Source: Survey data

**Table 3: Coefficients of CSR practices on Economic Performance**

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	0.310	.242		1.282	.202
CSR practices	.867	.058	.769	14.867	.000

a. Dependent Variable: Economic performance

Source: Survey data

The results revealed that R is 0.769, which represents the positive correlation between CSR practices and economic performance and R square at 0.591, which implies that 59.1% of the variability in economic performance is accounted for by the CSR practices. In other words, 40.9% of the variance of economic performance is affected by other variables (Table 2). The t-value (14.867, Sig. <0.001) further confirms that CSR practices are associated with improved economic performance and thus leads to the acceptance of hypothesis 1, i.e., CSR practices have a positive and significant impact on economic performance (Table 3).

## Test of Hypothesis 2

*Hypothesis 2: There is a positive relationship between CSR practices and the environmental performance of organizations.*

**Table 4: Model Summary of Impact of CSR practices on Environmental Performance**

Model	R	R square	Adjusted Square	R	Std. Error of the Estimate
1	.717 <sup>a</sup>	.514	.511		.51374

a. Predictors: (Constant), CSR practices

Source: Survey data

**Table 5: Coefficients of CSR practices on Environmental Performance**

Model	Unstandardized Coefficients		Standardized Coefficients		Sig.
	B	Std. Error	Beta	T	
(Constant)	.642	.261		2.458	.015
CSR Practices	.802	.063	.717	12.722	.000
a. Dependent Variable: Environmental performance					

Source: Survey data

The results revealed that R is 0.717, which represents the positive correlation between CSR practices and environmental performance and R square at 0.514, which implies that 51.4% of the variability in environmental performance is accounted for by the CSR practices. In other words, 48.6% of the variance of environmental performance is affected by other variables (Table 4). The t-value (12.722, Sig. <0.001) further confirms that CSR practices are associated with improved environmental performance and thus leads to the acceptance of hypothesis 2, i.e., CSR practices have a positive and significant impact on environmental performance (Table 5).

### Test of Hypothesis 3

*Hypothesis 3: There is a positive relationship between CSR practices and the social performance of organizations.*

**Table 6: Model Summary of Impact of CSR practices on Social Performance**

Model	R	R square	Adjusted Square	R	Std. Error of the Estimate
1	.665 <sup>a</sup>	.442	.438		.56099
a. Predictors: (Constant), CSR practices					

Source: Survey data

**Table 7: Coefficients of CSR practices on Social Performance**

Model	Unstandardized Coefficients		Standardized Coefficients		T	Sig.
	B	Std. Error	Beta			
(Constant)	.927	.285			3.251	.001
CSR practices	.758	.069	.665		11.002	.000

a. Dependent Variable: Social performance

*Source:* Survey data

The results revealed that R is 0.665, which represents the positive correlation between CSR practices and social performance and R square at 0.442, which implies that 44.2% of the variability in social performance is accounted for by the CSR practices. In other words, 55.8% of the variance of social performance is affected by other variables (Table 6). The t-value (11.002, Sig. <0.001) further confirms that CSR practices are associated with improved social performance and thus leads to the acceptance of hypothesis 3, i.e., CSR practices have a positive and significant impact on social performance (Table 7).

## DISCUSSION AND CONCLUSION

The banking industry is considered a driving force in collaborating and teaming up with national economic development initiatives in any country. In Sri Lanka, banks are domestic systemically important and play a vital role in the post-pandemic recovery and economic recession process. In this context, Sri Lankan banks are paying more attention to their sustainability performance by focusing on their economic, environmental and social performances. Additionally, Sri Lankan banks are helping to achieve the Sustainable Development Goals (SDG) of the United Nations, which include promoting decent employment, equal employment opportunities, green banking, and economic growth.

This study examines the impact of CSR practices on economic, environmental and social performances (sustainable performance) in selected commercial banks operating in the Colombo district of Sri Lanka. The study's empirical findings revealed that CSR practices are significantly and positively associated with the economic performance of banks. Banks are playing a pivotal role in uplifting the nation's economy. Thus, economic

performance is of utmost importance to the banks beyond social and environmental performance as it is treated as the base for the social and environmental performance of banks. In this sense, CSR practices support achieving economic gains by meeting the stakeholders' expectations, improving the employer brand, enhancing the social reputation, etc. Thus, Sri Lankan banks are paying more attention to implementing CSR practices to ensure financial stability and competitive advantage in the highly competitive environment of the banking industry. The findings of the study are consistent with prior studies (Galant et al., 2017; Newman et al., 2020; Bahta et., 2020; Mahmood, 2021) which suggested a positive relationship between CSR practices and economic performance.

The study's empirical findings revealed that CSR practices are significantly and positively associated with the environmental performance of banks. Nowadays, Sri Lankan banks are paying more attention to green banking practices to save the environment. Green banking practices can be considered as the CSR practices of banks that highly contribute to creating a low-carbon economy. Banks are implementing green financing and leasing, digital banking and other green initiatives under the label of green banking. Further, banks are putting more effort to create environmental consciousness among customers. For instance, banks are educating customers to reduce paper usage to save the environment through their automated teller machines. These initiatives reflect the corporate social responsibility of banks towards the environment. Further, Shaumya and Arulrajah (2017) suggested that green banking practices improve banks' environmental performance. This finding is parallel to past research works, which found that CSR practices have a significant role in the environmental performance of organizations (e.g., Xie et al., 2022; Li et al., 2022; Hristov, 2022).

Moreover, the study's empirical findings revealed that CSR practices are significantly and positively associated with the social performance of banks. Sri Lankan banks continue to assist communities in a variety of ways, including by making donations, enhancing community development and education, and providing job opportunities for aspiring entrepreneurs via special loan schemes. In addition, banks are considered more on decent work and equal employment opportunities that leads to creating a good employer brand in society. Further Sri Lankan banks contributed to the COVID-19 fund and support to the hospitals. These initiatives are highly fruitful in enhancing the social performance of banks. This finding is parallel to past research works, which found that CSR practices have a significant role in the social performance of organizations (e.g., Waheed et al., 2021; Cavaco, 2014).

A company's triple focus on people, the planet, and profit is the result of a CSR policy. CSR activity has enormous advantages for businesses, society, and the environment (Kanji and Chopra, 2010). Finally, the findings of the study revealed that CSR practices contribute to the sustainable performance of banks by enhancing economic, environmental and social performance of banks.

## **LIMITATIONS OF THE STUDY**

Some of the research's limitations were the limited sample size and its exclusive emphasis on a limited number of licensed commercial banks in the Colombo district of Sri Lanka. As a result, because this study simply employed a quantitative technique, the same research may be applied to other banks by gathering data from larger sample size and using a broad range of methodologies or approaches. Therefore, future research could think about asking respondents for more detailed information. The application of both qualitative and quantitative techniques would allow for fuller and more in-depth analyses of the impact of CSR practices on banks' sustainable performance.

## **IMPLICATION**

From the theoretical perspective, the results and findings are expected to contribute to CSR and organizational sustainability literature. Further, this study is conducted in Sri Lanka. The findings of the study enrich the study of literature in Sri Lanka. From the practical perspective, the researcher believes this study's results will help enhance CSR practices among banks. This study is especially meant for the licensed commercial banks operating in the Colombo district of Sri Lanka. In other words, the empirical findings should help the practitioners to understand how their CSR practices may influence the sustainable performance of banks. Finally, the overall findings of the study will be useful for banks that are practicing CSR. It also provides a useful reference for future research on these topics in Sri Lanka.

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## ANNEXURE

No.	Statements	1	2	3	4	5
<b>Corporate Social Responsibility Practices</b>						
Corporate social responsibility - employees		1	2	3	4	5
01	My bank pays fair salaries to its employees					
02	My bank offers safety at work to its employees					
03	My bank treats its employees fairly (without discrimination or abuses)					
04	My bank offers training and career opportunities to its employees					
05	My bank offers a pleasant work environment (i.e., flexible hours, conciliation)					
Corporate social responsibility - customers		1	2	3	4	5
06	My bank establishes procedures to comply with customers' complaints					
07	My bank treats its customers honestly					
08	My bank has employees who offer complete information about corporate products/ services to customers					
09	My bank use customer satisfaction as an indicator to improve product or services marketing					
10	My bank makes an effort to know customer needs					
Corporate social responsibility – community		1	2	3	4	5
11	My bank helps to solve social problems					
12	My bank plays a role in society beyond the economic benefits generations					

13	My bank contributes money to cultural and social events (i.e., music, sports)					
14	My bank uses part of its budget for donations and social projects to advance the situation of the most unprivileged groups of the society					
15	My bank is concerned with improving the general well-being of society					
16	My bank is concerned with respecting and protecting the natural environment					
Corporate social responsibility – shareholders		1	2	3	4	5
17	My bank tries to maximise its profits					
18	My bank keeps strict control over its costs					
19	My bank tries to ensure its survivals and long-term success					
Corporate social responsibility – legal and ethical issues		1	2	3	4	5
20	My bank always respects rules and regulations defined by law					
21	My bank is concerned with fulfilling its obligations <i>vis-à-vis</i> its shareholders, supplies, distributors and other agents with whom it deals					
22	My bank is committed to well-established ethic principles					
Economic Performance		1	2	3	4	5
23	My bank has improved market share					
24	My bank has improved company image (i.e., company is seen as a green company)					
25	My bank has improved company's position in the marketplace					
26	My bank has increased profitability					
Social Performance		1	2	3	4	5
27	My bank has improved relationships with the community and stakeholders					
28	My bank has Improved work safety work environment					

29	My bank has improved living quality of surrounding community					
Environmental Performance		1	2	3	4	5
30	My bank has reduced $CO_2$ emission					
31	My bank has reduced water usage					
32	My bank has reduced energy consumption					
33	My bank has improved compliance with environmental standards when compared with last year					

# Dynamics of Environmental Reporting Practices Among Listed Banks, Diversified Financial Companies and Insurance Companies in Sri Lanka

W.G.N.D. Jayathilake<sup>1\*</sup>, R. Uthayakumar<sup>2</sup>

<sup>1\*</sup>*Faculty of Commerce and Management, Eastern University, Sri Lanka,  
nadeesha.d.jayathilake@gmail.com*

<sup>2</sup>*Faculty of Commerce and Management, Eastern University, Sri Lanka,  
uthayakumarr@esn.ac.lk*

## ABSTRACT

*Environmental reporting plays a major role in communicating the values of environmental concerns of an organization with its stakeholders effectively. Again, it has now come to the prominence due to recent ecological threnodies. The aim of this study was to find out any significant variation in the environmental reporting practice on Energy Consumption, Bio-diversity and GHG Emission among listed banks, diversified financial companies and insurance companies in Sri Lanka. Environmental reporting practices were measured using a checklist which has based on the Global Reporting Initiative (GRI) referring to the relevant contents in the annual reports of five banks, twenty diversified financial companies and three insurance companies listed in Colombo Stock Exchange for the period from 2014 to 2018, amounting to 140 observations. Descriptive Statistics, Cross Tabulation and one-way ANOVA test have conducted for analyzing the gathered data. The results reveal that the environmental reporting practices on Energy Consumption, Bio-diversity and GHG Emission among banks, diversified financial companies and insurance companies are at low level on an average. However, the findings show a significant reporting variation among sub sectors in respect of various dimensions of environmental reporting. The insurance companies have disclosed majority of environmental reporting on Energy Consumption while banks have reported more on Bio-diversity and GHG Emission. Further, the analyses reveal that there is a significant variation in environmental reporting on Energy Consumption, Biodiversity and GHG Emission within the sub sectors. Based on the findings of this study, it is suggested that, all banks, diversified financial companies and insurance companies need to truly pay their attention on environmental wellbeing and adhere with a globally accepted framework when producing annual reports.*

**Keywords: Environmental Reporting, Energy Consumption, Bio-diversity, GHG Emission, Global Reporting Initiative (GRI)**

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<sup>1</sup>The author completed this study as a partial fulfillment of the requirements of final year, Bachelor of Commerce (B.com) specialization in Accounting and Finance degree programme at Eastern University, Sri Lanka.

## INTRODUCTION

Environment is a miracle which blesses everyone for fruitful their lives. It provides almost all the extracts, which help to prosper needs and wants of humankind. Ultimately, environment has become great spirit which stabilize the endurance of all creatures. However, because of changing and promulgating the operations of business organizations as well as human needs and wants, environmental problems have appeared simultaneously. Air pollution, waste disposal, natural resource depletion, global warming, deforestation, water pollution and carbon emissions are some of the major environmental issues we face (Bednarova et al., 2019).

Furthermore, with the increased scrutiny on social values, business ethics and corporate social responsibility, a wide range of stakeholders who pay attention on firm's performance in different aspects have gathered around firms. Recently, stakeholder's awareness about environmental wellbeing and demand for environmental information have been increased as priority given as for financial information. On the other hand, business organizations have to concern about a broader area and disclose social and environmental impact beyond its' financial status, due to increased pressure of its stakeholders. So that, the numbers of companies disclosing environmental information has been increasing to 47% in 2013 from 44% in 2008 in Sri Lanka (Rajeshwaran & Ranjani, 2014). In this regard, environmental reporting plays the major role when communicating the values of environmental concerns to their stakeholders.

Environmental Reporting (ER) is the practice of an organization to publicly disclose the impact of its activities on the environment and its efforts to manage those impacts (Gray et al., 1993). It covers the preparation and provision of information for use of multiple stakeholders on the environmental status and the performance of their company (Brophy & Starkey, 1996).

At present, firms have adopted various mediums to communicate their impact on environment such as annual reports, sustainability reports, web sites and press releases in accordance with either their mandatory or voluntary requirements. However, annual reports hold a significant place among those mediums. When preparing their sustainability and integrated reports, in Sri

Lanka, most companies rebrand their annual reports as 'integrated annual reports' or simply 'integrated reports' (Gunarathne & Senaratne, 2017). These reports usually present the International Financial Reporting Standards (IFRS) based financial reports and GRI-based sustainability reports within

the framework of the International Integrated Reporting Council in a single report (Gunarathne *et al.*, 2021).

Furthermore, Sri Lanka, as a developing country, ER practices are entirely a voluntary activity as in some other developed and developing countries (Rajapaksha, 2008). Even though, reporting environmental information is not mandatory by business organizations, they have confronted these details with manifold aspirations. There are several influential factors that determine the management's involvement in disclosing environmental information (Wilmschurst & Frost, 2000).

However, when managers' incentives are not perfectly aligned with the interests of all stakeholders, ER can be an imperfect mechanism for communicating environmental concerns.

Furthermore, most of the organizations disclose their "good" business practices that ensure the sustainability of the businesses in order to contribute to the maximization of shareholder value, but nothing related to the "bad" business practices of the environment (Chan & Welford, 2005).

According to Carol (2004), a good "ethical" report should be transparent and represent a genuine attempt to provide an account that covers negative as well as positive aspects of all material impacts.

Therefore, by cohering with international bodies such as Global Reporting Initiative (GRI) that supports for a sustainable trend, business organizations can effectively fulfill the necessities of its stakeholders by disclosing all the relevant material facts in their annual reports. It works towards communicating the impact of business on critical sustainability issues. Specially, GRI designs and builds acceptance of a common framework for reporting environmental information in sustaining corporate public accountability to proceed an enhanced disclosure practice.

Recently, banks began expanding their staff awareness, public relations and marketing efforts with the aim to position themselves as modern, progressive, responsible, which started to coincide more and more with being "green" (Zhelyazkova & Kitanov, 2015). So that, when comparing to other sectors, banks, diversified financial companies and insurance companies have diverted towards green initiatives to withdraw from its direct and indirect impact on environment and these direct and indirect impacts should be imperatively discussed.

Because of increased digitization and expansion in the banks, diversified financial companies and insurance companies, it entails a higher energy

requirement as an essential input in its daily work operations and it is one of the biggest challenges faced by such firms. In order to have a balance between market expansions and efficient energy consumption, these companies have focused on finding the most energy efficient and environmentally friendly means to accomplish increasing requirements.

Furthermore, Bio-diversity is another aspect, which banks diversified financial companies, and insurance companies have considerable impact. At first glance, the impact of these sectors on the biodiversity is less clear than for other environmental sensitive sectors because they do not have big production sites or products that take up a large number of natural resources. However, like every other business, these sectors create direct effects on biodiversity by their own business activities. So that, these sectors have significant indirect impacts on biodiversity by conducting their core business of lending, investing and project financing. In order to get rid of the impact on Biodiversity, these companies have implemented different programmes to protect and restore the habitats and emphasized more on the conception of green lending.

Moreover, there have been increased hue and cry about climate change in the world, as it has been highly inimical to our existence. As a result, increased concentration of Green House Gas (GHG) Emission, which relates to climate change issue, has become a severe problem in banks, diversified financial companies and insurance companies as in every other companies belong to different fields.

As per the previous studies, there are several shortcomings, which are related with the area of environmental reporting due to their voluntary nature and the lack of an accountability framework in environmental reporting. Although, environmental reporting practices at firm's level have been increasing over the last few years it does not adequately meet the stakeholders demand for environmental information (Rajapaksha, 2008).

In the literature, most of the previous studies exclusively focused on the environmental sensitive sectors such as manufacturing, motors and power and energy as it is considered that the operation of finance companies is deemed to have less impact to the environment. However, later, it has been found that, in terms of managing environmental and social impacts, the financial sector is still behind other sectors (Earhart et al., 2009).

As well as, hardly few studies have emphasized on the field of environmental reporting in developing countries, like Sri Lanka. However, as per the evidence I found, it can be observed that no previous studies have specifically

identified the significant variations of the level of environmental reporting practices among banks, diversified financial companies and insurance companies.

Under this backdrop, this study aims to cover this empirical gap in the environmental reporting research agenda in the region, by identifying the significant variations in level of environmental reporting practices among listed banks, diversified financial companies and insurance companies in Sri Lankan context.

### **Objectives of the Study**

This study has set the following objectives:

1. To find out the extent to which the environmental reporting on Energy Consumption vary significantly among listed banks, diversified financial companies and insurance companies in Sri Lanka.
2. To find out any significant variation in environmental reporting on Bio-diversity aspect among listed banks, diversified financial companies and insurance companies in Sri Lanka.
3. To find out that whether listed banks, diversified financial companies and insurance companies in Sri Lanka have diverse environmental reporting practice on GHG Emission.

## **LITERATURE REVIEW**

### **Environmental Reporting**

Environmental Reporting is the practice of an organization's publicly disclosing the impact of its activities on the environment and its performance in managing those impacts (Gray *et al.*, 1993). The main objective of environmental reporting is to assess ongoing performance in terms of identifying, controlling, managing and minimizing those impacts (Trojans, 1996). It covers the preparation and provision of information for use of multiple stakeholders on the environmental status and the performance of their company (Brophy & Starkey, 1996). Therefore, it can be considered as a process by which a corporation communicates information about its environmental activities to a wide range of stakeholders such as employees, local communities, shareholders, customers, government and environmental groups.

Companies can use environmental reporting as a modern management tool

to inform external stakeholders and look for ways to enhance internal operations, gain benefits, and ensure their own sustainability groups. Moreover, Welford (2005) has described the report as the company's method for providing information regarding environmental performance, addressing the needs of the financial markets, and giving itself a favorable environmental image all at the same time. Furthermore, Sarifudeen & Sheham (2013) have considered Environmental Reporting as a useful evaluation tool for financial institutions, organizations, and people when making investment and financing decisions.

**Environmental Reporting on Energy Consumption:** At the global level, people have adopted patterns of the use of energy that are simply unsustainable. The amounts of energy we are consuming are such that people are rapidly depleting the world's available resources. At the same time, this consumption is leading to increases in waste and pollution that, in quantity as well as in toxicity, are overwhelming the assimilative capacity of the world's ecosystem and most developed countries are consuming far beyond these needs (Dayaratne *et al.*, 2015).

For businesses with high-energy intensity, their energy productivity measures can be a major indicator for its competitive advantage. Companies selling goods and services that promise customers improved energy efficiency will also increase market share (Dayaratne *et al.*, 2015). Ultimately, organizations can gain long-term success through effectively communicating their energy consumption and its productivity with their stakeholders.

**Environmental Reporting on Bio-diversity:** All companies, regardless of sector, both impact on biodiversity and ecosystems depend on ecosystem services (Harrison, et al., 2010). The effects of the business sector on the environment and biodiversity are frequently perceived as negative, however this need not always be the case. To go beyond the mitigation of direct impacts by businesses, some have begun to modify their operations in ways that have beneficial direct effects on the environment and biodiversity, such as by adding a green roof to a new office building or making it suitable for use by local wildlife. Through such measures, the direct impacts of the financial sector can even be positive and not require mitigation or offsetting at all (Harrison et al., 2010).

In addition to the above-mentioned direct impacts, financial sector businesses can have significant indirect impacts on biodiversity by conducting their core business of lending, investing and project financing. The provision of these

financial services to other businesses, that impact biodiversity directly or even indirectly, can mean that the financial sector has a considerable indirect impact on biodiversity itself (Harrison et al., 2010).

**Environmental Reporting on GHG Emission:** Greenhouse gas (GHG) emissions include carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), hydro and perfluorocarbons (HFCs, PFCs) and sulfur hexafluoride (SF<sub>6</sub>) emissions from fuel combustion, process reactions and treatment processes. The climate change issue related to increasing concentrations of greenhouse gases is a global concern. As it is closely linked to emissions from energy sources is relevant across businesses. The definition of the GHG emissions covers the gases detailed in the Kyoto Protocol and their relative contributions are commonly accepted as detailed in the work of the Intergovernmental Panel on Climate Change (Beredugo & Mefor, 2012).

As per the Wayman (2008), in his study, examined the 500 companies in Europe and America between September 2006 and December 2007, and found 67 per cent (335) issuing environmental reports. Of these 335 CR reports, 87 per cent address climate change, with 78 per cent publishing quantitative GHG emissions data; 65 per cent include a specific climate change section; and 41 per cent address climate change in the CEO or Chairperson introduction. However, only 16 per cent assign management responsibility for addressing climate change. A closer look at their operations shows that organizations with increased report on environmental issues and global warming are receiving increased patronage from stakeholders.

## **Theoretical Background**

**Legitimacy Theory:** Legitimacy theory has been identified as a one of underlying theories in environmental disclosure research. It presents that organizations have different contracts with its society and accomplishing them legitimates the organization and its actions (Cormier & Gordon, 2001). Legitimacy is an important theory speaks about making the organizations responsible for providing true and all information about why and how they do so? (Mousa & Hassan, 2015).

According to legitimacy theory, companies can follow proactive or reactive approach towards achieving legitimacy. As per Mousa & Hassan (2015), large number of studies have been done focusing the reactive approach, which companies publish environmental information in relation to some event or crisis facing either the company or the industry. The proactive approach that has been designed to prevent legitimacy concerns from arising was given a little attention and made a contribution to this literature through

the study. Though the situation is like that, current study concerns only the environmental aspect of CSR disclosures and the reactive approach of the legitimacy which organizations responsible for communicating environmental information reacting to the increased environmental exposure (Mousa & Hassan, 2015).

Legitimacy requires a communication between organization and its various stakeholders and hence the disclosures are therefore required to show legitimacy and if not organizations may face a legitimacy threat if society is not aware that they are operating within its norms and expectations (Mousa & Hassan, 2015).

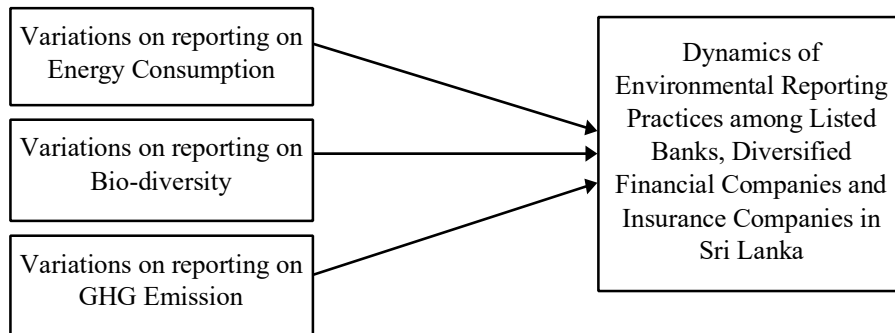
**Stakeholder Theory:** A stakeholder is any individual or group of individuals who affect or are affected by operations of an organization (Friedman & Miles, 2002). In practical business environment, the common stakeholders are customers, employees, local communities, the government, financiers and suppliers. According to stakeholder theory, an organization is looked at as a group of stakeholders. As such, the organization must meet the interest of all the stakeholders even as it strives to meet its goals and objectives. For this reason, stakeholder management becomes part and parcel of management (Friedman & Miles, 2002).

Interests of stakeholders are quite important, especially when it comes to adopting new tactics or initiating changes. Based on how they perceive the change, stakeholders may either embrace or reject it. How active stakeholders are in the change process and how much information they have about the proposed change will determine how they perceive the change. Therefore, it is the responsibility of management to guarantee that information can freely flow between the interested parties. (Andriof *et al.*, 2002).

In order to safeguard a long-term position in the market and gain competitive advantage as a company, it is vital to meet social expectations of range of stakeholders. It creates the path to legitimate the business and its action. For that, communicating true values using an effective medium to a standard level leads to stay outstand within the industry as well as in the global business world. Ultimately, it helps interested parties to compare the organization with other competitive organizations effortlessly to take relevant decisions and actions. From this study, researcher has created the platform to effectively compare the environmental reporting practices on three aspects among companies listed in the same industry. Based on that, conceptual framework of this study has developed.

## Conceptual Framework

**Figure 1: Conceptual Framework**



*Source:* Developed by the researcher

Figure 1 indicates the conceptual framework of this study that explains that the variations in environmental reporting on the three dimensions such as Energy Consumption, Bio-diversity and GHG Emission constitute the concept of Dynamics of Environmental Reporting Practices among listed banks, diversified financial companies, and insurance companies in Sri Lanka.

### Formulation of Hypothesis

Based on the conceptual framework, following hypothesis were developed:

*Hypothesis 1 - Level of environmental reporting on Energy Consumption varying significantly among listed banks, diversified financial companies and insurance companies.*

*Hypothesis 2 - Level of environmental reporting on Bio-diversity varying significantly among listed banks, diversified financial companies and insurance companies.*

*Hypothesis 3 - Level of environmental reporting on GHG Emission varying significantly among listed banks, diversified financial companies and insurance companies.*

## METHODOLOGY

### Research Method and Methods of Measurement

This study has used descriptive research design as it mainly focused on examining the variations of environmental reporting practices among banks, diversified financials and insurance sectors companies. Content analysis was applied to measure all the variables by carefully examining the all sections of annual reports and noting the presence of any environmental disclosures using a checklist that was based on the GRI-G4. The checklist contained 29 indicators to measure environmental reporting practices. Table 1 indicates the five-point rating scale that was used to measure each statement in the checklist.

**Table 1: Scaling**

Scale	Point
No disclosure	0
Specific endeavor in non-quantitative terms	1
Quantified performance data	2
Quantified performance data relative to benchmarks	3
Quantified performance data at disaggregate level	4

*Source:* Suleiman *et al.*, 2014

### Population

The target population of this study was all banks, diversified financials and insurance sector companies that are listed under the Colombo Stock Exchange (CSE). As of 7<sup>th</sup> of February 2020, 290 companies had listed in the CSE, representing twenty business sectors and among them, companies classified under banks, diversified financial and insurance sectors were selected. Accordingly, 12 banks, 49 diversified financial companies and 08 insurance companies considered for carrying out this study. However, 03 companies had to exclude when determining the final population, as they have not published their annual reports for a period of 5 years. Finally, the study population of this study could be identified as 69 listed companies under banks, diversified financial companies and insurance companies.

### Sample and Sampling Technique

From the target population of 69 listed companies in banks, diversified financial and insurance sectors calculated, sample size represents 41 percent

which has consistent with the minimum sample size as suggested by Field, (2000). As a result, 140 annual reports of 28 companies were selected for a period of 05 years from financial year 2014 to the financial year 2018. The selection process of companies from three sectors were based on the stratified random sampling technique.

### Method of Data Analysis, Evaluation and Presentation

Gathered data was processed by using quantitative data analysis functions that were facilitated by statistical package for social science (SPSS) 22.0 version. Univariate analysis (mean, standard deviation), Cross tabulation and One-way ANOVA were used to analyze the collected data. Table 2 indicates the decision criteria for the average level of reporting practices on a particular variable.

**Table 2: Decision Criteria**

Decision Criteria	Decision Attributes
$0.0 \leq X \leq 1.5$	Low level
$1.5 < X \leq 2.5$	Moderate level
$2.5 < X \leq 4.0$	High level

*Source:* Developed by the researcher

## DISCUSSION

### Discussion on Significant Variation in the Extent of Environmental Reporting on Energy Consumption

#### Univariate Analysis:

**Table 3: Mean and Standard deviation of Environmental Reporting on Energy Consumption**

Variable	Banks		Diversified financial		Insurance	
	Mean	Std. Deviation	Mean	Std. Deviation	Mean	Std. Deviation
Energy Consumption	0.9914	0.46808	0.5836	0.72900	1.0286	0.47442

*Source:* Survey Data

According to the table 3, the researcher found that the average level of environmental reporting on Energy Consumption for five years in banks sector was 0.9914 with a standard deviation of 0.46808. It reflects that the average level of environmental reporting on Energy Consumption in banks sector can be varied within the range of 0.5233 and 1.4595. As per the mean value, it can be concluded that the average level of environmental reporting on Energy Consumption in banks sector is low level because the mean is in between 0 and 1.5.

The average level of environmental reporting on Energy Consumption for five years in diversified financial sector was 0.5836 with a standard deviation of 0.7290. It denotes that the average level of environmental reporting on Energy Consumption in diversified financial sector companies can be varied within the range of -0.1454 and 1.3126. Therefore, it can be concluded that the average level of environmental reporting on Energy Consumption in diversified financial sector is low level because the mean is in between 0 and 1.5.

Furthermore, the average level of environmental reporting on Energy Consumption for five years in insurance sector was 1.0286 with a standard deviation of 0.4744. It indicates that the average level of environmental reporting on Energy Consumption in insurance sector companies can be varied within the range of 0.5542 and 1.503. Therefore, it can be concluded that the average level of environmental reporting on Energy Consumption in insurance sector is low level because the mean is in between 0 and 1.5.

Finally, it can be concluded that, the insurance sector companies are practicing majority of environmental reporting on Energy Consumption as the mean level of environmental reporting on Energy Consumption (1.0286) is the highest among banks, diversified financial companies and insurance companies.

### **Cross Tabulation Analysis:**

**Table 4: Comparison of Level of Environmental Reporting on Energy Consumption**

Level of Environmental Reporting on Energy Consumption	Sector				Total
		Banks	Diversified financials	Insurance	
	Count	24	83	13	120
	Expected Count	21.4	85.7	12.9	120.0
	<b>Low level</b>	20.0%	69.2%	10.8%	100.0%
	% within level				
	% within Sector	96.0%	83.0%	86.7%	85.7%
	% of Total	17.1%	59.3%	9.3%	85.7%
	Count	1	14	2	17
	Expected Count	3.0	12.1	1.8	17.0
	<b>Moderate level</b>	5.9%	82.4%	11.8%	100.0%
	% within level				
	% within Sector	4.0%	14.0%	13.3%	12.1%
	% of Total	0.7%	10.0%	1.4%	12.1%
	<b>High level</b>	Count	0	3	3
	Expected Count	.5	2.1	.3	3.0
	% within level	0.0%	100.0%	0.0%	100.0%
	% within Sector	0.0%	3.0%	0.0%	2.1%
	% of Total	0.0%	2.1%	0.0%	2.1%

Count	25	100	15	140
Expected Count	25.0	100.0	15.0	140.0
% within level	17.9%	71.4%	10.7%	100.0%
% within Sector	100.0%	100.0%	100.0%	100.0%
% of	17.9%	71.4%	10.7%	100.0%

*Source:* Survey Data

According to the table 4, out of all 140 annual reports, 120 (85.7%) annual reports of the five-year period have reported low level on Energy Consumption. From 120 which were reported low level on Energy Consumption, 24 (20%) were annual reports of banks, 83 (69.2%) were annual reports of diversified financial companies and 13 (10.8%) were annual reports of insurance companies. Out of all 140 annual reports, 17 (12.1%) annual reports of the five-year period have reported moderate level on Energy Consumption. From 17 which were reported moderate level on Energy Consumption, 01 (5.9%) was annual report of banks, 14 (82.4%) were annual reports of diversified financial companies and 2 (11.8%) were annual reports of insurance companies. Out of all 140 annual reports, 03 (2.1%) annual reports of the five-year period have reported high level on Energy Consumption. All 03 (100%) were annual reports of diversified financial companies.

Furthermore, out of 25 annual reports of 05 banks for five-year period, 24 (96%) annual reports were reported low level and 1 (4%) annual report was reported moderate level on Energy Consumption. Out of 100 annual reports of 20 diversified financial companies for five-year period, 83 (83%) annual reports were reported low level, 14 (14%) annual report was reported moderate level and 3 (3%) annual reports were reported high level on Energy Consumption. Out of 15 annual reports of 03 insurance companies for five-year period, 13 (86.7%) annual reports were reported low level and 2 (13.3%) annual reports were reported moderate level on Energy Consumption.

Moreover, out of all 140 annual reports of five years, 24 (17.1%) annual reports were reported low level and 01 (0.7%) annual report was reported moderate level on Energy Consumption by banks. Out of all 140 annual reports of five years, 83 (59.3%) annual reports were reported low level, 14 (10%) annual reports were reported moderate level and 3 (2.1%) annual reports were reported high level on Energy Consumption by diversified financial companies. Out of all 140 annual reports of five years, 13 (9.3%) annual reports were reported low level and 02 (1.4%) annual reports were reported moderate level on Energy Consumption by insurance companies.

### ANOVA Test:

**Table 5: ANOVA Energy Consumption Mean**

	Sum of Squares	df	Mean Square	F	Sig.
<b>Between Groups</b>	5.096	2	2.548	5.720	0.004
<b>Within Groups</b>	61.022	137	.445		
<b>Total</b>	66.118	139			

Source: Survey Data

According to the table 5, significant value was obtained as 0.004, which is less than 0.05. Therefore, it is concluded that there is a significant variation in environmental reporting on Energy Consumption among banks, diversified financial companies and insurance companies.

**Table 6: Multiple Comparison Energy Consumption Variable**

(I) Sector	(J) Sector	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
<b>Banks</b>	<b>Diversified</b>	.40786*	.11865	.003	.1223	.6934
	<b>financials</b>	-.03714	.15417	.969	-.4177	.3434
<b>Insurance</b>						
<b>Diversified financials</b>	<b>Banks</b>	-.40786*	.11865	.003	-.6934	-.1223
	<b>Insurance</b>	-.44500*	.14255	.012	-.7999	-.0901
<b>Insurance</b>	<b>Banks</b>	.03714	.15417	.969	-.3434	.4177
	<b>Diversified financials</b>	.44500*	.14255	.012	.0901	.7999

\*. The mean difference is significant at the 0.05 level.

Source: Survey Data

As per the table 6, it can be identified that there is a significant variation in environmental reporting on Energy Consumption between banks and diversified financial companies ( $0.003 < 0.05$ ) and there is a significant variation in environmental reporting on Energy Consumption between diversified financial companies and insurance companies ( $0.012 < 0.05$ ).

### **Discussion on Significant Variation in the Extent of Environmental Reporting on Biodiversity**

#### **Univariate Analysis:**

**Table 7: Mean and Standard deviation of Environmental Reporting on Bio-diversity**

<b>Variable</b>	<b>Banks</b>		<b>Diversified financials</b>		<b>Insurance</b>	
	Mean	Std. Deviation	Mean	Std. Deviation	Mean	Std. Deviation
<b>Bio-diversity</b>	0.9800	0.61486	0.6233	0.65633	0.5556	0.22420

Source: Survey Data

Based on the table 7, it is found that the average level of environmental reporting on Biodiversity for five years in banks sector was 0.9800 with a standard deviation of 0.61486. It denotes that the average level of environmental reporting on Bio-diversity in banks sector can be varied within the range of 0.3651 and 1.5949. According to the mean value, it can be concluded that the average level of environmental reporting on Bio-diversity in banks sector is low level because the mean is in between 0 and 1.5.

The average level of environmental reporting on Bio-diversity for five years in diversified financial sector was 0.6233 with a standard deviation of 0.6563. It shows that the average level of environmental reporting on Bio-diversity in diversified financial sector can be varied within the range of -0.033 and 1.2796. Therefore, it can be concluded that the average level of environmental reporting on Bio-diversity in diversified financial sector is low level because the mean is in between 0 and 1.5.

Furthermore, the average level of environmental reporting on Bio-diversity for five years in insurance sector was 0.5556 with a standard deviation of 0.2242. It reflects that the average level of environmental reporting on Bio-diversity in insurance sector can be varied within the range of 0.3314 and

0.7798. Therefore, it can be concluded that the average level of environmental reporting on Bio-diversity in insurance sector is low level because the mean is in between 0 and 1.5.

Finally, it can be concluded that, the banks sector is practicing majority of environmental reporting on Bio-diversity as the mean level of environmental reporting on Bio-diversity (0.9800) is the highest among banks, diversified financial companies and insurance companies.

### **Cross Tabulation Analysis:**

According to the table 8, out of all 140 annual reports, 124 (88.6%) annual reports of the five-year period have reported low level on Biodiversity. From 124 which were reported low level on Biodiversity, 22 (17.7%) were annual reports of banks, 87 (70.2%) were annual reports of diversified financial companies and 15 (12.1%) were annual reports of insurance companies. Out of all 140 annual reports, 14 (10%) annual reports of the five-year period have reported moderate level on Biodiversity. From 14 which were reported moderate level on Biodiversity, 02 (14.3%) were annual reports of banks and 12 (85.7%) were annual reports of diversified financial companies. Out of all 140 annual reports, 02 (1.4%) annual reports of the five-year period have reported high level on Biodiversity. From 02 which were reported high level on Biodiversity, 01 (50%) was an annual report of banks and 01 (50%) was an annual report of diversified financial companies.

Furthermore, out of 25 annual reports of 05 banks for five-year period, 22 (88%) annual reports were reported low level, 02 (8%) annual reports were reported moderate level and 01 (4%) annual report was reported high level on Bio-diversity. Out of 100 annual reports of 20 diversified financials companies for five-year period, 87 (87%) annual reports were reported low level, 12 (12%) annual reports were reported moderate level and 1 (1%) annual report was reported high level on Bio-diversity. Out of 15 annual reports of 03 insurance companies for five-year period, all 15 (100%) annual reports were reported low level on Bio-diversity.

Out of all 140 annual reports of five years, 22 (15.7%) annual reports were reported low level, 02 (1.4%) annual reports were reported moderate level and one (0.7%) annual report was reported high level on Bio-diversity by banks. Out of all 140 annual reports of five years, 87 (62.1%) annual reports were reported low level, 12 (8.6%) annual reports were reported moderate level and 01 (0.7%) annual report was reported high level on Bio-diversity by diversified financial companies. Out of all 140 annual reports of five years, all 15 (10.7%) annual reports were reported low level on Bio-diversity

by insurance companies.

**Table 8: Comparison of Level of Environmental Reporting on Biodiversity**

		Sector			Total
		Banks	Diversified financials	Insurance	
Level of Environmental Reporting on Bio-diversity	Count	22	87	15	124
	Expected Count	22.1	88.6	13.3	124.0
	<b>Low level</b>				
	% within level	17.7%	70.2%	12.1%	100.0%
	% within Sector	88.0%	87.0%	100.0%	88.6%
	% of Total	15.7%	62.1%	10.7%	88.6%
	Count	2	12	0	14
	Expected Count	2.5	10.0	1.5	14.0
	<b>Moderate level</b>				
	% within level	14.3%	85.7%	0.0%	100.0%
	% within Sector	8.0%	12.0%	0.0%	10.0%
	% of Total	1.4%	8.6%	0.0%	10.0%
	Count	1	1	0	2
	Expected Count	.4	1.4	.2	2.0
	<b>High level</b>				
	% within level	50.0%	50.0%	0.0%	100.0%
	% within Sector	4.0%	1.0%	0.0%	1.4%
	% of Total	0.7%	0.7%	0.0%	1.4%
<b>Total</b>	Count	25	100	15	140
	Expected Count	25.0	100.0	15.0	140.0
	% within level	17.9%	71.4%	10.7%	100.0%
	% within Sector	100.0%	100.0%	100.0%	100.0%
	% of Total	17.9%	71.4%	10.7%	100.0%

Source: Survey Data

## ANOVA Test:

**Table 9: ANOVA Bio-diversity Mean**

	Sum of Squares	df	Mean Square	F	Sig.
<b>Between Groups</b>	2.803	2	1.402	3.663	.028
<b>Within Groups</b>	52.423	137	.383		
<b>Total</b>	55.226	139			

Source: Survey Data

As per the table 9, significant value was obtained as 0.028 which is less than 0.05. Therefore, it is concluded that there is a significant variation in environmental reporting on Bio-diversity among banks, diversified financials and insurance sectors.

**Table 10: Multiple Comparisons Bio-diversity Variable**

(I) Sector	(J) Sector	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
<b>Banks</b>	<b>Diversified financials</b>	.35667 <sup>*</sup>	.13939	.038	.0170	.6963
		.42444 <sup>*</sup>	.13592	.010	.0910	.7579
<b>Diversified financials</b>	<b>Banks</b>	-.35667 <sup>*</sup>	.13939	.038	-.6963	-.0170
	<b>Insurance</b>	.06778	.08751	.720	-.1426	.2782
<b>Insurance</b>	<b>Banks</b>	-.42444 <sup>*</sup>	.13592	.010	-.7579	-.0910
	<b>Diversified financials</b>	-.06778	.08751	.720	-.2782	.1426

\*. The mean difference is significant at the 0.05 level.

*Source:* Survey Data

Based on the table 10, it can be identified that there is a significant variation in environmental reporting on Bio-diversity between banks and diversified financial companies ( $0.038 < 0.05$ ) and there is a significant variation in environmental reporting on Bio-diversity between banks and insurance companies ( $0.010 < 0.05$ ).

### **Discussion on Significant Variation in the Extent of Environmental Reporting on GHG Emission**

#### **Univariate Analysis:**

Variable	Banks		Diversified financials		Insurance	
	Mean	Std. Deviation	Mean	Std. Deviation	Mean	Std. Deviation
<b>GHG Emission</b>	1.3156	1.03024	0.4600	0.93137	0.9037	1.26259

**Table 11: Mean and Standard deviation of Environmental Reporting on GHG Emission**

*Source:* Survey Data

As per the results indicate in table 11, the researcher found that the average level of environmental reporting on GHG Emission for five years in banks sector was 1.3156 with a standard deviation of 1.0302. It denotes that the average level of environmental reporting on GHG Emission in banks can be varied within the range of 0.2854 and 2.3458. Therefore, it can be concluded that the average level of environmental reporting on GHG Emission in banks sector is low level because the mean is in between 0 and 1.5.

In diversified financial sector, the average level of environmental reporting on GHG Emission for five years was 0.4600 with a standard deviation of 0.9314. It reflects that the average level of environmental reporting on GHG Emission in diversified financial sector can be varied within the range of -0.4714 and 1.3914. Therefore, it can be concluded that the average level of

environmental reporting on GHG Emission in diversified financial sector is low level because the mean is in between 0 and 1.5.

Furthermore, the average level of environmental reporting on GHG Emission for five years in insurance sector was 0.9037 with a standard deviation of 1.26259. It reflects that the average level of environmental reporting on GHG Emission in insurance sector can be varied within the range of -0.3589 and 2.1663. Therefore, it can be concluded that the average level of environmental reporting on GHG Emission in insurance sector is low level because the mean is in between 0 and 1.5.

Finally, it can be concluded that, the banks sector is practicing majority of environmental reporting on GHG Emission as the mean level of environmental reporting on GHG Emission (1.3156) is the highest among banks, diversified financial companies and insurance companies.

#### Cross Tabulation Analysis:

**Table 12: Comparison of Level of Environmental Reporting on GHG Emission**

		Sector			Total
		Ban ks	Diversified financials	Insurance	
<b>Low level</b>	Count	14	82	10	106
	Expected Count	18.9	75.7	11.4	106.0
	% within level	13.2 %	77.4%	9.4%	100. 0%
	% within Sector	56.0 %	82.0%	66.7%	75.7 %
	% of Total	10.0 %	58.6%	7.1%	75.7 %
<b>Moderate level</b>	Count	7	13	2	22
	Expected Count	3.9	15.7	2.4	22.0
	% within level	31.8 %	59.1%	9.1%	100. 0%
	% within Sector	28.0 %	13.0%	13.3%	15.7 %

Level of Environmental Reporting on GHG Emission	% of Total		5.0%	9.3%	1.4%	15.7%
	High level	Count	4	5	3	12
		Expected Count	2.1	8.6	1.3	12.0
		% within level	33.3%	41.7%	25.0%	100.0%
		% within Sector	16.0%	5.0%	20.0%	8.6%
		% of Total	2.9%	3.6%	2.1%	8.6%
	Low level	Count	106	14	82	106
		Expected Count	106	14	82	106
		% within level	100.0%	13.2%	77.4%	100.0%
		% within Sector	100.0%	13.2%	77.4%	100.0%
		% of Total	75.7%	9.9%	57.9%	75.7%

Total	Count	25	100	15	140
	Expected Count	25.0	100.0	15.0	140.0
	% within level	17.9%	71.4%	10.7%	100.0%
	% within Sector	100.0%	100.0%	100.0%	100.0%
	% of Total	17.9%	71.4%	10.7%	100.0%

Source: Survey Data

Ground on the table 12, out of all 140 annual reports, 106 (75.7%) annual reports of the five year period have reported low level on GHG Emission. From 106 which were reported low level on GHG Emission, 14 (13.2%) were annual reports of banks, 82 (77.4%) were annual reports of diversified

financial companies and 10 (9.4%) were annual reports of insurance companies. Out of all 140 annual reports, 22 (15.7%) annual reports of the five-year period have reported moderate level on GHG Emission. From 22 which were reported moderate level on GHG Emission, 07 (31.8%) were annual reports of banks, 13 (59.1%) were annual reports of diversified financial companies and 02 (9.1%) were annual reports of insurance companies. Out of all 140 annual reports, 12 (8.6%) annual reports of the five-year period have reported high level on GHG Emission. From 12 which were reported high level on GHG Emission, 04 (33.3%) were annual reports of banks, 05 (41.7%) were annual reports of diversified financial companies and 03 (25%) were annual reports of insurance companies.

Furthermore, out of 25 annual reports of 05 banks for five-year period, 14 (56%) annual reports were reported low level, 07 (28%) annual reports were reported moderate level and 04 (16%) annual reports were reported high level on GHG Emission. Out of 100 annual reports of 20 diversified financials companies for five-year period, 82 (82%) annual reports were reported low level, 13 (13%) annual reports were reported moderate level and 05 (5%) annual reports were reported high level on GHG Emission. Out of 15 annual reports of 03 insurance companies for five-year period, 10 (66.7%) annual reports were reported low level, 02 (13.3%) annual reports were reported moderate level and 03 (20%) annual reports were reported high level on GHG Emission.

Out of all 140 annual reports of five years, 14 (10%) annual reports were reported low level, 07 (5%) annual reports were reported moderate level and 04 (2.9%) annual reports were reported high level on GHG Emission by banks. Out of all 140 annual reports of five years, 82 (58.6%) annual reports were reported low level, 13 (9.3%) annual reports were reported moderate level and 05 (3.6%) annual reports were reported high level on GHG Emission by diversified financial companies. Out of all 140 annual reports of five years, 10 (7.1%) annual reports were reported low level, 02 (1.4%) annual reports were reported moderate level and 03 (2.1%) annual reports were reported high level on GHG Emission by insurance companies.

### ANOVA Test:

**Table 13: ANOVA GHG Emission**

	Sum of Squares	df	Mean Square	F	Sig.
<b>Between Groups</b>	15.635	2	7.817	8.012	.001
<b>Within Groups</b>	133.668	137	.976		
<b>Total</b>	149.303	139			

Source: Survey Data

According to the table 13, significant value was obtained as 0.001 which is less than 0.05. Therefore, it is concluded that there is a significant variation in environmental reporting on GHG Emission among banks, diversified financial companies and insurance companies.

**Table 14: Multiple Comparison GHG Emission Variable**

(I) Sector	(J) Sector	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
<b>Banks</b>	<b>Diversified financials</b>	.85556*	.22612	.002	.3018	1.4093
	<b>Insurance</b>	.41185	.38566	.542	-.5486	1.3723
<b>Diversified financials</b>	<b>Banks</b>	-.85556*	.22612	.002	-1.4093	-.3018
	<b>Insurance</b>	-.44370	.33904	.410	-1.3166	.4292
<b>Insurance</b>	<b>Banks</b>	-.41185	.38566	.542	-1.3723	.5486
	<b>Diversified financials</b>	.44370	.33904	.410	-.4292	1.3166

\*. The mean difference is significant at the 0.05 level.

Source: Survey Data

As per the results of the table 14, it can be identified that there is a significant

variation in environmental reporting on GHG Emission between banks and diversified financial companies ( $0.002 < 0.05$ ).

## **CONCLUSION**

The study shows that the level of environmental reporting on Energy Consumption in listed banks, diversified financial companies and insurance companies have been having a low level of reporting. However, the insurance companies practice majority of environmental reporting on Energy Consumption when comparing among banks, diversified financial companies and insurance companies. Furthermore, it verifies that the extent of environmental reporting on Energy Consumption has been varying significantly among banks, diversified financial companies and insurance companies in Sri Lanka.

Moreover, the findings imply that the level of environmental reporting on Bio-diversity in banks, diversified financial companies and insurance companies have been having a low level of reporting. Among these three sectors, the banks sector practices majority of environmental reporting on Bio-diversity. Furthermore, it verifies that the extent of environmental reporting on Biodiversity has been varying significantly among banks, diversified financial companies and insurance companies in Sri Lanka.

Finally, the study shows that the level of environmental reporting on GHG Emission in banks, diversified financial companies and insurance companies have been having a low level of reporting. However, the banks sector practices majority of environmental reporting on GHG Emission when comparing among banks, diversified financial companies and insurance companies. Furthermore, it verifies that the extent of environmental reporting on GHG Emission has been varying significantly among banks, diversified financial companies and insurance companies in Sri Lanka.

The reasons for low level environmental reporting on Energy Consumption, Bio-diversity and GHG Emission could be that the environmental reporting is still voluntary in nature in Sri Lankan context. Furthermore, companies in the banks, diversified financial companies and insurance companies may believe in that they have less impact on environment and beyond that, they do not engage with assessing their extent of impact on environment. Moreover, most of the companies have tried to pretend that they do more environmental reporting on various aspects by including them in the content pages of their annual reports and also, they have added a separate page for mapping the material topics to GRI and GRI indicators and indicated whether they disclose on particular topic. However, when we actually go through the

content of such topic, it can be observed that those contents are inappropriate, irrelevant and do not fully comply with the GRI guidelines.

### **Recommendation**

It can be recommended that all banks, diversified financial companies and insurance companies need to aware about environmental well-being and emerging with a globally accepted framework like Global Reporting Initiative (GRI) for a proper communication of meeting social expectations of a range of stakeholders which leads them to effortlessly compare among competitive organizations and take relevant decisions and actions. Furthermore, they should improve and continue their environmental reporting in annual reports and other medias because those companies with a greater visibility among stakeholders seem to exhibit greater concern to improve good corporate image and gain competitive advantage through high level of environmental reporting in their annual reports.

At the same time, it can be suggested to the government that, they must increasingly assess the effects of their policy instruments by collaborating with accounting bodies like Institute of Chartered Accountants of Sri Lanka, showing that public policies have contributed to a stronger uptake of environmental reporting. Further, individual national frameworks and legislation (such as SLAS, ISO 14000 etc.) may lead to different schemes and obligations.

### **Limitations**

This study focuses on the environmental reporting practices among banks, diversified financial companies and insurance companies. It would be interesting to examine the environmental reporting practices of companies in other sectors.

The sample size had to be restricted only to 140 annual reports of 28 banks, diversified financial companies and insurance companies based on only the secondary data due to the time limitations, difficulty of access and various other constraints. If the sample size were increased, it would be able to obtain results with a lesser sampling errors.

The scale used to measure the variables was a five-point rating scale. Instead, if a seven-point scale were used, measurement that is more accurate would have been taken for each variable.

In order to measure the variables, the research study used the guidelines and measuring scales instructed by the Global Reporting Initiative (GRI). It

would be better if any other frameworks and measures of environmental reporting also could have used.

This study has considered only reporting practices on Energy Consumption, Bio-diversity and GHG Emission. It would be better if any other material aspects implemented by GRI under the section of environment also could have considered.

### **Suggestions for Further Research**

As per the study, level of environmental reporting on Energy Consumption, Bio-diversity and GHG Emission in banks, diversified financials and insurance sectors have low level reporting. Even though, banks, diversified financial companies and insurance companies are pioneers in acquaint green initiatives to their operations and services in Sri Lanka, they are still behind in communicating on their efforts and effects towards environment with its stakeholders. Further research should be done in order to examine this gap between proceeding green practices and level of environmental reporting practices in banks, diversified financial companies and insurance companies in Sri Lanka.

Furthermore, this study was totally depended on secondary data and data was collected by content analysis of annual reports of banks, diversified financials and insurance sectors companies. As environmental reporting is still voluntary in nature in Sri Lankan context, further studies should also concentrate on manager's perceptions and intentions on reporting environmental information voluntarily by using primary data collection method.

Moreover, this study has used adjacent five years of period's annual reports in order to find out the extent of variations in environmental reporting on Energy Consumption, Bio- diversity and GHG Emission among banks, diversified financial companies and insurance companies. As GRI- G4 was launched in 2013, further studies can be done by considering years with a rational gap between such years in order to find out another form of variation. For an example, one can select and consider annual reports in the years as, before introducing GRI-G4 (2011), as soon as introducing GRI-G4 (2014) and recent year's reporting level (2018).

### **Contribution of the Study**

**Empirical Contribution:** This study aimed to identify the significant variations in level of environmental reporting practices among banks, diversified financial companies and insurance companies in Sri Lanka. As

per the evidences I found, it can be observed that no previous studies have specifically identified the significant variations of the level of environmental reporting practices among these companies in Sri Lankan context. Therefore, this study adds a novel empirical contribution to the environmental reporting research agenda.

**Theoretical Contribution:** This study mainly based on two theories; legitimacy theory and stakeholder theory. Legitimacy theory explains that organizations have several agreements with their society, and fulfilling them gives the organization and its actions legitimacy (Cormier & Gordon, 2001). Stakeholder theory simply describes that a company can sustainable when it delivers value to its stakeholders only. In this case, effectively communicating the true values using an effective medium to a standard level works as the bridge between organization and its interested parties. As per the study findings, it reveals that the level of environmental reporting on Energy Consumption, Bio- diversity and GHG Emission of banks, diversified financial companies and insurance companies are at a low level and they are varying significantly among these companies in Sri Lanka. Therefore, companies need truly pay their attention on environmental wellbeing and adhere with a globally accepted framework when producing annual reports in order to achieve the legitimacy by delivering values to its stakeholders.

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# Consciousness and Behaviour Gap in Plastic Consumption among the Urban Population in Sri Lanka

M.A.A. Malkanthie<sup>1\*</sup>, H.M.C.J. Herath<sup>2</sup>, B.S. Galdolage<sup>3</sup>

<sup>1</sup>*Department of Marketing Management, Faculty of Management Studies and Commerce, University of Sri Jayewardenepura, Sri Lanka.  
maamalkanthie@sjp.ac.lk*

<sup>2</sup>*Department of Marketing Management, Faculty of Management Studies and Commerce, University of Sri Jayewardenepura, Sri Lanka.chamjayamini@gmail.com*

<sup>3</sup>*Department of Marketing Management, Faculty of Management Studies and Commerce, University of Sri Jayewardenepura, Sri Lanka. sandamali@sjp.ac.lk*

## ABSTRACT

*The primary purpose of this study is to examine whether environmental consciousness is aligned with consumers' actual behaviours concerning plastic and polythene consumption. Further, to obtain an understanding of the plastic and polythene consumption and disposal behaviour of consumers. The paired sample t-test is utilized in analysing primary data gathered via a detailed online questionnaire by following a convenient sampling method. The sample consists of 117 households living in urban areas throughout the country. The validity and reliability of the scales were tested before analysing the data. Results revealed a significant difference between environmental consciousness and consumers' actual behaviour. It is identified that even though most consumers hold positive attitudes towards environmental consciousness, which have not translated into respective behaviour to the same extent. Only 50% of the respondents handed over their waste to the municipal council or Pradeshiya Sabha collectors. However, it was significant to note that 39% of the respondents are engaged in open burning, while 4% have been engaged in open dumping. However, most of the residents engaged in open burning and open dumping have stated lack of appropriate options for disposing of polythene and plastic waste causes such behaviour. Although, studies have been conducted regarding plastics and polythene consumption in Sri Lanka, this research intended to show that the behaviour of people is getting significantly different from their attitude due to various reasons. It is noted that most of the time these reasons are beyond their control. The findings of this study can be taken into consideration to minimize the harmful effects of plastic and polythene disposing behaviour of consumers in Sri Lanka. Especially relevant government authorities shall initiate awareness campaigns and proper garbage disposal systems for households which will lead to a pleasant environment for living beings.*

**Key Words:** Plastic and polythene consumption, Environment consciousness, behaviour, behaviour-attitude gap

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**Correspondence:** chamjayamini@gmail.com

**ORCID of authors:** <sup>1</sup> Malkanthie M.A.A.  
<https://orcid.org/0000-0002-0119-3516>  
<sup>2</sup> Herath H.M.C.J.  
<https://orcid.org/0000-0002-7748-0677>  
<sup>3</sup> Barda Galdolage  
<https://orcid.org/0000-0003-3257-2882>

## **BACKGROUND OF THE STUDY**

When considering our historical dependency, people mainly depend on plants and animals for basic needs such as clothing, shelter, food, and water. Developments in technology, changes in culture and society, complicated lifestyles of people, and increasing needs led humans to manufacture and consume artificial products such as plastics. Consequently, plastic and polythene became essential in modern life. People tend to use cheap single-use plastics instead of clay, glass, metal, leather, etc. (United Nations Environment, 2018). However, this significant increment in global plastic and polythene consumption results in a global environment and waste crisis (Alam et al., 2018; Katsura et al., 2010).

The global population consumes five hundred billion to one trillion plastic bags annually, ten million plastic bags per minute. Consumption of plastic bags in one hour is enough to wrap around the earth seven times (United Nations Environment, 2018). On average, eight million tons of plastic enter our oceans (World Wide Fund (WWF), 2020). The increasing consumption of single-use plastics and polythene caused an increase in plastic and polythene waste generation. It was identified that 36% of total plastic and polythene production had been utilized for packaging purposes and a significant amount of packaging caused plastic and polythene leakages to the environment (World Wide Fund (WWF), 2020). If the current pattern of plastic consumption continues, in 2025, 12 billion tons of plastic litter will end up in landfills and the environment (United Nations Environment, 2018). Countries with developing economies suffer more from the high volume of plastic and polythene waste generation (Menikpura et al., 2010).

The mismanagement and increasing consumption pattern of plastic caused severe damage to human health, the well-being of living species, the environment, air, water, and biodiversity (Dumbili & Henderson, 2020). Those environmental problems need to be addressed at the individual level by developing, changing and creating environment-friendly behaviour among the public (Desa et al., 2011a).

Sri Lanka also maintained a similar pattern concerning the daily waste deposes, the same as other developing countries. As per the Central Bank statistics, a significant increment in plastic importation to Sri Lanka is noted (Central Bank of Sri Lanka, 2019). Further, Sri Lanka has been identified as the fifth-highest country, mismanaging plastic and polythene waste and contributing to marine pollution (Tibbetts, 2015). Thus, the high consumption of plastic and polythene became a national issue in the context

of Sri Lanka. Polythene and plastics are essential useable products in Sri Lankans' daily routines (Palugaswewa, 2018). However, this extremely high rate of consumption creates multiple negative externalities (Alam et al., 2018).

Currently, most countries in the world pay attention to reducing plastic waste and sustainable solutions for this excessive plastic and polythene consumption (Dilkes-Hoffman et al., 2019). Consumers play a considerable part in determining the consumption volume and disposing of plastic and polythene. People tend to change, modify or adapt their behaviours based on their changing needs and interests (Desa et al., 2011a). Changing human behaviour into plastic and polythene reduction /avoiding behaviour requires considerable time and more effort (Van et al., 2021). Educating people through written methods is identified as insufficient motivation for change. The help of the public, a high level of involvement, and the willingness to reduce plastic and polythene from the community is essential (Bandara, 2010).

However, even though most consumers hold positive attitudes towards reducing plastics, attitudes appear not to translate into respective behaviour to the same extent. Despite consumers' positive attitudes about the environment, and their growing environmental consciousness, several studies have revealed an inconsistency between green attitudes and behaviour (Pickett-Baker & Ozaki, 2008). This issue is commonly referred to as attitude-behaviour gap. Regardless of how positive customers' attitudes toward the environment are, maximising self-interest has been demonstrated to outweigh the cost of cooperating (Johnstone & Tan, 2015). Various constraints and competing needs, such as the physical surroundings of a business, consumers' moods, the time of day, and so on, hamper consumers' behaviour (Johnstone & Tan, 2015).

Therefore, the objective of this study is to understand the attitude toward plastic consumption and the actual behaviour of consumers. Particularly, whether their behaviour is reflected through their perceptions or whether there are any gaps. It would help to develop national-level strategies and take action to reduce plastic and polythene consumption by Sri Lankan consumers.

## LITERATURE REVIEW

### Plastic Consumption

Polythene and plastic are the most commonly found non-degradable solid waste in Sri Lanka (Kariyawasam et al., 2019). Plastic and polythene can be classified as lightweight, sanitized, and resistant material forms as a by-product of the petrochemical industry, which is utilized for a wide range of purposes (UNEP, 2018). The highest consumption of plastic and polythene is related to the packaging industry at micro and macro levels (Kariyawasam et al., 2019). One reason for increasing plastic and polythene consumption is the adaptation of plastics to make life comfortable (Paterson, 2019). Plastic and polythene items can be referred to the items manufactured by using polyethylene, terephthalate, high-density polyethylene, low-density polyethylene, polyvinyl chloride, polypropylene, polystyrene, biodegradable plastic, or any other similar raw material or any mixture (The Gazette of the Democratic Socialist Republic of Sri Lanka, 2021).

Most of the productions relating to plastics are only designed for single-time usage, which causes significant adverse externalities to both environment and animals. Many contemporary products made out of plastics are not essential to make out of plastics (United Nations Environment, 2018). The highest consumption of plastic and polythene can be noted relating to the packaging industry at micro and macro levels (Kariyawasam et al., 2019). Due to the inherent advantages of plastics, such as low cost in the manufacturing process, easiness of the manufacturing process, ability to use for multiple purposes, and versatility, plastics almost become 15 percent of urban waste. It was identified that the countries had successfully managed only 9% of the total world plastic waste (UNEP, 2018).

Most plastics and polythene do not biodegrade but instead slowly photodegrade. Plastics are not just one material. Plastics and polythene are a family of hundreds of different materials with a wide variety of properties. They are constructed to achieve the needs of every single application in the most efficient manner. It takes thousands of years to decompose (especially the polystyrene form refers to as Styrofoam) when dumped into soil or water. Thus, it is vital to follow a standard method in disposing of plastics (UNEP, 2018). However, multiple usages and consumption requirements create diverse waste streams (Hahladakis et al., 2017).

## Plastic Consumption in Sri Lanka

Excessive plastic and polythene consumption became a critical issue in Sri Lanka. Proving it, (Kaluarachchi et al., 2020) said, Sri Lanka generates around four hundred metric tons of plastic waste per day. Moreover, 90% of plastic waste is identified as single-use plastics that are used for packaging purposes (Central Environmental Authority, National Solid waste Managment Program, 2014). Various plastic and polythene consumption was identified due to the various requirements, usages, lifestyles, and income levels. Thus, it leads to generating a massive amount of waste daily. It is estimated that 40% of the total production of plastic does not consume not more than one month (Hahladakis et al., 2017). Moreover, the plastic consumption rate per capita of Sri Lanka is comparatively high compared with the other developing countries. The consumption rate of plastic maintains a positive relationship with the living standard and the strength of the country's economy (Palugaswewa, 2018).

Sri Lanka ranks within the top ten countries that polluted the environment due to excessive plastic and polythene usage and waste mismanagement. The existing state of excessive consumption creates a significant impact on wild species and human health precautions, and the country's economy (Gunawardana & Basnayake, 2009; Hikmath & Arachchige, 2020). Ninety percent of waste is openly burned or disposed of in a way of harms the environment (Arachchige et al., 2019). Open-air burning of plastics, especially PVC, caused toxic fumes to be released into the air, which caused severe negative externalities such as air pollution and lung cancer (Center for Environmental Justice, 2019). All the uncollected household waste by the municipal council (non-collection areas) in the rural areas has been burned (Wijerathna, 2013). Continuous leaching of non-biodegradable plastics caused a block of water flow and unfertile agricultural soil (Alam et al., 2018). Moreover, it is caused to transfer toxic chemicals into human and animal tissues eventually by entering a food chain. Further, wild animals such as elephants, cows, deer, Samba deer, wild boar, cattle, dogs, and sea animals like dolphins and turtles suffer from adverse externalities due to inappropriate disposing methods (UNEP, 2018).

As per the Socio-Economic information of the Central Bank of Sri Lanka, the manufacture of rubber and plastic products has gradually increased from 71,909 million to 83,009 million from the year 2014 to 2019 (Central Bank. of Sri, 2020). Even though no significant increase was identified in the total export earnings related to the rubber and plastic industry for the period from

2014 to 2019 (Central Bank of Sri Lanka, 2019). It is noted that the import of plastics and other articles has been recorded at \$ 928mn in the year 2019. There is a \$ 664mn increase in the imports of plastic and rubber compared to the year 2000 (Alex, 2021). Further, 70% of the total importation of plastic and polythene has been locally consumed (Palugaswewa, 2018). Sri Lanka has imported around 160,000 metric tons of raw plastics and 100,000 metric tons of intermediary or final plastic products to Sri Lanka (Kaluarachchi et al., 2020).

Single-use items, short-live plastics, and polythene are identified as the types of plastics consumed in high volume (Paterson, 2019). Mostly use sterilized plastics to reduce cross-infection, maintain hygiene, and control disease. Thus, plastic consumption cannot be eliminated, but replacing it with durable, high-quality, and cost-effective alternatives can reduce the consumption volume of plastics and polythene (Paterson, 2019).

Plastic consumption varies based on lifestyle and income level. As per (Paterson, 2019), consumption patterns and trends have been associated with traditional and cultural perspectives. Extreme household plastic and polythene consumption were identified as the primary source of plastic and polythene waste in Sri Lanka (Katsura et al., 2010).

### **Efforts in the Reduction of Plastic and Polythene Consumption**

Most developing countries' solid waste composition is biodegradable waste (Dhokhikah & Trihadiningrum, 2012). Solid waste in Sri Lanka has become a burden since late 1970. Small plastic packets (sachet) such as shampoo, toothpaste, washing powder, cosmetics, soap wrappers, instant food wrappers, yogurt cups, water bottles, and grocery bags became significant burdens when minimizing the daily consumption volume (Center for Environmental Justice, 2019). 90% of plastic waste in Sri Lanka can be identified as single-use plastic or polyethylene used for packaging purposes. Urban waste became a huge problem compared to the waste generated from rural areas (Wijerathna, 2013). The waste composition of the rural and urban areas is getting significantly different. 11% of rubber, leather, hard plastic and soft plastic consist of urban municipal solid waste. 4% of rubber, leather, hard plastic and soft plastic consist of rural municipal solid waste (Institute for Global Environmental Strategy & UNEP, 2020). The majority of the solid waste has been generated by the Colombo Municipal Council. Confirming that the urban areas generated more solid waste than the rural areas (Arachchige et al., 2019). Existing statistics of the daily solid waste collections by the local authorities are tabulated below (Central

Environmental Authority, 2015);

However, it is identified that the relationship between consumption patterns and consumption volume, which should change, is complex and challenging to change (Paterson, 2019). Sri Lanka has attempted to reduce and manage the volume of plastic and polythene waste and excessive consumption in various ways.

**Table 01: Daily Solid Waste Collection Statistics**

Local Authority	Quantity by a person (Kg/Day)
Colombo Municipal Council	0.80
Municipal Councils except for Colombo MC	0.75
Urban Councils	0.60
Pradeshiya Sabhas	0.40

*Source :* (Central Environmental Authority, 2015)

### **Projects and Strategies to Combat Consumption Volume**

Sri Lankan authorities are mainly concerned with collecting municipal waste other than focusing on sustainable disposing procedures or effective waste management and recycling procedures (Wijerathna, 2013). Mainly Sri Lanka has been attempting to implement the mechanical process of collecting garbage. However, multiple projects/ strategies can be identified as efforts to minimize plastic and polythene consumption.

National post-consumer plastic recycling project (NPCPRP) identified that the practical and straightforward project for waste treatment is crucial for effective waste management (Gunawardana & Basnayake, 2009). The Ministry of Environment has initiated this project to address the required changes in the consumption patterns and disposal methods that have been practiced by consumers, which create harm to the environment. Imposing a tax of 1% on every plastic importation from 2017 and the contribution of particular tax income is considered an initial investment of the national post-consumer plastic recycling project.

To combat the plastic and polythene waste problem, it is noted the necessity of a technically feasible, economically viable, and socially acceptable mechanism (Dilkes-Hoffman et al., 2019). The adoption of reusable bags and biodegradable bags is a practical example that has been currently implemented by some of the supermarkets in Sri Lanka. Central

environmental authority had introduced Biodegradable products as an alternative to plastics and polythene. However, it was significant to note that only Four manufacturers have been identified as the recommended Bio-Degradable Manufacturers as per the registry (Registry of Recommended Bio-Degradable Product Manufacturers, 2021). Further, it was identified that biodegradable plastics promote by supermarkets operated within Sri Lanka are not genuinely biodegradable (Center for Environmental Justice, 2019). Moreover, inherent limitations were noted with alternatives, such as practical reasonableness, quality, and durability.

It is identified that changing consumer patterns and attitudes are crucial. A gradual and continuous process is required to shape consumption and disposal behaviour. Sri Lanka has been promoting and making awareness about waste separation (Institute for Global Environmental Strategy & UNEP, 2020). Further, local authorities of Sri Lanka have introduced a concept of *Siyapath Piyasa Centers– Recyclables collection centers* to the Western Province. This project mainly focuses on effective methods of collecting domestic waste while raising awareness of the general public that domestic waste has a monetary market value that could be earned as revenue.

Even though Sri Lanka has initiated various projects, policies, and procedures, due to the inadequacy of financial resources, trained human resources, political influence, lack of proper commitment from authorities, and poor commitment from the public are caused ineffective and unsuccessful of most projects (Wijerathna, 2013).

### **Regulatory Bodies and Regulations in Waste Management and Reduction**

Global and national policies and regulations have been enforced to manage solid waste and protect the environment. The local authorities and regulatory bodies have governed laws and regulations that govern waste management and recycling.

As per the Local Government Act, the Local Authorities in Sri Lanka have been responsible for collecting municipal solid waste in the respective territory (Bandara, 2011). Further, the government spends 20% to 50% of the annual budget to manage waste in Sri Lanka, and only 20% to 80% of solid waste has been effectively managed (Eheliyagoda & Prematilake, 2016).

Municipal Council Ordinance (29 of 1947 ~ 57), Urban Council Ordinance/Act (61 of 1939 ~ 22), and Pradeshiya Sabha Act (15 of 1988- 14 of 1999) provide necessary provisions to the local authorities. Apart from

that, the Sri Lankan government has established different institutions to protect the environment and ensure the effective management of waste in Sri Lanka at different stages, such as the Ministry of local government and provincial councils, Ministry of Mahaweli Development and Environment, Ministry of Mega-Police and Western development, Central Environmental Authority (CEA), Urban Development Authority, National Policy on Solid Waste Management Support Center, and Western Province Waste Management Authority.

Under Act No. 47 of 1980, the Democratic Socialist Republic of Sri Lanka has established a Central Environmental Authority to make provisions to protect, promote, manage, coordinate, regulate, maintain, and direct environmental concerns.

In 1994, the minister of the environment initially attempted to impose guidelines and proposals to ban high-density polythene bags with a thickness less than 20 microns (Center for Environmental Justice, 2019). Several years later, in 2007 Environment Minister imposed a ban on consuming polythene that thickness is less than 20 microns under section 23W of the National Environmental Act No 1466/5. Same as previously, regulating plastic usage based on the microns was not practical due to the incapability of measuring microns effortlessly.

In 2008, a conservation levy was introduced on high-density polyethylene bags under the Environment Conservation Levy Act, No 26 of 2008. However, a court order was issued against charging 2 rupees for a plastic bag.

Under the powers of the National Environmental Act, through an extraordinary gazette (Notifications, 2008), it is prescribed that the activities: manufacture of polymer or polymer-based products, recycling industries, municipal solid waste, and other solid waste composting plants have a capacity of less than ten metric tons per day, solid waste recycling/recovery or processing plants have a capacity of less than ten metric tons per day, and solid waste disposal facilities have a disposal capacity of less than ten metric tons per day required to obtain a license to carry out operations within Sri Lanka.

A set of regulations has been introduced to reduce consumption volume by regulating consumption purpose, sales, offer for sale, offer free of charge, or exhibition in Sri Lanka. It is prohibited to manufacture polythene or any polythene product of twenty microns or below thickness. The polyethylene or any polyethylene product of twenty microns or lower in thickness may be permissible to be used with the prior written approval of the authority for the

purposes stipulated in the Central Environmental Authority schedule of legislation (The Gazette of the Democratic Socialist Republic of Sri Lanka, 2007). Bans manufacture of food wrappers (Lunch Sheets) and high-density Polyethylene bags from polythene as a raw material (The Gazette of the Democratic Socialist Republic of Sri Lanka, 2017a; The Gazette of the Democratic Socialist Republic of Sri Lanka, 2017b). Further, prohibit all forms of plastics, polyethylene and polypropylene products for decorations in political, social, religious, national, cultural, or any other event within Sri Lanka (The Gazette of the Democratic Socialist Republic of Sri Lanka, 2017c). And prohibit the manufacture of food containers, plates, cups, and spoons from expanded polystyrene. Further, it is required to mark plastic material identification standards on every manufactured plastic item (The Gazette of the Democratic Socialist Republic of Sri Lanka, 2021).

### **Environment-friendly Plastic and Polythene Consumption Behaviour**

It is identified that behaviours, opinions, and attitudes that are rewarded and reinforced are likely to be repeated and ultimately incorporated into individuals' personal values and routine behaviour (Desa et al., 2011b). According to the theory of planned behaviour, it is identified attitudes, subjective norms, and perceived behavioural control are impacted in determining human behaviour. Behavioural intention can be identified as the willingness of an individual to perform a behaviour (Maria et al., 2020). It maintains a positive relationship between the strength of the intention and the potential to perform the desired behaviour. Nevertheless, people tend to act upon interests that their attitudes aligned with rather than considering the society or environment (Maria et al., 2020).

However, the theory of planned behaviour allows the expansion. The theory of planned behaviour does not consider awareness and knowledge (Boadi, 2012). The additional variables can be integrated for better contribution (Khan et al., 2019). By considering prior studies, it utilized consciousness about the environment and the impact of economic factors to determine environment-friendly plastic and polythene consumption behaviour in this study (Van et al., 2021).

### **Environmental Consciousness**

Since the problem of environmental deterioration is worldwide, a coordinated effort must be begun to instill "environmental consciousness" in all and sundry before it is too late to correct the situation. Consciousness about the damage caused to the environment by plastic and polythene is considered a variable in determining the environment-friendly plastic and

polythene consumption behaviour of consumers. Environment consciousness is something that should be seriously considered and instilled among generations (Gören, 2014). Being conscious about the environment comprehend environmental habits, activities, and interactions among people and the consequences of immediate and long-term effects.

Consciousness is set in the context where events appear and are beheld. Environmental Consciousness argues that the key issue here is our understanding of nature and the ways in which they condition our relationship with it. (Bonnett, 2021). Environmental concern is regularly associated with education, age, political ideology, demographics, Environmental attitudes, socio-demographic characteristics, personality, environmental knowledge, and environmentalism (Hiramatsu et al., 2016; Sánchez & Lafuente, 2010; Sharma & Bansal, 2013)

Making changes to environment related attitudes is one way of changing environmental consciousness. Environmental consciousness usually comprises an intellectual as well as an effective component, that is, knowledge of environmental issues as well as a way of responding and attitudes that information activates (Rannikko, 1996). Some studies state that a high level of problem awareness related to plastic and polythene tends to initiate new behaviours (Heidbreder et al., 2019). Further, it is revealed that perception of the consequences causes behavioural changes (Maria et al., 2020). However, (Van et al., 2021) identified that environmental consciousness does not maintain a significant impact on behavioural intentions.

Further, as per the study of (Hiramatsu et al., 2016), women are more environmentally conscious than men. Females were more likely to take waste prevention measures, and women often performed environmentally conscious actions based on custom rather than knowledge. Though men had more knowledge of environmental issues than women, it did not indicate that men were more environmentally conscious. Moreover, this study revealed that elderly people generally tended to be more environmentally conscious than the younger generation. So, it is stated that there is a positive correlation was shown between age, income, and environmental attitude.

Accordingly, there is considerable debate in previous research findings regarding whether environmental consciousness is aligned with consumer actual behaviours concerning plastic and polythene consumption. However, it was noted that sufficient empirical studies have not been performed to examine whether environmental consciousness is aligned with consumer

actual behaviours regarding plastic and polythene consumption in the Sri Lankan context.

## **METHODOLOGY**

The present study employed a quantitative research design. Methodology planning involves the specification of the population to be studied, the treatments administered, and the method followed in performing data analysis. By aligning with the developed research questions, this study is conducted to identify the gap that exists between environmental consciousness and environment-friendly plastic and polythene consumption behaviour of Sri Lankan consumers based on the cross-sectional data obtained in a different context at a single point in time.

Moreover, this study intends to understand the discrepancy between consumer consciousness and behaviour rather than focusing on conventional problems identified concerning the infrastructure and procedural insufficiency in plastic waste management in Sri Lanka.

The paired sample t-test is utilized to analyse primary data gathered via a detailed questionnaire to assess the gap that exists between environmental consciousness and environment-friendly plastic and polythene consumption behaviour of Sri Lankan consumers. Once performing a pilot study to ensure validity and reliability, paired sample statistics and paired samples correlation tests were performed to identify the significance of the differences and the correlation among the variables. Afterward, by performing paired sample test, it is intended to obtain statistical evidence that the mean difference between paired observations to identify the average difference between constructed pairs.

There is considerable debate in previous research findings regarding whether environmental consciousness is aligned with consumer actual behaviours concerning plastic and polythene consumption. However, sufficient empirical studies have not been performed to examine this gap in the Sri Lankan context. Thus, this study attempts to obtain a clear understanding of whether the plastic and polythene consumers' attitudes have been translated into respective behaviour to the same. The total population of Sri Lankan plastic and polythene consumers has been identified as a target population for this study. The target sample represents the population covering all districts in Sri Lanka.

The non-probability sampling (convenient sampling) method was followed for a sample size of 117 households. The collection of data from the total

plastic and polythene consumers is impractical due to budgetary constraints and time constraints. Based on the Sri Lankan Socio-Economic report, select respondents as proportionate to the population of Sri Lanka. (Central Bank of Sri Lanka, 2020). The sampling strategy is determined based on the population statistics of the census of population and housing in 2012. Obtain district-wise population (including estate population) and proportionate total sample size to the inhabitants of each district.

The primary data: non-numerical data gathered via a detailed online questionnaire. The responses were collected via google form in the manner of online questionnaires from November 2021 to January 2022. A questionnaire is developed to collect information/ data regarding the determined areas to accomplish the objectives of this study.

The total respondents represented both male and female participants above eighteen (18) years old. Further, information was gathered by conducting discussions and interviews with experts in environmental protection, waste management, recycling, and officers of the local authorities.

The questionnaire consisted of three parts. Part one focuses on an introduction to the research and ethical principles involved in conducting the data collection process and conducting the research. Part two is for collecting the demographic details of the respondents. This part consists of eight (08) questions covering the residence area, household income, and occupation status. Part three focuses on the collection of data by covering all research objectives. Questions are in the form of a five-point Likert scale covering aspects of environment-friendly plastic and polythene consumption behaviour, social factors, economic factors, and environmental consciousness.

The guideline is developed by using Microsoft Word. Then translated into the Sinhala language for participants' convenience and to obtain clear ideas by eliminating language barriers. Thus, the option for selecting a convenient language is provided when filling out the questionnaire-

We would like to declare that no conflict of interest has been incurred in the conduction of this research. This research aims to enhance social well-being by identifying and reducing the plastic and polythene waste problem in Sri Lanka. Thus, this study does not engage in any unethical behaviours. Therefore, no ethical consideration is required for this research.

Further, throughout the research, respondents have been treated confidential and assured the privacy of their information by not disclosing it to any third

party. Before initiation, inform nature of the study to participants and provide an opportunity to decide on participation in this study. Not any kind of forced full action involves. Obtained consent before autosaving answers.

The research model is formulated to facilitate the determining research questions. It is used to develop a linkage between the literature review and the proposed model. A clear picture of the variables and measurements used in this study is given in table 02.

**Table 02: Operationalization of variables**

Variable	Questionnaire Item	Factor loadings	Avg. variance extraction	Composite reliability
Environment Consciousness	Plastic contamination in the ocean.	.754	0.566098	0.944069
	The amount of plastic and polythene waste produced.	.810		
	The amount of solid waste going to landfills without a proper recycling mechanism.	.771		
	Water Pollution.	.725		
	Endangered animals and biodiversity.	.700		
	Natural resources depletion (Forest, water) due to plastic and polythene.	.741		
	Air Pollution	.801		
	Climate change (global warming)	.793		
	Reduce the use of plastics by using other environment-friendly alternatives.	.726		

	Lowering the volume of plastic waste generated.	.814		
	Perception as an environmental concern person.	.780		
	Awareness of negative externalities	.618		
	Contribution to environmental protection campaigns.	.726		
Environment-friendly Polythene and plastic consumption behaviour.	Reduce the use of single-use plastic and polythene by replacing water bottles.	.704	0.571984	0.013689
	Reduce the use of single-use plastic and polythene by replacing takeaway containers/ Lunchboxes.	.676		
	Reduce the use of single-use plastic and polythene by replacing reusable bags.	.834		
	Reduce the use of single-use plastic and polythene by reducing the usage of plastic spoons, straws, and forks while take-out any food.	.618		
	I reduce the use of single-use plastic and polythene by buying packaging-free products and bulk stores/loose items.	.628		

I reduce the use of single-use plastic and polythene by avoiding sachet packets and small personal care products.	.853
I reduce the use of single-use plastic and polythene by purchasing large volumes at once.	.843
I reduce the use of non-disposable plastics by replacing plastic containers with glass and buying wooden household goods instead of plastic goods.	.746
I choose to purchase environmentally sustainable products.	.716
Use labels that ensure environmental friendliness.	.807
Check the grade number of plastic items.	.841

## FINDINGS AND DISCUSSION

It is discovered that there is a difference between environment-friendly consumption behaviour and the environmental consciousness of consumers. According to table 03, the environment consciousness variable obtained a mean value of 4.4 while environment-friendly consumption behaviour obtained a 3.55 mean value. Therefore, it is revealed that there is a difference of 0.8466 between the mean values obtained by the two variables. Hence it is discovered that there is a high environmental consciousness among the residents of Sri Lanka relating to the environment. However, the behaviour of the residents indicates otherwise.

**Table 03: Mean values of the variables**

		Mean	N	Std. Deviation	Std. Mean	Error
Pair 1	EC	4.3964	117	.61551	.05690	
	EFB	3.5498	117	.83376	.07708	

**Table 04: Significant mean of the difference between variables**

Paired Differences										
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		T	df	Sig. (2-tailed)	
					Lower	Upper				
Pair 1	EC - EFB	.84656	.94208	.08709	.67406	1.01906	9.720	116	.000	

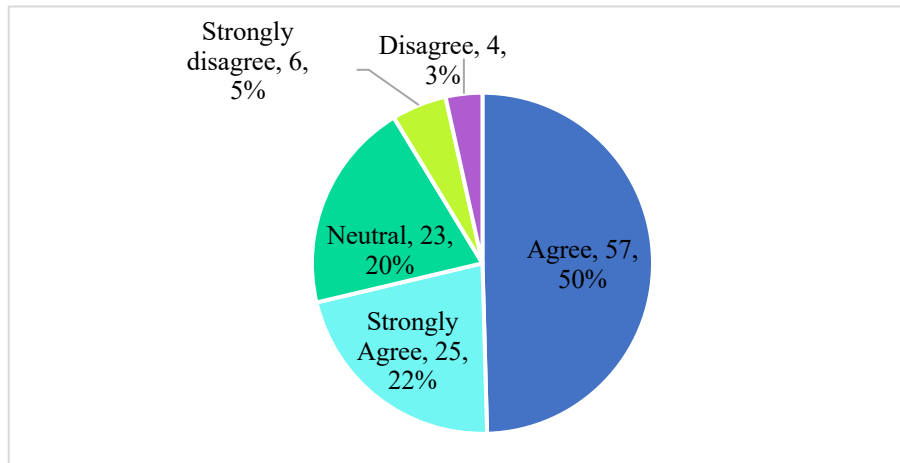
According to table 04, there is a significant difference between environmental consciousness and the behaviour of consumers (0.8466,  $P < .000$ ). Therefore, we can accept the alternative hypothesis that there is a gap between environmental consciousness and environment-friendly plastic and polythene consumption behaviour.

It is not enough to say that there is a significant difference between environmental consciousness and environment-friendly behaviour. Since it implies that people won't behave according to their attitudes, it is needed to

see their attitudes and behaviour in detail.

### **Perception of Consumers as Environment Concern Person:**

**Graph 01: Perception as a complete environment concern person**



It is identified that 22% of the respondent believe that they are fully environment concern persons. While 57% of the respondents think that they are environment concern persons to a certain extent. Which is more than half of the population. Only 10% of the respondents consider themselves as not filly/ partially environment concern person.

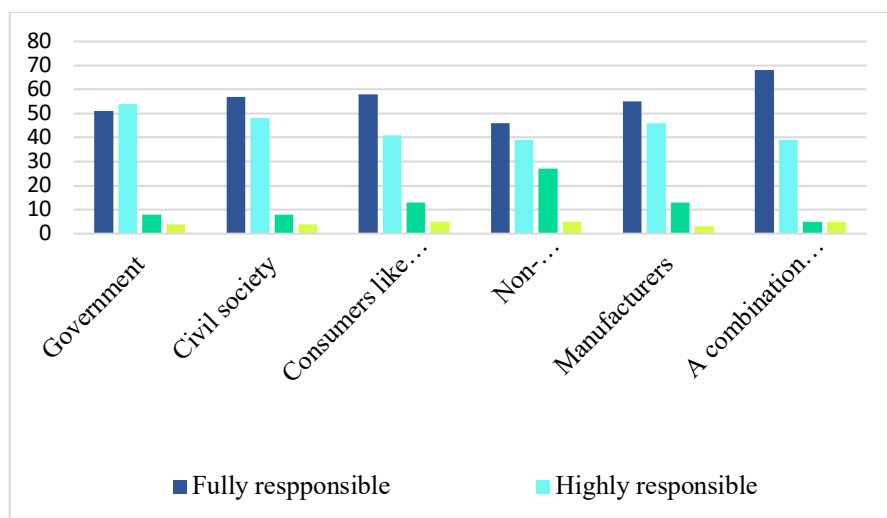
### **Attitude Regarding the Level of Responsibility for Reducing Plastic and Polythene:**

As per the prior empirics, Sri Lanka was identified as a country that has not practiced waste separation at the household level, and households are unsatisfied with the current waste management process (Warunasinghe & Yapa, 2016). To conduct effective waste management and recycling, stakeholders, including waste generators, collectors, recyclers, administrators, and agencies, have a vital role and central responsibility in effective waste management (Kariyawasam et al., 2019).

Graph 02, it is revealed that the combination of government, civil society, consumers, manufacturers, and non-governmental organizations is responsible for reducing the volume of plastic and polythene consumption. Accordingly, consumers, manufacturers, and government hold a

considerable responsibility to reduce and manage plastic and polythene waste. The majority of Sri Lankan plastic and polythene consumers have identified that all the parties including consumers are fully responsible for the reduction of plastic and polythene waste.

**Graph 02: Level of responsibility for reducing plastic and polythene**



### **Reasons for Plastic and Polythene Consumption:**

As per the responses in chart 03, the majority of respondents mainly consider reusability when consuming polythene and plastics. Convenient and durability are the following most substantial qualities considered by polythene and plastics consumers. One reason for increasing Plastic consumption is the adaptation of plastics to make life comfortable (Paterson, 2019).

### **Repeat Usage of Single-use Plastics:**

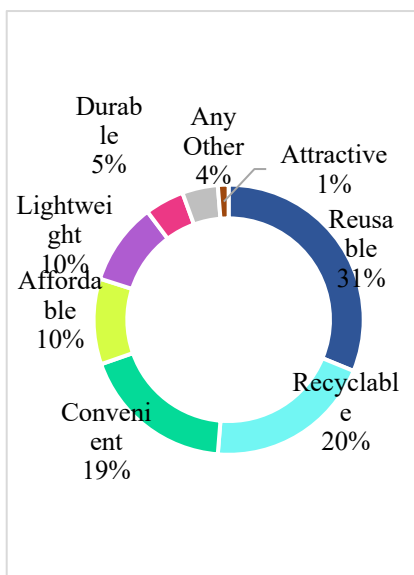
Most people reuse single-use plastic and polythene without considering the health and environmental impact. The heavy metal contained in plastic gets uncovered in exposure to high temperatures. That causes adverse external leakages to the environment, food, and water. Toxic leakage is mainly caused due to the open-air burn of plastics, cooking food (heating) by using a plastic container, packing warm food over a long period by using plastic covers, and reusing single-use plastic for a more extended period. Thus, it was identified that leaching metal during the recycling process of plastic is conceivable and resulting adverse impacts on living species in the long run (Cheng et al.,

2010).

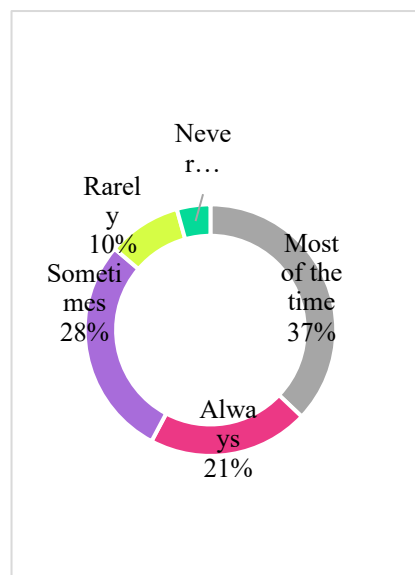
37% of the population tends to reuse single-use plastics most of the time (Graph 04). Further, 21% of consumers always reuse single-use plastics without considering the impact caused on their health. Consumers shall

develop the habit of checking labels and the level of recyclability before reusing. Further, try to follow the principle that “if you cannot reuse it, refuse it.” Only 4% of the consumers never reuse single-use plastic and polythene, and 10% rarely reuse plastic: which is a very low percentage.

**Graph 03: Positive reasons for plastic and polythene consumption**



**Graph 04: Frequency of reusing single-use plastics**



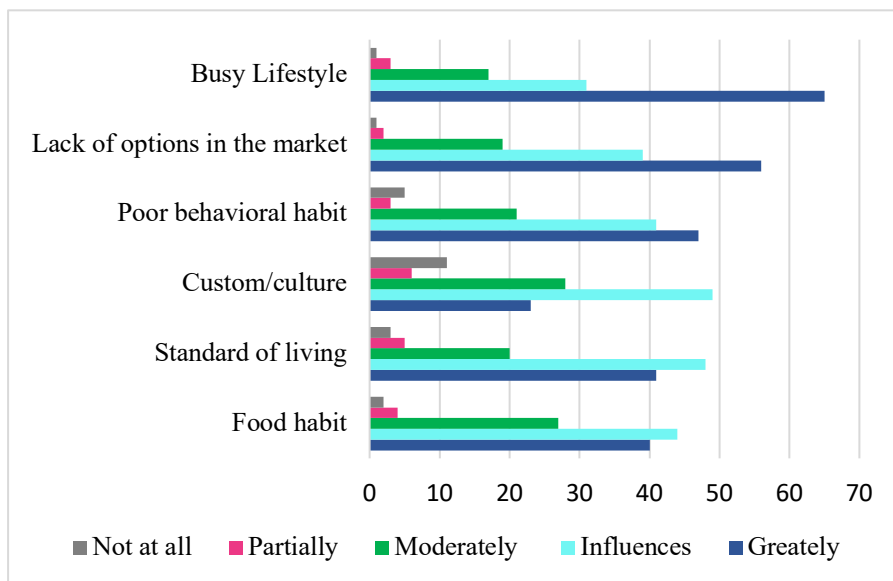
### Reasons Behind the Usage of Plastic and Polythene:

A complicated modern lifestyle and increasing needs became a reason for the excessive consumption of plastic-based products. Polythene and plastics are essential products in the modern standard of living in Sri Lankans' daily routine (Palugaswewa, 2018).

It was identified that the busy lifestyle, lack of options in the market, and poor behavioural habits of the residents had greatly influenced the increasing consumption of plastic and polythene (Graph 05). Moreover, modern culture, the standard of living, and food habits also influence the volume of plastic and polythene consumption.

Socio-cultural differences lead to different activities, living patterns, events, and lifestyles. As per Peterson 2019, consumption patterns and trends have been associated with traditional and cultural perspectives (Paterson, 2019). Thus, plastic consumption may vary and occurred more damage to the environment based on the nature of the cultural and traditional events (Wijerathna, 2013). Further, it is identified that the replacement of appropriate and sustainable alternatives is able to reduce the consumption volume (Paterson, 2019). However, according to the results, the lack of suitable alternatives in the market causes an increase in plastic and polythene consumption.

**Graph 05: Reasons behind plastic and polythene consumption**

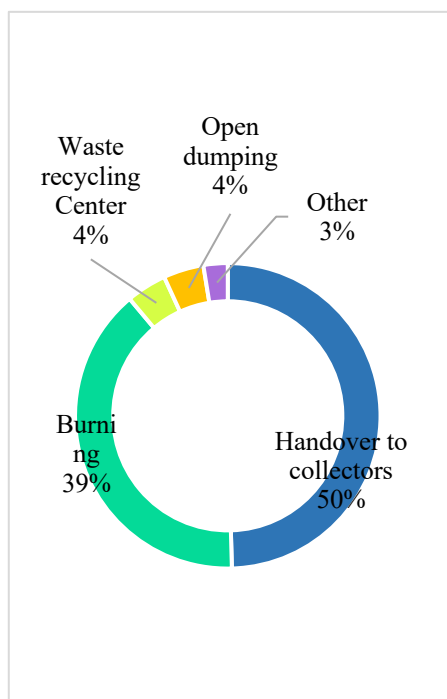


### Consumers' Behaviour in Plastic Waste Disposal:

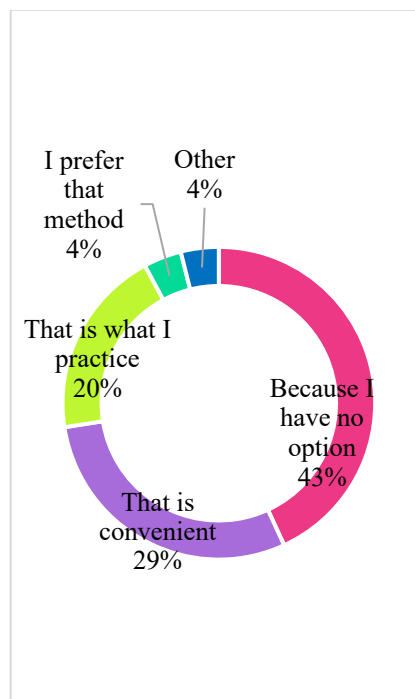
In the Sri Lankan context, the promotion of waste separation started in 2011. The ones mainly engaged in recycling are the municipal councils of Sri Lanka. The municipal collectors have collected the majority of the waste. However, collectors only focus on collecting waste that involves high value. Thus, low-value recyclables remain uncollected and end up in dumpsites (Institute for Global Environmental Strategy & UNEP, 2020).

According to the results of the study (Graph 06), it is revealed that only 50% of the respondents handed over their waste to the municipal council or Pradeshiya Sabha collectors. However, it was significant to note that 39% of the respondents are engaged in open burning, while 4% have been engaged in open dumping. This waste mismanagement caused severe damage in several aspects, including living species and the environment.

**Graph 06: Method of disposing of plastic and polythene waste**



**Graph 07: Reasons for open dumping and burning of plastic and polythene waste**

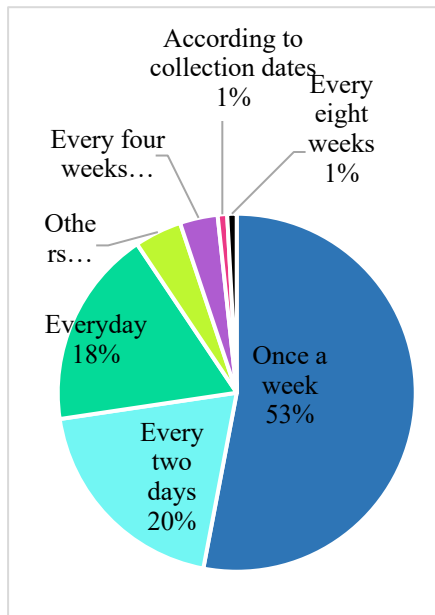


However, the majority of the residents engaged in open burning and open dumping stated that the lack of appropriate options for disposing of polythene and plastic waste caused them to follow such methods (Graph 07). Further, 49% of residents are engaged in open burning and open dumping because of the convenience and practice. The chemical reactions that occurred due to the open dumping and burning caused gas emissions and pollution of primary water resources in Sri Lanka (Bandara, 2011).

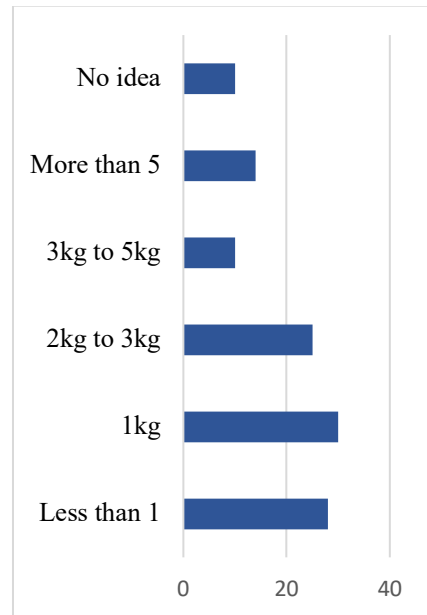
Excessive plastic and polythene consumption became a national issue. Sri Lanka ranks within the top ten countries that polluted the environment due to excessive plastic and polythene usage and waste mismanagement. By confirming that, Sri Lanka generates around 400 metric tons of plastic waste per day (Kaluarachchi et al., 2020). Ninety percent of waste is openly burned or disposed to the environment (Arachchige et al., 2019).

53% of the population generally dispose of domestic waste once a week as a practice (Graph 08). Furthermore, 20% of the population dispose of waste every two days, while 18% dispose of waste every day. 26% of the population generates an average of 1kg of plastic and polythene waste per week (Graph 09). 24% of the population contributes less than 1kg of polythene and plastic waste per week. However, 41% of the population contributes more than 1kg of plastic and polythene waste per week. Moreover, 10% of the population does not have even a rough idea about the volume of their plastic and polythene waste generation.

**Graph 08: frequency of disposing domestic solid waste**



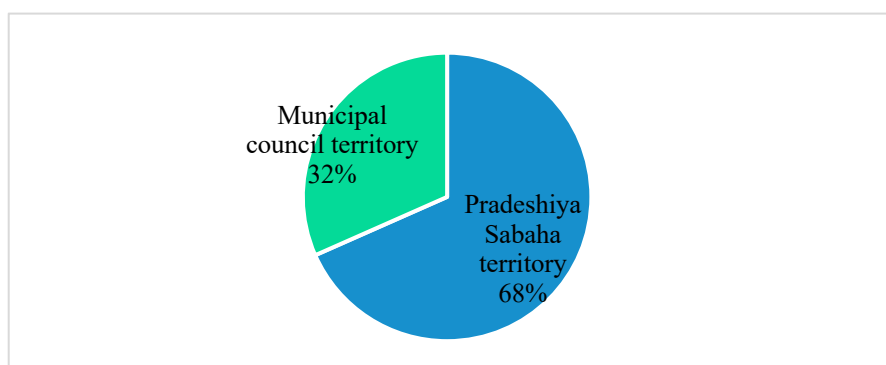
**Graph 09: weight of plastic and polythene waste generation (per week)**



Government shall set national targets for waste collection, segregation, recycling, and investing in national/regional waste management infrastructure. Further, ought to focus on establishing plastic collecting centers with the collaboration of plastic recyclers to expand the recycling and collection centers.

Further, Manufacturers and companies can explore, improve, and develop the potential of new materials which we can use as an alternative to plastics, such as biodegradable plastics, and reinstate some old products that we have replaced. It is identified that the lack of alternatives for plastic and polythene has been greatly influenced by excessive plastic and polythene consumption and waste generation.

**Graph 10: Territory**



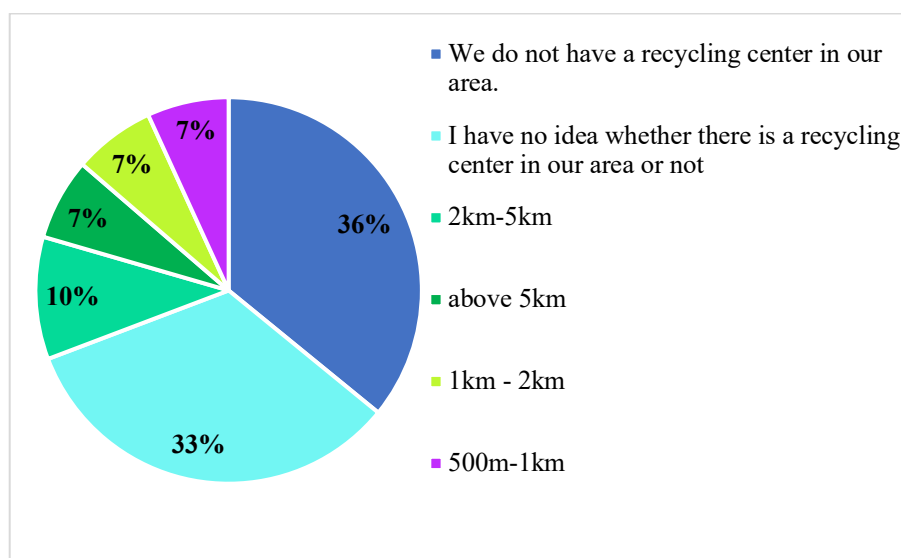
### **Recycling Facilities of Plastic and Polythene Waste:**

Urban waste became a huge problem compared to the waste generated in rural areas. The waste composition of the rural and urban areas is getting significantly different. (Wijerathna, 2013). The majority of the solid waste has been generated by the Colombo Municipal Council, confirming that the urban areas generated more solid waste than the rural areas (Arachchige et al., 2019). Hence the majority of the respondents of the sample (68%) represented the Pradeshiya Sabha territory, while 32% represent the municipal council territory in this study (Graph 10).

It was significant to note that 36% of the population does not have a recycling facility in their living territory (Graph 11). Thus, they face multiple difficulties in disposing of their plastic and polythene waste. Further, it was noted a low level of awareness among the population regarding recycling facilities. 33% of the population does not have awareness about their local

recycling center or the availability of such facilities. Moreover, 17% of the population state that they must travel 5km or more to find a recycling facility. Thus, it is concluded that sufficient recycling facilities and awareness are not provided to households in Sri Lanka.

**Graph 11: Distance from residence to the collection point/ Recycling centre**

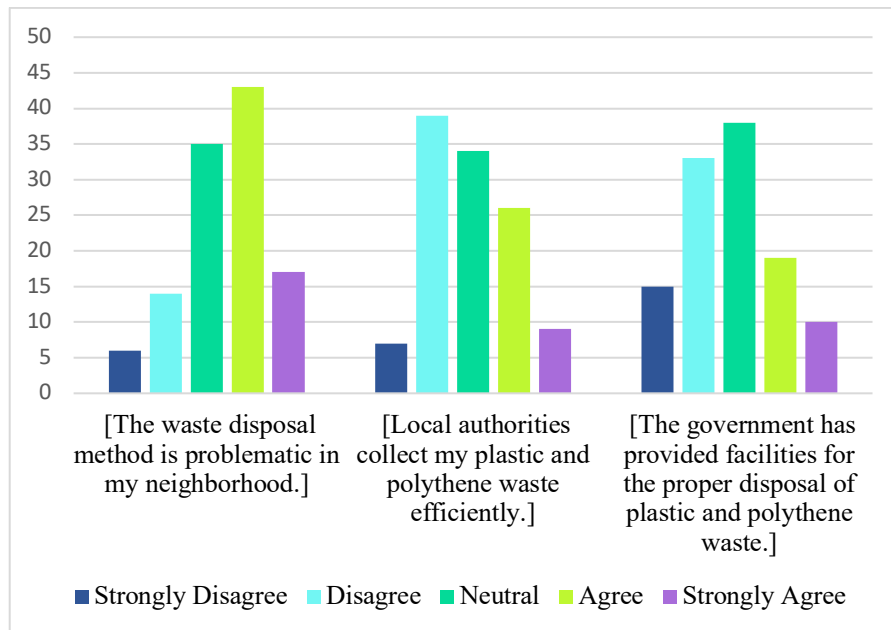


However, the final disposing method for 95% of municipal solid waste is open dumping in Sri Lanka. All the uncollected household waste by the municipal council (non-collection areas) in the rural areas has been burned (Wijerathna, 2013). Continuous leaching of non-biodegradable plastics caused a block of water flow and unfertile agricultural soil (Alam et al., 2018). Further, it is noted that most of the dumping sites have been located nearby populated urban areas, and those sites are inadequate to handle municipal solid waste in the long run (Gunawardana & Basnayake, 2009). Moreover, studies revealed that solid waste collection involves significant carbon dioxide emission and consumption of fossil oil during the transportation and collection of waste in Sri Lanka (Menikpura et al., 2010).

The majority of the responses state that the available methods of waste disposal are problematic in their living territory. Thus, a significant portion of respondents has been engaged in open burning or open dumping due to inadequate facilities (refer to graph 05). Further, the majority of respondents state that local authorities have not collected their plastic and polythene waste

efficiently. Thus, most respondents are not satisfied with the current facilities available for their waste management and disposing needs.

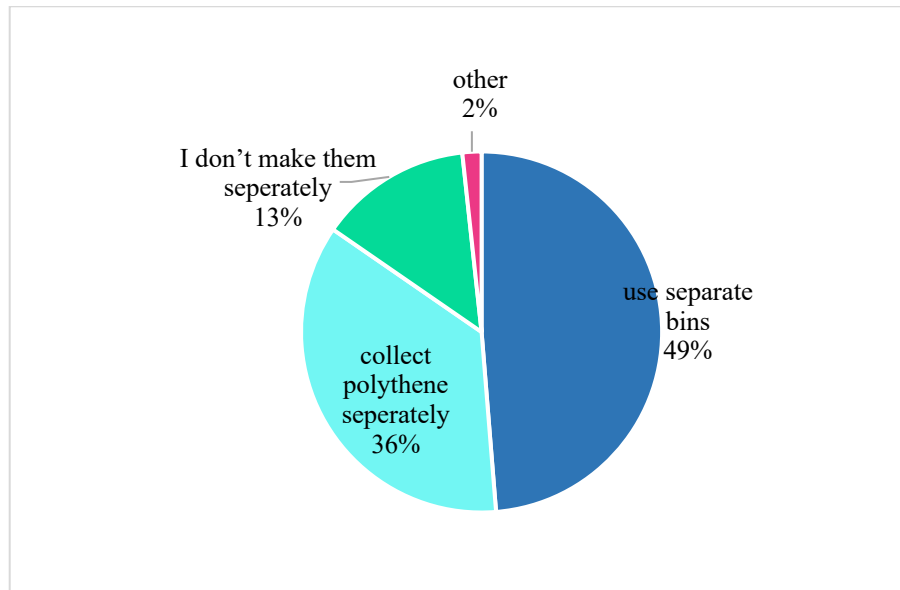
**Graph 12: Status of current waste disposal facilities**



Unseparated household plastic and polythene waste can be identified as the main waste stream in Sri Lanka (Katsura et al., 2010). Since 2011, the Sri Lankan government has promoted proper waste separation among households. Waste separation and cleaning of plastic items have begun with government assistance. Further, concerning the difficulties facing the separation, the government has advised the general public to segregate their household waste accordingly. Moreover, municipal councils do not collect non-segregated waste from households.

However, 13% of the population does not separate their household waste. Only 49% of the population maintained separate bins for waste disposal. Conversely, 85% of the population separately collects their waste from other solid waste, which is a remarkable improvement.

**Graph 13: Method of separating domestic solid waste from other waste**



Educate the public by conducting awareness programs regarding proper waste disposal, plastic consumption, and health issues (health issues due to the use of PET water bottles, juice bottles repeatedly, and using non-food graded packaging to store food items) may facilitate in reduction of the information gaps causing asymmetry of information and poor awareness. Through proper education, this public attitude and waste disposal practices can be changed. Thus, education about the consequences and proper waste disposal practices from childhood seems a crucial requirement.

It is noted that very few people are willing to return their non-recyclable plastic to the shop without any incentive (Graph 15). A significant portion of the population is never willing to return their plastic items. However, it is noted that the majority of the population agrees to bring back their plastic waste if they receive any incentive in return (Graph 14).

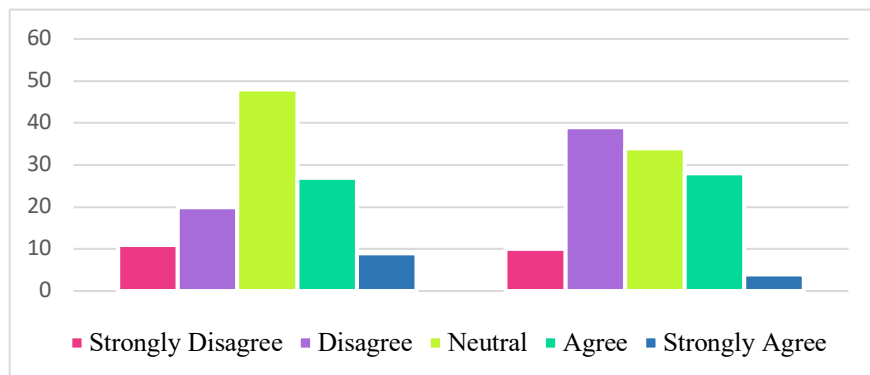
Thus, Companies and manufacturers shall take responsibility for the product's end-life impacts. That should be initiated by reducing dependency and unnecessary utilization of plastics from the point of design and choice of materials. This can be effectively implemented by providing financial incentives (reducing some amount from the final bill or collecting as points in loyalty cards) for the consumers who return recyclables since consumers

are highly sensitive to economic factors, people will motivate and attempt to follow that.

As per the results, it is revealed that consumers do not pay sufficient attention to the labels that are available to ensure environment-friendliness (Graph 16). Further, it is indicated that the majority of consumers do not consider recyclability when making purchases (Graphs 16 and 17). Therefore, this confirmed that even though most people consume plastic and polythene because of the reliability of such items (graph 02), they do not consider the recyclability grade of the item which they reuse. In contrast, very few consumers have considered labels that indicate environment-friendliness (such as CFC-free) and recyclability grade before making the purchases (Graph 17).

**Graph 16: Usage of labels that ensure environment friendliness**

**Graph 17: Examine the grade number that indicates recyclability.**



## **Practical Implications**

The findings can be taken into consideration to minimize the harmful effects of plastic and polythene disposal behaviour among consumers in Sri Lanka. Especially if relevant government authorities, environment-conscious activists, and groups can implement proper strategies to increase consumer awareness regarding the harmful impacts of plastic and polythene usage along with proper garbage collection and recycling systems. Such initiatives will be able to enhance the image of Sri Lanka as one of the most beautiful places in the world.

## **Limitations of the Study**

Due to the COVID-19 pandemic, human interference with the participants was limited. Thus, the data was gathered via a detailed online questionnaire.

## **CONCLUSION**

One of the main sources of intense plastic and polythene waste generation in Sri Lanka can be identified as the extreme volume of plastic and polythene consumption among the public. But according to the findings of the research, it is identified that the environmental consciousness among the people in Sri Lanka is very high (Mean Value =4.39). But a significant difference of 0.8466 between the mean values of environmental consciousness and their actual behaviour was identified from this study. Thus, it is confirmed that though most consumers hold positive attitudes towards environmental consciousness not to translate into respective behaviour to the same extent. Then what may be the reasons behind the difference between behaviour and attitude? According to the results, the lack of suitable alternatives causes an increase in plastic and polythene consumption. As well as according to most of the residents who engaged in open burning and open dumping, the lack of appropriate options for disposing of polythene and plastic waste caused them to follow such methods. Further, the unawareness of the health risk of repeat usage of single-use plastics was highlighted in this study.

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# **Influence of Presenteeism Factors on Employee Productivity: A Study of Sales Officers in the XYZ Insurance Company**

S. V. H. Silva<sup>1\*</sup>, P. E. D. D. Silva<sup>2</sup>

<sup>1\*</sup>*Faculty of Management and Finance, University of Ruhuna, Sri Lanka  
s\_viraji@yahoo.com*

<sup>2</sup>*Faculty of Management and Finance, University of Ruhuna, Sri Lanka  
peddsilva@gmail.com*

## **ABSTRACT**

*Presenteeism as a concept that is rarely concerned in the organizational context by the managerial levels compared to absenteeism, has been incurring a hidden cost and lost productivity to the organizations. To thrive in the competitive business arena, it is mandatory to address the factors influencing presenteeism which reduce the employee productivity. Following the problem, aim of this study is to test presenteeism factors influencing the employee productivity in the insurance sector. The specific objectives pursued are to examine the influence of institutional factors of presenteeism on employee productivity; to examine the influence of organizational culture, supervisor disagreement, work-family conflict, family-work conflict & workplace stress on employee productivity; and finally, to validate the relationship of presenteeism on employee productivity in the insurance industry. Hypotheses are generated and tested based on the specific aim to investigate the elements that influence employee productivity at XYZ insurance company. The study is led by the pragmatism paradigm and used a variety of research techniques to target the specific insurance firm. Primary data of the study is gathered using a web-based self-administered questionnaire prepared by using previously validated items and it is distributed among the study population by employing a convenience sampling technique. 150 responses are received from the sales officers of Western province in the XYZ Company. To aid in the achievement of the goals, data is analyzed using SPSS. The significant determinants of presenteeism, which are organization culture, disagreement of the supervisors, work-family conflict, family-work conflict & workplace stress indicated negative influence with the employee productivity. The study recommends the need for companies to continuously invest in negative*

*influences in terms of organizational culture, work-family conflict, family-work conflict & workplace stress to increase employee productivity.*

**Keywords – Organization Culture, Presenteeism, Supervisor Disagreement, Work-Family Conflict, Workplace Stress.**

## **INTRODUCTION**

Presenteeism is defined as reduced productivity at work due to health problems or other events that distract one from full productivity which leads to extremely high economic and social burdens. (Pohling et al., 2016). In addition, presenteeism is known to occur when employees go to work while sick and are unable to perform efficiently because of their illness (Cooper, 1998). Therefore, due to the loss in productivity, it has been estimated that presenteeism costs of organizations are more than sickness absence, and as such, it should be monitored to a greater extent. It affects workers' health, well-being, resilience, and organizational health. (Schaefer, 2007).

Presenteeism is growing more prevalent in the workplace culture, and it has a significant influence on businesses. According to Paul Hemp (2004), presenteeism indicates 63% of the organizational indirect medical cost while absenteeism is just 6%. In fact, according to a recent study conducted on United Kingdom originations (CIPD, 2018), it was proved that presenteeism has tripled since 2010. Even in the year 2020, when working from home came to play due to the Covid pandemic, findings have shown that presenteeism is the same regardless of the location of work due to the fact that the pertaining issues of presenteeism are not addressed properly (CIPD, 2021).

Presenteeism in the workplace has been incurring a relatively high cost that is hardly visible in the financial reports. The total cost of presenteeism for U.S. companies exceeds \$150 billion a year, which is reportedly more than the cost of absenteeism (Hemp, 2004). Presenteeism at work reduces productivity, lowers work quality, and increases the risk of developing health problems. It is especially high in groups who deal with a lot of stress. Variables associated with the individual, such as current health issues and health risk factors, as well as organizational variables, such as management leadership style, available resources, and the presence and degree of corporate restructuring, have all been linked to presenteeism in studies (Burton et al., 2006).

## Research Problem

The recent pandemics has transformed work on an unprecedented scale. Organizations have to deal with many challenges, from sickness and loss to absence and redundancy. Although more employers are committing to their employee's health and well-being (especially their mental health), there is significant space that needs to be improved in terms of productivity. Presenteeism is widespread, with many employees feeling like they could not stop. More organizations are tackling presenteeism compared to the past years, yet 2/5s of organizations experiencing these issues are taking no action whatsoever (CIPD, 2021).

According to the literature, presenteeism can significantly predict the productivity of employees and improve their self-efficacy level to reduce the negative influence of presenteeism on productivity loss (Li et al., 2019). Finding the presenteeism variables that may affect an employee's productivity and lessen the negative effects on an organization are of utmost importance because they are a significant aspect of the organizational context. However, the theoretical and empirical knowledge regarding the presenteeism factors that influence on employee productivity is limited (Jayaweera, & Dayarathna, 2021, Samarasinghe, 2021) and generalizability of previous study findings to the country likes Sri Lanka is difficult due to the differences between the employees in developed and developing context. Moreover, previous studies only focused about the influence of absenteeism on employees' productivity and not properly address the presenteeism factors that might influence on employees' productivity in developing context.

Considering the existing body of knowledge, researchers in developing context mostly explored the introduction and review of presenteeism, rarely studied the acting mechanism between the relevant variables, and limited number of researchers have presented the influence of organizational culture, supervisor's disagreement, work-family conflict and workplace distress on presenteeism that has influenced the employee productivity. Therefore, to fill this theoretical and empirical knowledge gap this study carried out to examine the Influence of presenteeism on employee productivity in Sri Lankan context.

Insurance sector is considered as one of the rapidly growing industry and the economic value generated to the economies are high compared to other industries. Furthermore, it is drastically expanding to the countrywide; they provide large number of employment opportunities to the country and due to that, it is important to economic development of each country. Due to the

nature of careers in insurance industry presenteeism became a critical issue. Thus, this study specifically focused on insurance industry and explore presenteeism factors that might influence to the employee productivity.

## **LITERATURE REVIEW**

### **Presenteeism**

Cooper, a professor of psychiatry at Manchester University with a focus on organizational management, invented the notion of presenteeism in the early 1990s (Chapman, 2005). Presenteeism is defined in several ways. Cooper (1998) describes presenteeism as an action made by employees to demonstrate their dedication to the organization because of job insecurity, and it is defined as employees working or seeming to work for lengthy hours. Correspondingly, Simpson (1998) referred to presenteeism as the propensity to stay at work longer than is necessary to be productive.

Hemp (2004) asserts that many of the health problems brought on by absenteeism are seriously risky. Among the chronic or episodic conditions researched in this new discipline, include seasonal allergies, asthma, headaches, depression, back pain, arthritis, and gastrointestinal disorders. The truth is that people do not function at their best when they are not feeling well. Employees with depression may be exhausted and irritable, which makes it harder for them to collaborate well with others. Blurred vision, sensitivity to light, and intense pain are all common symptoms of migraine headaches, making it difficult for sufferers to spend all day staring at a computer screen (Hemp, 2004).

Presenteeism reflects employees' concerns about making good impressions on their bosses, showing complete dedication to their jobs, and proving their worth to the organization (Garrow, 2016). It may also involve attempts by the employees to avoid creating the 'wrong impression of them not contributing to the organization. Employees with lower income may be unable to make ends meet on a smaller salary and therefore cannot risk missing days away from work (Neo et al., 2021). This is especially prevalent amongst service industry workers who are also less likely to have paid sick leave (Miller et al., 2020). A meta-analysis of more than 100 studies found that employees experiencing job insecurity related to potential unemployment, or those hoping to achieve permanent status also have a higher likelihood of engaging in presenteeism (Miraglia & Johns, 2016)

Johns (2012) and Koopman et al. (2002) described presenteeism as

employees performing at a lower level than their usual productivity level despite they are physically present in their professions. This research explained that working while ill causes much more productivity loss than absenteeism (Collins et al., 2005). According to the same study, presenteeism forces employees to show up for work even while their physical and mental health make it harder for them to do their jobs well. The nature of the health issue itself, objective and perceived work characteristics, organizational policies and procedures, wider cultural and socioeconomic context, managers' relationships with employees and their effectiveness in implementing organizational policy, work-family conflict, and work distress have all been identified as causes of presenteeism in previous studies (Wynne-Jones et al., 2011). Among them, the Organization culture, supervisor's disagreement, work-family conflict, family-work conflict, and work distress causes affect mostly presenteeism based on the literature (Wynne-Jones et al., 2011) (Collins & Cartwright, 2012)

### **Organization Culture**

'Presenteeism cultures' in organizations are widely seen within the industries and it affects low replaceability, low control, conflicting demands, lack of work resources, and time pressure. Employers who rely solely on disciplinary measures promote presenteeism by mandating that workers report to work when they are physically or mentally unwell or when their productivity would otherwise be reduced (Schaefer, 2007). In conventional organizations, many assumed that absenteeism had a negative effect on performance and work productivity. So they tend to discipline the employees by imposing tight rules and regulations, policies, and procedures. Another element is how sick leave is distributed within an organization, albeit this may rely on the size of the company and the employee's line of work, both of which have been proven to have an impact on how quickly workers return to their jobs (Irvine, 2011). Organizational practices, such as a culture of workaholism (Schaufeli et al., 2009).

Insurance companies in Sri Lanka are known to be the most conventional industries in Sri Lanka with autocratic organizational cultures. Performance-based result-oriented cultures tend to result in complex organizational policies and procedures that affect employees' job satisfaction and employee performance (Rajakarier, 2020). According to the report, insurance sales employees are after commissions and sales targets. In achieving these targets, they usually find complexities and barriers in organizational cultures. In this context of presenteeism, cultural practices may further normalize behaviors

and attitudes of turning up for work while not physically or mentally active.

### **Supervisor's Disagreement**

Supervisors are in a position to listen to employee complaints and help workers acquire the resources they need. Numerous exploratory research have looked at how presenteeism in terms of supervisor disagreement can raise potential productivity loss. Supervisor support is the only dealing for presenteeism that has been found to be helpful. (Bergstrom & Lhagberg, 2009). This study examined the mediating role of distributive justice in the relationship between co-worker and supervisor disagreement and presenteeism since it was discovered that disagreement between coworkers and supervisors has a direct and indirect influence on presenteeism. Strong disagreement from supervisors decrease the survivability in work environments by increasing employee stress which impacts job satisfaction and performance and successively increase the presenteeism in organizations.

Opposition of the company is on how the employees are perceived. This demonstrates how poorly the company treats its employees. (Yoshimura, 2003). Disagreement of an organization means an organization and top-level managers neglect employees to achieve their expectations not only financially but also increase their problems and difficulties to provide moral support (Colakoglu et al., 2010). Further, Yang et al. (2015) institute that supervisor disagreement can destructively predict presenteeism over an increase in job stress and a decrease in distributive justice. Presenteeism is more rampant in organizations where employees are being held accountable for the work of others. - Middle management. The fear of being judged by the senior management coupled with the sense of being responsible for the performance of their teams may drive middle management to work harder, despite feeling ill (Gilbreath & Karimi, 2012).

### **Work-family conflict / Family-work conflict**

Work-family conflicts between work and family occur in two directions:

1. Conflicts originate from work to family space.
2. Conflicts originate from family to workspace.

Research indicates that employee health is impacted by work-family conflict and family-work conflict, which is linked to presenteeism (O'Driscoll et al., 2004). Huffman et al. (2003) found that seventy percent of employees are dissatisfied with their work-family balance, and fifty percent of those people are thinking about seeking for other jobs because they are having trouble

juggling both their personal and professional lives. Frone et al. (1993) indicated that Work-family conflict (WFC) is a two-way construct that represents two types of conflict. Work-to-family conflict occurs when work interferes with family life. When family life interferes with work responsibilities, it is called family-to-work conflict (FWC). Greenhaus and Beutell (1985) suggested three major sources of work-family Conflict: time-based sources, strain-based sources, and behavior-based sources.

### **Workplace stress**

Workplace distress is the unhealthy physical and emotional reactions brought on by an imbalance between perceived demands and perceived resources and capacities of people to meet such demands (International Labor Organisation, 2016).

Presenteeism is impacted by job pressures and a lack of social support through sleep disruption, psychological stress reactions, and physical stress responses (Furuichi, 2020). Both presenteeism and absenteeism are correlated with work demands, control, rewards, procedural fairness, interactive justice, and support from coworkers and managers. Additionally, by their effects on psychological and physiological reactions, workplace pressures and social support indirectly influence presenteeism.

In a study led by Cristina et al. (2020) the correlation between presenteeism and absenteeism in workplace distress was shown to be higher for presenteeism than for psychological distress and absenteeism. As a result, it was determined that presenteeism and the stress, anxiety, and depression brought on by the Covid19 epidemic are connected. Stress is a major factor in presenteeism, particularly in Asian countries. Presenteeism is a decision made by the individual to deal with psychological suffering by working, although that was proven to be more difficult to do than usual in circumstances such psychological disorders such as sadness and anxiety (Aronsson et al., 2000).

### **Employee Productivity**

When considering the cost of the resources used, productivity is a measure of the amount and quality of work completed (Miller & Monge 1986). Robin (2008) defined productivity as a gauge of a particular organization's overall production efficiency, effectiveness, and performance. Taylor and Baker (1994) upheld that a mental attitude is what makes someone productive. Existing is the mindset of advancement and continuous improvement. There is the knowledge that things can change. Employees can do better today than

they did yesterday, which is the guarantee. Regardless of how favorable things may appear, it is the desire to improve the circumstances at hand. It is the ongoing attempt to use innovative methods and the belief in human capacity.

A drop in an individual's productivity as a result of presenteeism and absence for illness has been referred to as health-related productivity loss (Koopman et al., 2002). Prior research has focused more on the detrimental effects of illness absenteeism on health-related productivity but less on the significant loss caused by presenteeism (Goetzel et al., 2004). Evidence has shown, however, that presenteeism causes firms to lose significantly more productivity than sick leave does (Weaver, 2010). Numerous studies have demonstrated that when workers are working in unhealthy conditions, negative effects including a quality decline, efficiency decline, and productivity sabotage are highly likely to happen (Prasad et al., 2004). More specifically, a greater percentage of their products would be compromised the worse the employees' physical and mental health was (Zhao et al., 2011).

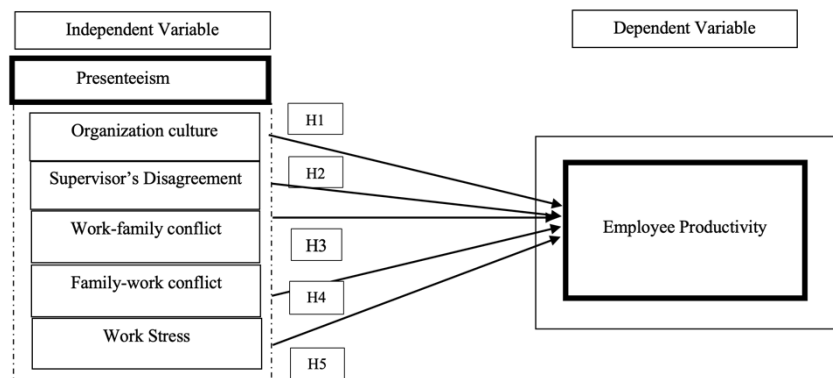
Employees frequently display lower productivity and performance when presenteeism occurs. Such a low level of individual performance and productivity would have a negative impact on the performance and productivity of the company (Kivimaki, 2005).

### Research model

Employee Productivity = f (Presenteeism) (Koopman et al., 2002)

Employee Productivity = f (OC, SD, WFC, FWC, WS)

**Figure 1 - Conceptual Framework**



Source; Author's constructed, 2022

## **The rationale for Hypothesis Development**

Based on the detailed findings of the literature, the researcher developed and took consideration into four factors of presenteeism which influence employee productivity, namely OC, SD, WFC, FWC, and WS, formulated the following hypotheses.

Hypothesis 1: Organizational Culture has a negative influence on employee productivity.

Hypothesis 2: Supervisor's Disagreement has a negative influence on employee productivity.

Hypothesis 3: Work-Family conflict has a negative influence on employee productivity.

Hypothesis 4: Family-Work conflict has a negative influence on employee productivity.

Hypothesis 5: Work stress has a negative influence on employee productivity.

## **METHODOLOGY**

The objectives are addressed by means of quantitative study designs that are definite, well structured, and evaluated for their validity and reliability. This research is being conducted utilizing the following quantitative methodology. In this research, the population is the total number of employees in sales carter of insurance industry in Sri Lanka. Due to practical limitations, study population was limited to the sales employees of XYZ insurance company in western province, Sri Lanka. Western province was selected as the study population, because large number of sales employees in the selected organization represent from Colombo district and large number of annual sales volumes was generated by them. (CIPD, 2021) Moreover, large number of employee groups from sales section represents Colombo district. For the sample, sales employees who work at the Colombo district XYZ company branches were selected and designed questionnaire was distributed among them by using convenience sampling technique. The researcher has done modifications to the Stanford Presenteeism Scale (SPS) developed by Koopman et al. (2002), Organizational culture dimensions were adopted from Cooke R. and Rousseau (1988). Participants perceived supervisor disagreement was measured using items adapted from Clark (2001) and the support of supervisor scale developed by Eisenberger et al. (1997). The

Work-Family Conflict Scale was developed by Carlson et al. (2000), which measured work-family conflict and family-work conflict, which is employed in the study. The workplace distress dimensions were adopted from (Cohen & Williamson, 1988). Employee productivity is measured with the scale of the Endicott Work Productivity Scale (EWPS) developed by Endicott and Nee (1997) which is adjusted to the XYZ company context. Since these scales are widely used in previous studies this proves the validity to use in this study. (Dorcas et al., 2010). 150 responses were gathered to analyze by exceeding the minimum sample size 87 determined by (Cohen, 1988). Data analyze was done by using SPSS 23 version.

## **DATA ANALYSIS**

### **Demographic profile of participants**

#### **Age Group**

The majority of the personnel in the sales carder of XYZ Company are noted as being between the ages of 21 and 30. This age restriction affects 50 employees, or 33.3% of the sample as a whole. Additionally, 25.3% of employees are under the age of 40, followed by 25.3% of employees between the ages of 41 and 50, and 16% of employees between the ages of 51 and 60 who are required to look out for the firm.

#### **Gender**

Among the whole sample of 150 employees, the highest percentage of the profile is recorded as male and is 59.33%, while the percentage of women is recorded at 40.67%.

#### **Marital status**

60.67% of the sample is married, which is a majority. Employees who are single make up 39.33% of the sample overall, with 59 out of 150 employees having this status.

### **Reliability Analysis on Dimensions**

The degree to which a research approach yields reliable and repeatable outcomes is expressed by its reliability. If a particular measurement is applied repeatedly to the same item of measurement and yields consistent findings, it is regarded as trustworthy.

In order to measure the internal consistency of the Likert scale questions of

each dimension are measured by the reliability analysis. Therefore the researcher tested internal consistency using Cronbach's alpha. According to Cronbach (1951), the internal consistency scale is assessed using Cronbach Alpha based on the number of items and score variances. George and Mallery (2003) provide the following rules of thumb: " $\alpha > 0.9$  – Excellent,  $\alpha > 0.7$  – Acceptable,  $\alpha > 0.6$  – Questionable,  $\alpha > 0.5$  – Poor, and  $\alpha < .5$  – Unacceptable". As shown by earlier studies, adequate composite dependability must be demonstrated at a threshold level of 0.7 or higher. (Bagozzi & Yi, 1988). According to table 1 below, which is based on the final model, the composite dependability is at a reasonable level above the necessary threshold.

**Table 1 - Reliability analysis**

	Reliability Statistics	
	Cronbach's Alpha	N of Items
Organizational Culture	.839	5
Supervisor disagreement	.897	5
Work-Family conflict	.919	9
Family-Work conflict	.891	9
Workplace Distress	.907	5
Employee Productivity	.935	5

*Source:* survey data – 2022

Table 1 illustrates that the statistical findings of the present research Cronbach's alpha values of all variables are greater than 0.7, which indicates that all the selected questions in the questionnaire have the necessary reliability to test the selected variables. The alpha coefficient of all the items suggests that the items have relatively high internal consistency.

### **Sampling adequacy**

A statistic called the Kaiser-Meyer-Olkin Measure of Sampling Adequacy shows how much of the variance in the variables may be due to underlying causes. High values (close to 1.0) typically imply that the data lend themselves to factor analysis. The hypothesis that your correlation matrix is an identity matrix, which would suggest that the variables are unrelated and hence unsuitable for structure detection, is tested by Bartlett's test of sphericity. Factor analysis may be helpful with data if the significance level

is small (less than 0.05). (IBM, 2016). A KMO value over 0.5 and a significance level for Bartlett's test below 0.05 suggest there is a substantial correlation in the data. According to Kaiser and Rice (1974), a Kaiser-Meyer-Olkin value of 0.65 or larger requires supporting the application of factor analysis.

**Table 2 - Factor Analysis**

Variable	Kaiser-Meyer-Olkin Measure of Sampling Adequacy	Bartlett's Test of Sphericity		
		Approx. Chi-Square	Df	Sig
Organizational culture	.832	280.119	10	.000
Supervisor disagreement	.868	436.965	10	.000
Work-Family conflict	.929	802.489	36	.000
Family-Work conflict	.879	669.956	36	.000
Workplace Stress	.876	464.934	10	.000
Employee Productivity	.895	610.768	10	.000

*Source:* survey data – 2022

According to table 2, all the variables of the current study showcase a KMO value above 0.65 and close to 1.0. The highest KMO value is recorded from WFC which is 0.929 while the lowest value is OC 0.832. This indicates that the current study's data are appropriate for the factor analysis.

Bartlett's test results show that all the variables in the current study are significant by .000 so that variables in the population correlation matrix are uncorrelated.

### **Relationship between the variables**

Previous research studies elaborate that there is a linear relationship between presenteeism and employee productivity (Hemp, 2004). Further, the OC, SD, WFC FWC, and WS are functions of presenteeism. Thus, the current study

sought to establish the relationship between presenteeism factors OC, SD, WFC, FWC, WS, and employee productivity. Guilford (1973) suggested a rule of thumb to interpret the correlation coefficient. He claims that the correlation coefficients' absolute values (+/-), which range from 0 to 0.2 to indicate a negligible relationship, 0.2 to 0.4 to indicate a low relationship, 0.4 to 0.7 to indicate a moderate relationship, 0.7 to 0.9 to indicate a high relationship, and 0.9 to 1 to indicate a very high relationship. Correlation analysis (Pearson coefficient of correlation) was obtained for each respondent and the results are summarized in Table 3.

**Table 3 - Correlation analysis**

	Employee Productivity	Organizational culture	Supervisor disagreement	Work-Family conflict	Family-Work conflict	Workplace stress
Employee Productivity	1					
Organizational culture	-.667**	1				
Supervisor disagreement	-.666**	-.385**	1			
Work-Family conflict	-.666**	.494**	.601**	1		
Family-Work conflict	-.827**	.603**	.585**	.582**	1	
Workplace stress	-.881**	.519**	.623**	.570**	.758**	1

Source: - Survey data 2022

The magnitude of the association between presenteeism characteristics and employee productivity was highly significant at the 0.01 level, with moderate

and high relationships, as shown in Table 3 according to Guilford (1973). OC correlation coefficient is -0.667, SD correlation coefficient of -0.666, followed by WFC, FWC, and WS with correlation coefficients of -0.666, -0.827, and -0.881 respectively. These variables, OC, WFC, FWC, SD and WS have a negative correlation between employee productivity which is an increase in one variable is associated with a decrease in the other. This correlation between OC, SD, WFC, FWC, WS & EP implies that there is a relationship between the variables in the population as well as the sample.

As illustrated in the table highest correlation coefficient yielded -0.887 among workplace stress and employee productivity. The lowest correlation coefficient yielded -0.666 among work-family conflict, supervisor disagreement, and employee productivity.

### **Multicollinearity**

When a multiple regression model has multicollinearity, one predictor variable can be linearly predicted from the others with a high degree of accuracy (Hair et al., 2009). The Tolerance and Variance Inflation Factors are used to determine whether the regression model is multicollinear. Utilizing Tolerance ( $x > 0.1$ ) and VIF values ( $x < 10$ ), multicollinearity is examined. Results from the analysis of the gathered data are displayed in Table 4-4, and all of the variables produced significant values.

**Table 4 – Multicollinearity**

#### **Collinearity Statistics**

	Tolerance	VIF
Organizational culture	.600	1.666
Supervisor disagreement	.511	1.955
Work-Family conflict	.525	1.905
Family-Work conflict	.345	2.898
Workplace stress	.368	2.717

a. Dependent Variable: Employee Productivity

*Source:* - Survey data 2022

Table 4 shows that all of the independent variables included for this investigation have tolerance values more than 0.1 and VIF values lower than 10. As a result, it may be said that none of the independent variables have multiple correlations with the dependent variable.

## Testing Hypothesis

The overarching conceptual model of the current study has been put to the test using multiple regression analysis. A variable's value is predicted by multiple regression using the values of two or more additional variables. This makes it possible to assess the model's overall fit and variance as well as the relative contributions of each predictor to the total variance explained.

## Model Fitness

The model summary determines how fit the regression is. The joint link between the independent factors and the dependent variable is represented by multiple correlations (R). Employee Productivity is the dependent variable, and the R square value or Coefficient of Determination shows how much of the dependent variable is covered or explained by the independent factors (Organization culture, supervisor disagreement, work-family conflict, family-work conflict, and work stress). Zikmund and Gho (2000) proposed the following rule of thumb for assessing a relationship's strength based on its R-squared value: if it is 0.3 Very weak impact size, 0.3 r 0.5 weak or low effect size, 0.5 r 0.7 Moderate effect size, and  $r > 0.7$  large effect size.

**Table 5 - Model Summary**

### Model Summary

Model	R	R Square	Adjusted Square	R Std. Error of the Estimate
1	.938 <sup>a</sup>	.879	.875	1.37423

a. Predictors: (Constant), WS, OC, WFC, SD, FWC

(Source: - Survey data 2022)

The multiple correlation coefficient (R), as stated in the aforementioned model summary, is 0.938. The independent variable and dependent variable have a significant correlation because the coefficient is bigger than 0.7. It suggests that OC, SD, WFC, FWC, and WS have a significant impact on employee productivity. It guarantees the accuracy of the dependent variable's forecast.

R square's coefficient of determination is 0.879. As a result, the regression model has a strong effect size and is perfectly fitted. This implies that the regression model has successfully explained 87.9% of employee productivity. 87.9% of the independent variables' variance can be explained by the dependent variable. The R square will rise even when extraneous

independent variables are employed. Therefore, it should be adjusted using another coefficient called Adjusted R square (Adjusted R<sup>2</sup>). According to the results, 87.5% is covered by the regression model.

Moderate effect size,  $r > 0.7$  strong effect size.

### Analysis of Variance

The significance value statistic can be used to gauge the model's overall relevance. Regression ANOVA results that are significant indicate that the model is suitable. This guarantees the model's joint significance. To guarantee the overall significance of the model, the following table of analysis of variance (ANOVA) was provided.

**Table 6 - ANOVA table**

ANOVA <sup>a</sup>					
Model		Sum of Squares	df	Mean Square	F Sig.
1	Regression	1978.416	5	395.683	209.520 .000 <sup>b</sup>
	Residual	271.947	144	1.889	
	Total	2250.363	149		

a. Dependent Variable: Employee Productivity

b. Predictors: (Constant), WS, OC, WFC, SD, FWC

(Source: - Survey data 2022)

The overall regression model's fit to the data is evaluated using the F-ratio in the ANOVA table. The ratio of the mean square of the model (MSM) to the mean square of the residual or error is the test statistic (MSE). The overall statistical significance of the regression model is explained by the formula  $F(5,144) = 209.520$  (F - Value and degree of freedom). This shows that the overall model used can accurately predict the dependent variable statistically. Additionally, the model's P-value of 0.0000 ( $P > 0.05$ ), which denotes that the entire model is statistically significant, supports it. Regression modeling is therefore applicable. It shows that staff productivity has had a combined impact on all five independent factors.

## Multiple Regression Analysis

The pre-established hypotheses were tested using multivariate hypothesis testing methodologies, as was previously discussed. Since the conceptual framework of the current study includes just one dependent variable in addition to many independent factors, the answer is being measured using a Likert scale. The results of the regression analysis that was conducted to determine how independent variables affect employee productivity are detailed in the table below.

**Table 7 - Coefficients**

**Coefficients<sup>a</sup>**

Model	Unstandardized Coefficients		Standardized Coefficients		t	Sig.
	B	Std. Error	Beta			
1 (Constant)	27.928	1.256			22.241	.000
Organizational culture	-.271	.054	-.187		-4.999	.000
Supervisor's Disagreement	-.085	.039	-.088		-2.179	.031
Work-Family conflicts	-.061	.023	-.106		-2.660	.009
Family-Work conflicts	-.121	.027	-.222		-4.498	.000
Workplace stress	-.566	.054	-.501		-10.485	.000

a. Dependent Variable: Employee Productivity

(Source – Survey Data 2022)

When all other independent variables are maintained constant, unstandardized coefficients show how much the dependent variable fluctuates with an independent variable. By examining Beta under standardized coefficients, it can be deduced that employee productivity is negatively impacted by workplace stress the most—by -0.501; this effect is significant at the.000 level. Then the organization culture influences

negatively by -0.187, while family-work conflicts influence by -0.222. Both variables are significant at .000. The least negative influence is recorded by the work-family conflict a value of -0.106. With a significance of 0.009. This implies that when the OC, WFC, FWC, SD and WS increase by 1 unit, employee productivity will be decreased by the respective beta value when all other factors remain constant.

As illustrated in Table 7, independent variables were analyzed using regression analysis and the significance values are yielded. From the coefficient tab, it can be seen that when the other variables are controlled OC, SD, WFC, FWC & WS show a significant correlation with EP. According to Cohen's (1994) general rule of thumb, the result is not significant if the p-value is more than 0.05. The result is significant if the p-value is less than 0.05. It is highly significant if  $p < 0.01$ , and so on. Due to their P-values being less than 0.05, each independent variable in the study shows a very significant correlation between work-family conflict and presenteeism. All variables added statistically significantly to the prediction,  $p < .05$ .

Thus, the ran multiple regression predicts EP from OC, SD, WFC, FWC & WS as all these independent variables are statistically significantly predicted EP, by  $R^2 = .879$ . All four variables added statistically significantly to the prediction,  $p < .05$ .

## DISCUSSION

The hypotheses tested against the regression analysis results and findings are as follows.

Hypothesis 1: Organizational Culture has a negative influence on the employee productivity.

This hypothesis was supported through the regression analysis and as depicted in Table 7, with the magnitude of the standardized Coefficient value of -0.187, it is evident that this is a moderate significant variable that affects the variance of the dependent variable of Employee productivity in XYZ. The significance level is 0.000. This variable was selected and the hypotheses were developed based on previous research work of Collins and Cartwright (2012) where it was stated that organizational culture is a factor of presenteeism that a tight organizational culture increases presenteeism behavior and reduce and employee productivity. Thus, the results obtained for the present study, further establish the findings of previous research work.

Hypothesis 2: Supervisor's disagreement has a negative influence on the employee productivity.

This hypothesis is accepted through the regression analysis with a standardized coefficient value of -0.088 which is having a significant influence on the variance of the dependent variable. The significance level of 0.031 is also less than 0.05. This variable was selected and the hypothesis were developed based on previous research work of Collins and Cartwright (2012) where it was stated that supervisor disagreement influences increased productivity loss and that strong supervisor support conditions positively affect employee productivity and vice versa.

Hypothesis 3: Work-Family conflict has a negative influence on employee productivity.

The end finding is consistent with earlier literature. Conflict between work and family was also found to have a substantial impact on presenteeism by Arslaner and Boylur (2017). Work-family conflict was also recognized by Cicei (2012) as a predictor of presenteeism. Regression analysis with a standardized coefficient value of -0.106, which significantly influences the variance of the dependent variable, validated this hypothesis. Additionally less than 0.05 is the significance level of 0.009.

Hypothesis 4: Family-Work conflict has a negative influence on employee productivity.

This hypothesis was supported through the regression analysis with a standardized coefficient value of -0.222 which is having a significant influence on the variance of the dependent variable. The significance level of 0.000 is also less than 0.05. This variable was selected and the hypotheses were developed based on previous research work of Collins and Cartwright (2012) where it was stated that Family work conflicts of the employees influence the presenteeism behavior which leads to loss of productivity, that the high family work conflicts Value negatively affects employees productivity and vice versa.

Hypothesis 5: Workplace stress has a negative influence on employee productivity.

This hypothesis was developed based on the previous work of (Furuichi, 2020). This hypothesis was supported through the regression analysis with a standardized coefficient value of -0.501 which is having a significant influence on the variance of the dependent variable. The significance level of 0.000 is also less than 0.05. This variable was selected and the hypotheses

were developed based on previous research work of Collins and Cartwright (2012) where it was stated that stress developed in the workplace influence presenteeism behavior which reduces employee productivity, and that the high-stress levels negatively affect employee productivity, and vice versa.

<b>Hypothesis</b>	<b>Result</b>
Hypothesis 1: Organizational Culture has a negative influence on the employee productivity.	Accepted
Hypothesis 2: Supervisor's disagreement has a negative influence on the employee productivity.	Accepted
Hypothesis 3: Work-Family conflict has a negative influence on employee productivity.	Accepted
Hypothesis 4: Family-Work conflict has a negative influence on employee productivity.	Accepted
Hypothesis 5: Workplace stress has a negative influence on employee productivity.	Accepted

## CONCLUSION & IMPLICATIONS

This study examines the relative influence of presenteeism conditions on employee productivity. The outcomes recommend that a large proportion of presenteeism factors influence employee productivity, both individually and in combination. When firms are ignorant about the level of presenteeism among their employees and how to manage it, this often causes productivity loss which severely challenges cost-effectiveness. Evidence-driven intermediation could help reduce the productivity loss caused by presenteeism, particularly the insurance companies that contribute to lost productivity.

Productivity in the insurance industry is critical for an accurate estimation of the time and cost of a job (insurance policy). Having high productivity means optimal consumption of manpower resources. More accurate estimates of cost are to grow high profits, high morale of employees, and better relations between employer and employee. This is all the more important in Sri Lanka as the insurance industry workforce comes from varied backgrounds and different cultures and there is a shortage of sales employees.

In recent years, academics have made an effort to develop a thorough understanding of workplace presenteeism. The presenteeism literature is furthered by these findings in the following ways. First, by adding productivity loss as the outcome variable, this study explored the relationship between presenteeism behavior and its effect and explained the differences between the two. These findings in particular gave the link strong empirical support. The study made it clear that productivity loss is one of the negative effects of presenteeism, not one of its causes.

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# **The Impact of Ethical Practices on Job Satisfaction of Employees in Small and Medium Enterprises of Colombo District, Sri Lanka**

C.L Kuruppu<sup>1</sup>, A.A Lokeshwara<sup>2</sup>, H.L.W Hettiarachchi<sup>3</sup>,  
K.D.U.S Liyanage<sup>4</sup>, N. Ratnayake<sup>5\*</sup>, S.P.A. Jayawardena<sup>6</sup>

<sup>1</sup> Senior Lecturer, Sri Lanka Institute of Information Technology, Faculty of Business, Malabe, Sri Lanka  
chalani.k@sliit.lk

<sup>2</sup> Assistant Lecturer, Sri Lanka Institute of Information Technology, Faculty of Business, Malabe, Sri Lanka  
anuja.l@sliit.lk

<sup>3</sup> Undergraduate student, Sri Lanka Institute of Information Technology, Faculty of Business, Malabe, Sri Lanka  
bm19528656@my.sliit.lk

<sup>4</sup> Undergraduate student, Sri Lanka Institute of Information Technology, Faculty of Business, Malabe, Sri Lanka  
bm19522098@my.sliit.lk

<sup>5\*</sup> Undergraduate student, Sri Lanka Institute of Information Technology, Faculty of Business, Malabe, Sri Lanka  
nisansaratnayake@gmail.com

<sup>6</sup> Undergraduate student, Sri Lanka Institute of Information Technology, Faculty of Business, Malabe, Sri Lanka  
bm19524214@my.sliit.lk

## **ABSTRACT**

*Irrespective of the size, capacity and funds, business organizations of any scale in the present, observes a significant competition from the competitors on the ways of how they engage in their day-to-day operations. Ethical conduct of these organizations has begun to monitor by customers, legislative bodies and any other stakeholders, both from an internal and external perspective. It is not just the products or services that the stakeholders of any organization expect but the value they deliver. More pressure is on the organizations of small and medium scale as they lack the necessary funds, strategic information and other necessities to implement ethical business practices. Ethical Practices within these organizations leads to many desirable outcomes and onekey accomplishment would be a satisfied workforce. This study investigates how Ethical Practices could result in Job Satisfaction of Employees in the context of small and medium enterprises in the Colombo district of Sri Lanka and focus to evaluate whether Ethical Practices have*

*a positive strong impact on Job Satisfaction. The study is based on a quantitative research design. The survey method is used as the data collection method. Using this method, self-administered questionnaires and surveys are used as the primary data collection tools. These questionnaires were hand-delivered to the contributors by the researcher. Study has been conducted in selected sample and measures of the respective Employee Job Satisfaction, and the relationship will be evaluated using a correlation coefficient. The study aims to analyze the type of relationship which exists between the comprehensiveness of Ethical Practices assumed by small and medium enterprises in the Colombo district. Through this study, the researchers intend to provide recommendations to practitioners, owners, managers of these organizations to take necessary arrangements to implement Ethical Practices within these organizations.*

**Keywords: Employee Job Satisfaction, Ethical Practices, Organizational Culture, Small and Medium Enterprises (SMEs), Top Management**

## INTRODUCTION

There is a competitive world today, especially for organizations regardless their size, capacity, location etc. There is a marked trend of failure associated with organizations of small and medium scale compared to large scale organizations. Studies over the recent years are evidence for this. Such as, Adebisi & Gbegi (2013) conducted a study in Nigeria and found out lacking managerial leadership, marketing skills etc. are some major reasons for the fall of Small and Medium Enterprises (SMEs) while a study conducted by Mobley, Horner & Hollingsworth (1978) concluded that gaining access to markets, information support, and financial support are main reasons to consider. But apart from these conclusions it is well noted that these organizations cannot either perform or reach their organizational goals without a committed staff. It has become a mandatory fact that these organizations should have a set of loyal employees who fulfil their tasks precisely. Most importantly these employees should be loyal and faithful to the organizations that they work while having a sense of accomplishment. But to achieve this, organizations should ensure that the employees are satisfied with their job, and they feel secured within the organizational climate that they work in. In recent years, organizations have focused on restructuring and downsizing their organizations due to a number of factors and the growing competitiveness. As a result, organizations some of fundamental values which workforce expects from these organizations. Lacking 'Ethical Practices' is one major area to focus on in this context. Literally, ethics is associated with everything where absence of ethics could

consequence in many undesirable outcomes for organizations. It is not just a written document within organizational premises but a much complex and significant area for concentration. Lacking Ethical Practices would definitely lead organizations towards a fall. Many studies have proved a positive impact made by Ethical Practices on various aspects of small and medium scale organizations, especially Job Satisfaction of Employees. For example, Shafnaz (2019) concluded that ethics inspires employee's organizational commitment, performance, organizational citizenship behavior and Job satisfaction. Khomba and Vermaak (2012) stated that small and medium scale Enterprises face an immense rate of employee turnover due to the pressure to operate ethically in an economical and effective manner. Therefore, necessary attention should be given to ensure that Ethical Practices are established within these organizations. The present study attempts to discover the association between Ethical Practices and Job Satisfaction of Employees who are employed in SMEs in Sri Lanka. Although many researchers have been conducted regarding Job Satisfaction of Employees in Sri Lanka, almost no prior studies have been done to explore how Ethical practices impact on Job Satisfaction of Employees, especially in the context of SMEs in the Colombo district, Sri Lanka.

### **Research Problem**

The primary purpose of this study is to determine if there occurs a relationship between Ethical Practices and Job Satisfaction of Employees in SMEs. To the best of the researcher's knowledge, they have discovered that employees are satisfied with their job if the organizational culture enriches with Ethical Practices. Unfortunately, Ethical Practices (EP) are mainly discussed among large and multinational organizations rather than SMEs in Sri Lanka. In organizations, Ethical Practices are one of the major contributors to employee satisfaction as it shapes the organization's culture which employees grow with. Organizational Culture is a perception, not something that can be seen or physically experienced by the employees, it is something employees understand by their own experience (Twomey and Jennings, 2013 cited in Donovan, 2013). Apparently, they have found that workers are happy with their work assuming the hierarchical culture improves with Ethical Practices. Tragically, Ethical Practices are predominantly examined among huge and worldwide associations as opposed to SMEs. Organizations are worried about the responsibility of their workers on the grounds that their prosperity relies on representative commitment. With a leaner labor force, non-appearance and lateness become critical issues. In the event that representatives become less

dedicated to associations because of an absence of correspondence, they will channel their responsibility somewhere else. Wiid et al., (2013) states that unethical practices are prevalent in businesses in all sizes today and that SMEs are in a more vulnerable position when compared to large-scale organizations. SMEs in developing countries are lacking the awareness and understanding of the necessity of business ethics and its advantages since they lack long-term vision and focus more on survival in the short term (Turyakira, 2018) has further identified that SMEs in developing countries embrace unethical practices to remain afloat, due to a lack of financial resources to build up a formal ethical culture. Estimation of the Ministry of Industry and Commerce in Sri Lanka (2016), 45 percent of employment was occupied in the sector of SMEs and there is a higher employee turnover rate in SMEs. Regardless of that, the researchers conducted to monitor the EP and Job satisfaction of employees in SMEs are hardly founded when the scholars are more focused on large scale businesses. Therefore, it's essential to investigate the relationship between Ethical Practices and Job Satisfaction of Employees in the context of SMEs and measure the impact of them towards SMEs. Regardless of having done many explorations on factors influencing the Job Satisfaction of Employees in large scale organizations there is restricted writing zeroing in on this specific issue with regards to SMEs. Hence, this exploration will connect the common information hole while giving experiences on the effect made by Ethical Practices hands on the Satisfaction of Employees in SMEs. Also, this information assists institutes with better comprehension and value representative inclinations while creating projects and strategies intended to impact worker work responsibility through expanded work fulfillment.

### **Objectives of the Study**

This research study is expected to achieve the following objectives.

- To measure the impact of Organizational Culture and Policies on Job Satisfaction of Employees in SMEs.
- To measure the impact of Ethical Commitment of Top Management on Job Satisfaction of Employees in SMEs.
- To measure the impact of Ethical Practices on Job Satisfaction of Employees in SMEs.

## LITERATURE REVIEW

### The Aspect of Business Ethics

‘Ethics’ are defined in many ways according to researchers, such as according to Okafor (2011) it is an arrangement of moral philosophies and rules of behavior which implicates undertaking the right thing in the correct means. Ethics comprise broad philosophies of integrity, accountability, responsibility, and impartiality, and is focused on interior stakeholder concerns such as quality of product, the satisfaction of customers, employee welfare, and social responsibilities (Joachim and Joseph, 2014). Obalola (2008) argued that business ethics refers to the behavior that organizations must adopt in conducting its day-to-day operations both within the business environment in which they operate and maybe even outside the community. Johnson (2002) reported that most of the business organizations are just interested in making money without any consideration of business ethics and that they are referred to as capitalists in the purest form Bucholz (2003 cited in Turyakira, 2018 p.3) observed business ethics as directorial values, principles, and criteria that assist people to decide in what way things must to be done. Businesses and ethical values are often interrelated although there is no clear distinction between them and it is known as a basic application of general rules in business behavior (Hodgels & Luthans, 2003). Rossouw (2011) stated that business ethics is generally about the identification and implementation of standards relevant to conduct that would assure a business does not upset the interests of its stakeholders. Although ethical practices have been considered as a code of conduct in larger firms, recent studies have revealed that ethical practices in SMEs have gained considerable momentum. This fact is considered significantly distinct according to the general idea of how ethically SMEs operate compared to large-scale organizations. However, SMEs may have to increase their attention to ethical practices to reduce the gap in ethical behavior compared to large-scale organizations. “Customers value ethical businesses and once a business has lost trust by being unethical, customers will seek alternatives, or in the process of defending against lawsuits” (Donovan, 2013 p.51) which is seen as an obvious fact as creating value for the customers is believed to be a mandatory element by an organization in any scale. Small firms are by nature independent and self-managed (Spence & Lozano, 2000) but the responsibility of those firms together towards the society and a nation’s economy is not much different from that of larger firms.

Small and Medium Enterprises must identify the importance of ethical practices among their businesses since the recession has a considerable impact on SMEs compared to larger- scale firms resulting in hard survival for SMEs. Ethical practices among enterprises benefit those firms financially in the long run, whereas if the firms are lacking those practices it will result in drawbacks. In cases where any company seeks to be perceived as being trustworthy and a distinguished member of the business community, it should reflect and constantly implement the necessary standards being applied to business ethics Sroka and Szántó (2018) as the image of a business to retain honorably within the society is believed to be highly influenced by business ethics.

### **Organizational Culture and Job Satisfaction of Employees**

Organizational culture is a “set of key values, understandings, and norms that is shared by members of an organization as correct” (Daft, 2005, p. 422) while in simplest terms Lundy & Cowling (1996) stated that it is the ways in which things are done within an organization. Most definitions for organizational culture discuss values, beliefs, and behavior in common. Although culture is an intangible term, it is associated with both tangible and intangible benefits including some important outcomes such as job satisfaction of employees, employee retention (Macintosh & Doherty, 2010), leadership behavior (Tsai, 2011), and organizational effectiveness (Gregory, Harris, Armenakis, & Shook, 2009). Many researchers have emphasized that ethics and organizational culture have received a growing interest in the area of business ethics research. Huhtala et al. (2013) argued that besides organizations getting their jobs done, it is similarly important to note if they are done ethically and that even good employees can engage in unethical behavior by making unethical choices if the environment they work in does not emphasize ethical values. Further, they revealed that if ethical practices are implemented in the organization, employees would feel more engaged and committed to the organization, and the probability that they would compromise the organization’s standards is very low. Robbins & Coulter (2009) believed organizational culture is a perception that employees realize based on what they experience within the organization and although employees in an organization may differ in background, and levels of work, they tend to interpret organizational culture in the same way. Kawiana et al. (2018) stated that having a solid organizational culture would direct employees with a pure vision to carry out their responsibilities, while a weak organizational culture is to end in employees not mastering a clear orientation.

Huang and Wu (2000) concluded that result orientation, control, and management, professionalism that are considered to be components of organizational culture positively influence the job satisfaction of employees. Sapada et al. (2017) indicated that organizational culture including management policy concerning employees should be ethical with an approach including fairness, openness, in terms of compensation, career, and evaluation of employee performance, and the policy framework of any organization should be ethical such that the decisions in the organization does not only address the interests of management but also employees. SHRM (2022) stated that if believed that organizational culture positively affects organizational performance, it must be in a way where values are firmly upheld, and that a strong organizational culture provides many benefits such as superior trust and corporation, transparency in decision making, shared understanding among employees, etc. These studies have emphasized that it takes a certain level of involvement by the owners/managers of organizations to establish and maintain a decent culture. However, researchers like Lund (2003), Harrison, Chow and Wu (2003) argued that people are more and more interested in working in organizations with flexible organizational cultures and that companies operating with flexibility focusing on the support and development of employees will gain competitive advantage in their operations, but this perspective of flexibility-oriented organizational culture is a real challenge for traditional organizational cultures which are based on strong control and rigid structures. Abdullah et al. (2014) stated that organizational culture could be used as a referent point to analyze desired work behavior of employees.

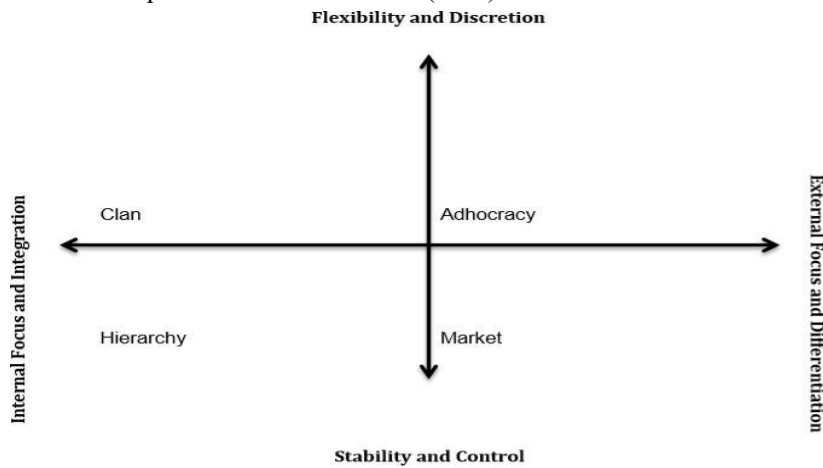
These insights on what organizational culture is, leads to the assumption that organizations may be called social groups and although profit maximization should be their main objective, they must also function in a way in which a decent culture within the organization is studied and promoted. Tharp (2009) stated that in the 1970s, there has been a universal rise in the global economy, this led organizations to migrate into big numbers of workers, and employees, which as a result made the organizations, become multicultural. The author revealed that in this situation many researchers tended to study if the values and behavior of employees influenced their performance and organizational performance. This can also be considered true when considering the common components of the many definitions provided by researchers that a proper organizational culture consists of values, ethical behavior, norms and this leads to many positive outcomes including job satisfaction of employees.

## Dimensions for organizational culture:

Schein (1992) proposed that organizational culture is comprised of three areas which are underlying assumptions, espoused values, and artifacts but researchers like Ubius and Alas (2009) described the domains of organizational culture as hierarchy, clan, market, and adhocracy.

Figure 1: The Competing Values Framework

Source: Adopted from Ubius and Alas (2009)



According to the model proposed by Ubius and Alas (2009) as shown in figure 1, the vertical axis specifies an organization's flexibility in dealing with issues while the horizontal axis indicates organizations that value control and tail hierarchical organizational culture which highlights documented procedures and processes. In here Adhocracy and Market culture represents external parts of the organization whereas Clan and hierarchy types focus on the internal effectiveness of organizations. A study conducted by Ginevičius and Vaitkūnaite (2006) used Denison organizational culture survey as a tool to identify dimensions of organizational culture and based on that they have identified the dimensions of organizational culture as involvement, consistency, adaptability, and mission as shown in table 1.

**Table 1: Dimensions of Organizational culture according to Denison organizational culture survey**

Dimension	Measures
Involvement	Empowerment, Team orientation, Capability development

Consistency	Core values, Agreement, Coordination, and integration
Adaptability	Creating change, Customer focus, Organizational learning
Mission	Strategic direction and intent, Goals and objectives, vision

Empirical studies conducted in the past few years have illustrated that employee's perception of the strength of organizational culture is a censorious element of human resource management (e.g. Allen 2006), whereas many researchers have also concluded empirically that organizational culture displayed a significant role towards job satisfaction as well as retention rate (e.g. Adkins & Caldwell, 2004). The ways in which organizational culture is considered in the context of ethics have been done in many ways by the researchers. For example, researchers like Abalala et al. (2021) considered the concern held by the employees regarding the firm's standards of how things work, processes, policies, rules, etc. reflects the ethical culture of an organization. Schwartz (2013) said that three main aspects must be considered in order to form and maintain an ethical culture for a business. These three elements are 1) presence of fundamental moral standards in its tactics, advancements, and practices in all phases of the business 2) integration of a proper ethical program 3) the existence of morally correct leadership in front of employees. It is the most common insight from the researchers who have studied in this area that culture within an organization has the significant ability to influence the long-term plans of a particular organization to achieve its objectives, while dictating processes and policies that enable the organizations to live its mission every day. Organizational culture should be created as well as managed, this should be done with the purpose of bringing together the values of organizations. If done properly, this culture can act as a catalyst to reap many benefits.

### **Ethical Commitment of Top Management on Job Satisfaction of Employees**

The top management is well known as the decision-maker of any organization and considered as the most important human capital within the company as well as a core team that influences the tactical choices and business performance of the association (Brown et al., 2005; Hoogh & Hartog, 2008; Tu & Lu, 2013; Tang et al., 2019). When the top management,

who are the leaders in an organization, adapt the ethical behavior to their career life such as honesty, fairness, trustworthiness, and care, they'll become genuine and trustworthy role models (Brown et al., 2005). Corporate Social Responsibility and business ethics are considered as essential requirements in today's corporate world and due to increasing attention, scholars have pointed out the importance of leadership at the top level as it is an essence of ethical practices in an organization (Brown & Treviño, 2006; Tang et al., 2015; Chen & Hou, 2016). Usually, because of the authority and the visibility of top management, if they engage in ethical practices and display a high level of ethical leadership, employees follow their way of behavior and engage in more helping and prosocial activities (Mayer et al., 2009). It is a Brown & Trevino (2006) belief that when the top management commits to the ethical practices, the middle level, and lower level workforces tend to behave ethically in return for the fair, honest and caring treatment of the top-level people and the organization. Brown et al. (2005) discovered that ethical leadership can provide great outcomes such as employee job satisfaction and dedication, the effectiveness of leaders and employees' full effort, and willingness to the organization. The ethical commitment of top management can influence the behaviors and turn into positive energy in the organization by exerting a cascading effect on the middle level and employees, so the ethical measurement of top management must be considered as a crucial factor that affects the company's effectiveness (Trevino et al., 2003). When the organization is governed based on rightful and ethical principles, employees seem to be confident about the fairness of the decision-making process (Shin et al., 2015).

Even though there is enough research done to measure the positive relationship of ethical leadership of top management and job performance, there are only few reliable past literature evidence on job satisfaction. According to Babin, Boles & Robin (2000), top management support for ethical practices in a company can influence the organizational values and the employees who feel honored to work in ethical organization are much more satisfied with their job. In 2015, a study conducted in South Korea had concentrated on top management's willingness to promote ethical behavior into practice and how its impacts on members' job satisfaction and turnover intention. After analyzing the results, they were able to discover that top management's will to put ethical management into practice will majorly effects employee job satisfaction and ultimately decrease turnover intentions as well (Kim et al., 2015). Increased rate of corporate failures due

unethical practices of corporate leaders is not only showing in developed countries but also in developing countries. Evident from Nigeria, one of the developing countries in the sub-Saharan Africa have proved the above statement (Bello, 2012). In 2011, a study was conducted to measure the impact of top management ethical behavior on employee job satisfaction. 120 employees of Bank Industry were taken as their sample study to analyze the relationship and impact of both variables. As the findings, researchers have shown a significant impact of higher management ethical practices on employee job satisfaction and top management considers as the role model in Pakistan Banks of their employees (Mumtaz et al., 2011). It is believed that ethics must begin at the top. Unless the top management's commitment to ethical practices are consistent, there would be much lesser opportunity to be successful in formal ethical codes and ethic training for their followers (Brown & Mitchell, 2010). According to Abbas and Kowang (2020), increased satisfaction of employees is achieved if the ethical practices are followed from the top of the organization. When leaders of higher management can communicate motivationally and spread awareness about work ethics, fellow workers tend to get higher job satisfaction. In 2018, a research was taken place in Italy to determine the relationship between ethical leadership of the top management and intention to stay in organization through the mediation of job satisfaction. Entire research was conducted based on the sample of non-profit Organizations' volunteers. They were able to discover that ethical leadership of the top management and volunteers' willingness to remain in business is fully mediated by employee job satisfaction and intention to stay in organization has complete indirect effect on ethical leadership (Benevene et al., 2018). There are no studies conducted to measure the impact of these variables in SMEs context and discovery of a positive correlation between the ethical commitment of top management and employee job satisfaction in SMEs might certainly have important consequences.

### **Job Satisfaction of Employees**

Most of the definitions of what job satisfaction is revolve around the consideration of the nature and importance of a person's work as a human activity. Cheung et al. (2009) identified job satisfaction as a person's enjoyable state that stems from one's own evaluation of one's work experience. Spector (1997) stated job satisfaction is the ways in which an employee feels about his/her job and its various aspects. It has a key concern on the extent to which the employee like or dislike the job. Job satisfaction can be described as the degree to which a worker is satisfied with the

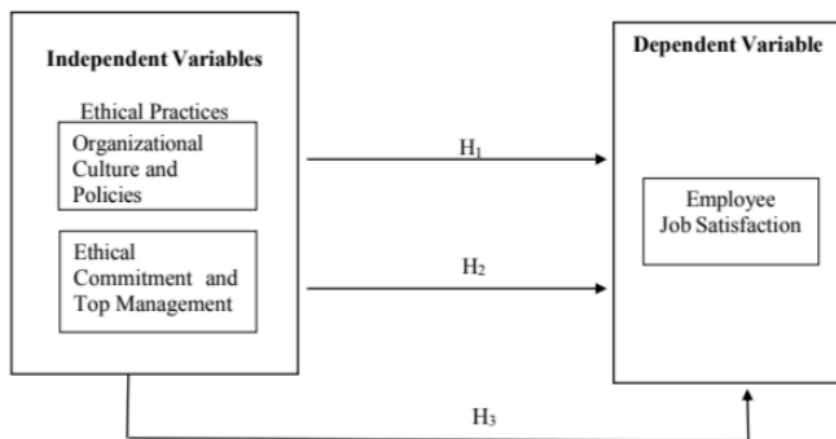
rewards he or she gets out of his or her job, particularly in terms of intrinsic motivation (Statt, 2004). Based on this definition, it is clear that the author limits the satisfaction to an internal factor. He assumed that the employee gets satisfied with his/her job in terms of intrinsic motivation regardless some important factors like work environment, policies, colleagues, supervisors, job role, etc. It is true that intrinsic motivation can be accepted as a motivational factor, but job satisfaction cannot be just based on the intrinsic benefits that an employee receives. Armstrong (2006) had a decent opinion on job satisfaction where he stated favorable and positive attitude towards work indicate job satisfaction while negative and unfavorable attitudes represents Job dissatisfaction. George et al. (2008) argued that employees' levels of job satisfaction could range from extreme satisfaction to extreme dissatisfaction, apart from having attitudes about their jobs as a whole. Kaliski (2007) referred to job satisfaction as an employee's sense towards achievement as well as the success on the job. The author further stated that this is positively linked to personal well-being and the productivity of the employee. Some factors like recognition, organizational culture, working conditions, management, etc. have been frequently used as measurements of job satisfaction. But many researchers like Koh & Boo (2001), Abalala, Islam and Alam (2021) stuck to the components of job satisfaction proposed by Smith, Kendall & Hulin (1969) where job satisfaction is measured through satisfaction with pay, promotions, coworkers, supervision, and the work itself. Although it has been some time since this research was conducted these measurements of job satisfaction seems to be expressively applicable in the modern era as well. These measurements considered job satisfaction as a composition of both internal and external factors and certainly, it is mostly used in modern researches. Some researchers like Aziri (2011) stated that the importance of job satisfaction comes into the attention mostly in situations which occur due to job dissatisfaction. Some of these situations were mentioned as lack of loyalty, increasing absenteeism, poor performance etc. Job satisfaction should be regarded as an essential component by organizations in determining whether the company has reached its goals where Junget al. (2004) mentioned that it is considered as an indicator which motivates employees to achieve both personal and organizational goals. Although the attention given on the job satisfaction of employees has taken a reactive approach in modern organizations, Braun et al. (2013) stated that job satisfaction has received a considerable attention for more than a decade because of the certainty that it shapes employees' commitment, behavior and performance. While organizations should work towards achieving their

goals and objectives, it is also necessary that the organizations are guided by human values. This would be oriented towards treating the employees fairly, with respect, and in these contexts, job satisfactions will definitely act as a fine indicator of employee effectiveness.

## CONCEPTUAL FRAMEWORK

The conceptual framework has examined the contributing variable to Employee Job Satisfaction and the impact of Ethical Practice on the success of SMEs. Job satisfaction is selected as dependent variable and Organizational culture and policies and Ethical commitment of top management as independent variables. Figure 2 represents what the researchers should study throughout the research process. This model has mostly progressed based on a literature review of existing studies on the topic 'The link between organizational ethics and Employee Job Satisfaction'.

Figure 2: Conceptual Framework



Source: Author Compilation.

## Hypothesis

H10- There is no impact of Organizational Culture and Policies on Job Satisfaction of Employees in SMEs.

H1a- There is a significant impact of Organizational Culture and Policies on Job Satisfaction of Employees in SMEs.

H20- There is no impact of Ethical Commitment of Top Management on Job Satisfaction of Employees in SMEs.

H2a- There is a significant impact of Ethical Commitment of Top Management on Job Satisfaction of Employees in SMEs.

H30 - There is no impact of Ethical Practices on Job Satisfaction of Employees in SMEs.

H3a - There is a significant impact of Ethical Practices on Job Satisfaction of Employees in SMEs.

## **RESEARCH METHOD**

Researchers selected 11 SMEs in Colombo district for the ease of execution and convenience of the study as the sample size obtained through simple random sampling technique was 85. This study is based on a quantitative research design. In order to achieve the objectives mentioned earlier in this article, researchers used a questionnaire to collect the required data. This questionnaire was based on previous literature prepared by Abalala, Islam and Alam (2021), Koh& Boo, (2001). The questionnaire composed of twenty-nine close ended questions and it was divided in to three sections where section one included questions regarding demographic information of the employees, section two consisted of questions regarding independent variables(Organizational culture and policies, Ethical commitment of Top Management) and section three consisted questions regarding the dependent variable 'Employee Job Satisfaction'. The dimensions for Employee Job Satisfaction were based on the study conducted by Koh & Boo (2001) and the dimensions of Organizational Culture and Policies and Ethical Commitment of Top Management was based on the study conducted by Abalala, Islam & Alam, (2021). Section two and three of the questionnaires were based on a five-point Likert scale where the answers ranged from strongly disagree to strongly agree. In here 1 represented strongly disagree and 5 represented strongly agree(1 = strongly disagree, 2= Disagree, 3= Neutral, 4= Agree, 5= strongly agree). As all the data required for the study was primary data, the survey was distributed online as an online survey. The researchers assumed online survey method is the most convenient method for data collection as mentioned by some previous researchers (e.g. Sekaran & Bougie, 2016). This survey was distributed to 85 employees employed in SMEs based in Colombo district and 80 responses were received with a 94% response rate. The collected data was analyzed using Statistical Package for the Social Sciences (SPSS version 22). This software was convenient for the study as it assisted the researchers to ensure that the

relevant issues are observed comprehensively. All the statistical tools suitable to analyze the relationship between the dependent variable and independent variables were used.

## RESULTS AND DISCUSSION

This section of the paper is intended to investigate the data comparative with the research objectives utilizing statistical and analytical tools. This chapter presents the analysis of quantitative results. Quantitative data analysis comprises of demographic data, validity and reliability testing, descriptive data analysis etc. Eventually the outcomes are interpreted to find the connection between the dependent and the independent variables of the study.

### Statistical methods

For this study data was collected using survey method. Employees working in SMEs in the Colombo district were selected as the target population. Descriptive statistics (e.g. Mean, Standard deviation, frequency distributions etc.) were used to build an outline of the respondents and for summarizing variables. Analysis of demographic information of the respondents explained that approximately 61% of the respondents were aging between 18- 25 years, 24% of the respondents were aging between 26-45 years, and 9% of the respondents were aging between 16-18 years and the rest aging above 46 years. As for the gender approximately 58% of the respondents were male and 41% of the respondents were female. Table 2 indicates the mean and standard deviation values obtained for each variable of the study. The mean value represents the average of the responses given to test each variable while the standard deviation indicates the dispersion from the mean. According to the survey results obtained from 80 respondents, the mean value obtained for the questions representing Organizational Culture and Policies was 3.7875, the mean value obtained for the questions representing Ethical Commitment of Top Management was 3.7667 while for Employee Job Satisfaction the mean value obtained was 3.5267. These results indicated that on average the respondents had a positive insight on each variable.

Table 2: The mean and standard deviation values of all variables

Variable	Mean	Standard deviation
Employee Job Satisfaction	3.5267	3.7667

Organizational Culture and Policies	3.7875	3.7875
Ethical Commitment of Top Management	3.7667	3.7667

### Reliability testing

For testing the internal consistency of the questionnaire, Cronbach's alpha coefficient was used. The results obtained from this test are as shown in Table 3. The Cronbach's alpha value obtained for the two independent variables, 'Organizational Culture and Policies' and 'Ethical Commitment of Top Management' were 0.827 and 0.808 respectively. The Cronbach's alpha value obtained for the dependent variable 'Employee Job Satisfaction' was 0.939. As all the alpha values obtained were above 0.80, it indicates that the internal reliability of each instrument is satisfactory according to the general rule of thumb.

**Table 3: Cronbach's alpha coefficients for each variable**

Dimensions	No of items	Cronbach's Alpha
Organizational Culture and Policies	3	0.827
Ethical Commitment of Top Management	3	0.808
Employee Job Satisfaction	15	0.939

*Source:* Author Compilation.

### Validity testing

Validity test was conducted to determine if the questions included in the questionnaire were fit to be included in the questionnaire. This was measured by Pearson Correlation coefficient. The results obtained indicated that most of the items have a Pearson correlation value above 0.7 and the rest between 0.3-0.7 indicating a positive relationship.

### Multiple regression analysis

Regression runs were performed through SPSS software to achieve the main objective of the study which is to measure if there is an impact made by Ethical Practices on Employee Job Satisfaction. The results obtained are summarized in table 4. According to the results, the overall regression

model was found to be significant ( $F_{2,77} = 46.928$ ,  $p < 0.05$ ) and has an adjusted R-square of 0.538 (R-square = 0.549) which indicates that about 54% of the variation in Employee Job Satisfaction can be explained by the variation in variables of Ethical practices. This level of R-square can be considered satisfactory as the objective of this model is to evaluate strength and direction of the association between Ethical Practices and Job Satisfaction and not to forecast only Job Satisfaction. In order to test the research hypothesis, significance of the t-tests for the model coefficients is assessed as shown in table 5. According to the results, the p-value for 'Organizational Culture and Policies' was found to be 0.066 which is not significant ( $0.066 > 0.05$ ). Therefore, the null hypothesis H1 (that there is no impact of 'Organizational Culture and Policies' on Employee Job Satisfaction) could not be rejected indicating that Organizational Culture and Policies cannot be considered as a driver for Employee Job Satisfaction. Although some researchers like Koh & Boo (2001) found that Organizational Culture and Policies positively associated with Employee Job Satisfaction, the results of this study found out otherwise. This could be factual as these researchers segregated Organizational culture into three components as Egoistic Climate, Benevolent Climate and Principled Climate. The p-value for 'Ethical Commitment of Top Management' was obtained as 0.000 which indicated a high significance level ( $0.000 < 0.05$ ). Therefore, the null hypothesis H2 (that there is no impact of 'Ethical Commitment of Top Management' on Employee Job Satisfaction) can also be rejected. This specified that Ethical Commitment of Top Management has a significant impact on Employee Job Satisfaction.

**Table 4: Summary of the model**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.741 <sup>a</sup>	.549	.538	.49699

a. Predictors: (Constant), ECTM, OCP

**Table 5: Summary of the Coefficients**

Unstandardized Coefficients	Standardized Coefficients
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Model		B	Std. Error	Beta	T	Sig.
1	(Constant)	1.010	.270		3.747	.000
	OCP	.209	.112	.238	1.864	.066
	ECTM	.458	.109	.537	4.204	.000

a. Dependent Variable: JS

## IMPLICATIONS OF THE FINDINGS

The findings of the results are consistent with the expectations and mainly with previous findings in the similar literature. However, the authors find the findings of this study are much stronger as significant relationships were found between the measurements of Ethical Practices (namely Organizational Culture and Policies and Ethical Commitment of Top Management) and Employee Job Satisfaction. It is noted and statistically proved in this study that Organizational Culture and Policies and Ethical Commitment of Top Management has an association between Employee Job Satisfaction as the research model was found to be statistically significant. But only one measurement of Ethical Practices was found to be significant (Ethical Commitment of Top Management). Thus, by willfully working on these findings, people who are accountable and in-charge of these organizations, especially Top Management of these organizations can take necessary steps in order to develop satisfied employees in the workplace. In addition, the authors assume that with an increased amount of respondents for this study Organizational Culture and Policies might also be proved statistically significant. Therefore, the research recommends for future researchers studying in a similar context, to focus on this as both measurements of Ethical Practices have been found positively associated with Employee Job Satisfaction, taken as a model.

## CONCLUSION, LIMITATIONS AND FUTURE RESEARCH

The study was focused on finding the impact of Ethical Practices on Job Satisfaction of Employees in SMEs. Ethical Practices in SMEs were measured under two dimensions, Organizational Culture and Policies and Ethical Commitment of Top Management. A questionnaire was distributed among eighty employees who are occupied in SMEs as the questionnaire was checked for internal reliability among questions and validated prior to the final dissertation. As per the results, a significant association was founded between Ethical Practices and Job Satisfaction of Employees. This

finding implies that employees, who are surrounded by ethical environment and support the Ethical Practices in SMEs, are more likely to be satisfied with their work that highlights the importance of carrying out the researches with the same context in the future. Results obtained from multiple regression analysis show that Ethical Commitment of Top Management has a significant impact on Employee Job Satisfaction. Therefore, corporate leaders in Top Management should generate organization decisions based on considering employee job attitudes/behaviors which will lead to company favorable outcomes in long run. Mayer et al. (2009) reported if the Top Management engage in Ethical Practices, employees tend to follow their behavior as of the higher authority and visibility which the study was able to prove from the statistic result. In this study, authors couldn't find a significant impact of Organizational Culture and Policies on the dependent variable, even though many empirical studies were able to prove a positive impact among the two variables.

Discussion of findings of the study would be accurate when the limitations of the study are disclosed as well. First, the sample of eighty employees may not be representative to the population of SME employees in Sri Lanka. Also, the findings wouldn't be generalized to every population and geographical region as the SMEs are operated under various conditions in all over the world. Second, it is noted that questionnaires which includes lengthy questions and contain jargons are more difficult to complete which leads to inattentive responds from the respondents. Third, the independent variables investigated in the study is limited to Organizational Culture, Policies, and Ethical Commitment of Top Management but in reality, there can be many aspects of Ethical Practices taken place in SME sector.

Finally, considering all the limitations of study, authors would be able to brighten the research pathway of researches with same context. Future researches can deeply investigate the modern approach of Ethical Practices established in SMEs and cover more organizational favorable outcomes and other dimensions of Ethical Practices.

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# **The Impact of Grievances Handling Procedure on Organizational Citizenship Behaviour: Evidence from Executive Level Employees in Selected Apparel Companies in Sri Lanka**

N. Jasintha<sup>1</sup>

<sup>1</sup> Lecturer, Department of HRM, University of Jaffna

*jasinthabn@univ.jfn.ac.lk*

## **ABSTRACT**

*The purpose of the study is to show the impact of grievances handling procedure have towards employee organizational citizenship behaviour. To what extent the employees are showing the exertion of effort at the work is still a puzzle. Expecting higher citizenship behaviour is the current phenomenon of every apparel industry to get the success and sustainability. However, previous studies, paid attention to organizational citizenship behaviours, but little attention was paid to grievance handling procedure with organizational citizenship behaviour especially for apparel sector. The population of the study consists of the executive level employees working in the garment factories around Sri Lanka. The sample consists of 285 employees selected using a convenient sampling method. Data was collected through the administration of a structured questionnaire survey. SPSS was utilized to analyse the data. The results revealed that the more grievance handling procedure leads to more citizenship behaviour at the apparels. Therefore, it is very much essential in giving ample amount of consideration to improve the citizenship behaviour. Thus, the organization's administration can use grievance handling factors as a tool to improve organizational citizenship behaviour of their employees. The study expands the frontiers of human resource management literature while also offering the community beneficial real-world applications. More rules could be created by policymakers to improve the citizenship behaviours of executive employees. This study can be carried out in a longitudinal manner to determine the actual degree of citizenship behaviours over time for greater comprehension.*

**Keywords: Grievance Handling, Supervisor's support, Job security, Working conditions and Rigid rules and regulations**

## **INTRODUCTION**

Employees are viewed as an organization's lifeblood. Employee performance can make or break an organization's success. Collective performance of all employees is vital since one or two people cannot achieve corporate goals

alone. Therefore, in general, managers should always strive to increase individual employee performance if they want to improve organizational performance. At the same time, all managers should prioritize employee satisfaction. On the other hand, employee happiness leads to higher productivity and lower attrition (Gregory, 2011). Getting a satisfied employee is a difficult thing to achieve because it varies greatly from person to person and job to job. When it comes to accomplishing objectives that are continuously targeted, organizational citizenship behaviour is crucial.

A complaint about the workplace or a problem with a co-worker's connection that occurs during a person's employment with an organization is referred to as a grievance. While grievance handling is the process of resolving problems that develop inside the business by comprehending the root causes of those problems in order to keep employees productive and effective in their work (Maduwanthi & Fahim, 2020). If the employment meets the individual's expectations, standards, and beliefs, organizational citizenship behaviour would also occur. One's commitment and performance would be impacted by how happy they are at work (Varma, 2017). Grievances arise in almost every workplace and handling them effectively and appropriately is crucial to maintaining a positive workplace culture. According to studies on grievance management, it is clear how issues are addressed and resolved in workplaces, such as through educating managers in addressing grievances, which includes having a fair dialogue and using participatory approaches (Gomathi, 2014).

Compared to other responsibilities, an employment occupies a sizable portion of an individual's life. The most crucial resource that plays a major role in the firm is human capital (Nurse & Devonish, 2007). These resources are mostly used to steer an organization's competitiveness and success. In this regard, managing human resources above all other resources is very critical while these grievances are there. The effectiveness of the workforce will have an impact on the productivity of all other resources, which will ultimately have an impact on the overall effectiveness of the business (Gamage & Hewagama, 2007).

Grievance suggests a real or imagined cause for complaint, particularly unfair treatment. It is the propensity to gripe about job circumstances and corporate practices that one deems to be wrong or unethical. Worker complaints may relate to compensation, the condition of the workplace, working hours, and other employment-related issues. Employee complaints used to be based on simple issues, but as competition has grown and businesses have gone global,

there has been a battle for talent in the market, which has led to more complex reasons for employee complaints. Numerous analysts have established clear links between worker complaints, employee performance, and turnover goals. In the unlikely event that complaints are not handled properly, it would immediately or later have an impact on the company's effectiveness and profitability (Mozumder & Ramlal, 2016). This indicates that it is crucial to handle matters separately where collective action will not be suitable because most recent cases have been individual cases involving the employee and manager and have not been collective grievances (Walker & Hamilton, 2011).

Practically speaking, dissatisfaction may be diminished to some level, but it is extremely improbable that this could be totally eliminated or obliterated. A grievance mechanism, however, would give a clearer understanding of the framework for resolving the problems. Managers must be perceptive enough to be aware of the issues of the staff before a clearly dire situation arises. Typically, that ought to be the norm and most effective method of staff supervision. In order for the issues to be found and fixed as soon as possible before a bad outcome happens. Nevertheless, whether this actually occurs efficiently in practice presents a problem. There may be too many people under the immediate supervisor's supervision at times, making it difficult for them to provide effective direction to every one of them. This leads to complaints from the supervisor's support staff. Bias and injustice in grievance handling are recognized in Sri Lanka as contributing factors to employee underperformance and unproductivity.

At the same time, the garment industry is very important to Sri Lanka's economy. It has been Sri Lanka's top gross export earner since 1986 and top net foreign exchange contributor since 1992. Over the past few years, labour productivity has gradually improved in a significant way. Several factors, including on-the-job training, suitable working circumstances, and suitable management techniques, led to this. Outsourcing labour, poor working conditions, a lack of staff who are properly trained and supervised, and strict labour laws are a few issues that have contributed to low productivity (Dheerasinghe, 2009).

The labour force, which is defined as the population that is economically engaged, fell from 8.592 million in 2019 to 8.467 million in 2020. Similarly, the number of people who are not working has climbed from 7.832 million in 2019 to 8.273 million in 2020. This increase in the idle population is the result of those who have lost their jobs and are actively looking for work.

This was mostly caused by containment and transportation restrictions that were in place owing of the COVID-19 epidemic (Central Bank Report, 2020).

Sri Lanka's labour force participation rate dropped from 52.3 to 50.6, with male involvement down 1.1% (from 73.0-71.9) and female participation down 2.4%. (34.5-32.1). Additionally, gender disparities in the labour force increased from 38.5% in 2019 to 39.8% in 2019. Employment in industry sectors as a percentage of total employment fell from 27.6% in 2019 to 26.9% in 2020. (Report, 2020). The garment industry employs a large number of people, and it can be difficult for management to keep track of so many people. The executive level personnel are put under some strain as a result, leading them to file complaints. The researcher has chosen the clothing business because of the intense workload and numerous complaints that a large staff would bring about. The Sri Lanka was chosen because it is a very well-known business location in the nation and has a large number of factories in a variety of industries. Further, Sri Lanka right now highly relying on apparel sector revenue.

Targeting the executive level employees stems from my belief that in order to manage a workforce effectively, effective management must come first. Since it is the executive level employees who actually carry out the work, if they are not satisfied, the lower level would also be impacted. The satisfied executive level is whom I aim for since they can improvise that influence on the bottom level. Because of the amazing productivity that may be anticipated through satisfied employees while lowering turnover rates, organizational citizenship behaviour plays a significant part in this.

The present pandemic situation has had a significant impact on the labour sector. With the containment and safety measures implemented, this has altered the workplace culture and working procedures. Employees' job security has suffered as a result of the current situation. Compared to the usual typical workplace culture, the working conditions have changed. With the rules adopted by the government of Sri Lanka, where the managers and supervisors must abide by the rules as a common context, the rules and regulations have grown more strict than usual. When taking into account all of the aforementioned problems, a single issue emerges employee grievances. Because the pandemic has caused a profound impact in the world. As a result, firms would like to adopt the worldwide changes in workplace culture, which have both positive and negative effects. The problem is that it's possible that this culture will endure until the world has fully recovered

from this crisis.

However, given that the majority of workers in the garment sector are women, they occasionally struggle to strike a balance between their professional and personal lives when taking into account their responsibilities as wives, mothers, or both. As a result, the working environment, supervision, and rules and regulations all have a significant impact on exertion of an effort of employees. Employees could experience a variety of problems. Because their contentment will immediately affect their productivity and efficiency at work, it is crucial to provide them with answers that will please them in their different roles.

Inadequate supervisor training to deal with conflicts with specific instructions, supervisors are unaware of employee problems, and there is a lack of discussion of the problems regarding the causes and effects are a few flaws that I have identified. These problems affect new employees who join the organization. Through appropriate grievance management methods and mechanisms, it is imperative to consistently maintain the standard of employee satisfaction in the employee's position in their work environment (Saundry, et al., 2014). The disagreements or problems are reduced or eliminated through effective grievance handling. Basically, solving their issues will allow them to operate cheerfully and peacefully, which will lead to employee organizational citizenship behaviour. If the complaints of the employees are not handled, they would not be working to the best of their abilities, they could be frustrated and consider about leaving, and there would be a problem if the project was not completed to the standard expected. Given the fierce competition in the labour market and the fact that employees have many options, corporate citizenship behaviour is crucial in keeping such valuable talent within the company.

New disputes would be resolved according to the manager's or the management's principles, but, if there were none. The useful side of this is that employee satisfaction and retention rates will rise when they perceive that their disagreements are handled effectively and sufficiently (Balaneasa & Manolescu, 2011).

However, the issue is that the managers do not place enough emphasis on these grievance-causing issues, and the grievance handling procedure does not proceed to the intended level. As a result, there is a gap in this circumstance that results from incorrect grievance handling technique which highly affect the employees' efforts. Through this study, researcher hope to close the knowledge gap on how important complaints are, how they may

affect organizational citizenship behaviour, and how a poor grievance management method may affect employee organizational citizenship behaviour.

## **Research Questions**

The prime question is:

Does the grievance handling procedure impact on employee organizational citizenship behaviour in selected apparel industries in Sri Lanka.

Further, the study investigates:

1. Does supervisor's support impact on employee organizational citizenship behaviour among the executive level employees in selected apparel industries in Sri Lanka?
2. Does job security impact on employee organizational citizenship behaviour among the executive level employees in selected apparel industries in Sri Lanka?
3. Do working conditions impact on employee organizational citizenship behaviour among the executive level employees in selected apparel industries in Sri Lanka?
4. Do rigid rules and regulations impact on employee organizational citizenship behaviour among the executive level employees in selected apparel industries in Sri Lanka?

## **Research Objectives**

### *Primary Objective*

To identify the impact of the grievance handling procedure on employee organizational citizenship behaviour among the executive level employees in selected apparel industries in Sri Lanka.

### *Secondary Objectives*

1. To identify the impact of supervisor's support towards employee organizational citizenship behaviour among the executive level employees in selected apparel industries in Sri Lanka.
2. To identify the impact of job security towards employee organizational citizenship behaviour among the executive level employees in selected apparel industries in Sri Lanka.

3. To identify the impact of working conditions towards employee organizational citizenship behaviour among the executive level employees in selected apparel industries in Sri Lanka.
4. To identify the impact of rigid rules and regulations towards employee organizational citizenship behaviour among the executive level employees in selected apparel industries in Sri Lanka.

## **LITERATURE REVIEW**

### **Grievance**

An employee's complaint may be against their co-workers or the job itself. This might arise within the course of their job's routine procedures. This can be a problem with the organization or the terms of employment that affects one employee or a group of employees. Any organization will experience personnel issues, regardless of how strong and capable the management is (Gomathi, 2014).

As per Gomathi (2014) employee would view this in a variety of ways as unfair and unwarranted, whether it was voiced or not and whether it was valid or not. This may be due to a number of variables, including the job assignment, working circumstances, salaries and benefits, leaves, transfers, service transmission, and promotions. If complaints are not handled effectively, the organization may experience a range of detrimental effects, including decreased employee morale and productivity. In essence, disagreements or complaints will occur in an organization even if it has solid and strong management, which highlights the need of grievance handling.

### **Supervisors Support**

Feedback on the work performed is very important to determine how well the employee is in performing his or her duties. The understanding and friendliness of the immediate supervisor, commending for good performance, listening to their thoughts, and displaying a genuine interest in their ideas will raise the satisfaction levels of the staff. The supervisor's obligation to provide opportunities for career advancement is equally crucial.

### **Job Security**

Every employee concern about their job security since stability comes from staying put. because adapting and becoming accustomed to a new environment takes time and effort. Therefore, by assuring job stability, it is possible to lessen employee complaints while simultaneously fostering better

organizational citizenship behaviours and mental health.

A reliable and trustworthy firm ought to have a system in place for handling complaints and for examining criticism of the senior management. In both personal and professional settings, faithfulness, authenticity, regularity, and devotion are significant elements of enchantment (Bhakar, et al., 2016).

### **Working Conditions**

This mainly refers to the physical appearance of the workplace; if it is pleasant and fulfilling, the employee will be content and at ease while working there. Employees would feel uncomfortable and not be able to perform at their best if the setting was unpleasant and unsatisfying (Akuratiyagamage & Opatha, 2004).

### **Rigid Rules and Regulation**

Employees who work in environments with rigorous rules and regulations may experience mental challenges as well as a sense of being severely constrained and lacking in personal freedom. The purpose of rules should be to limit undesirable outcomes and improper behaviour, not to contradict the mindset of the employees. So, when creating rules and regulations, managers should always consider the viewpoint of the employees as well and not just the needs of the organization.

### **Organizational Citizenship Behaviour**

Employees' attitudes about their employment from many angles and viewpoints, as well as how diligently they perform their obligations, make up their organizational citizenship behaviour. Employees' dedication to their employers is demonstrated by how they react to their relevant work in businesses (Lister, 2007). This could reveal how content an individual would be with their job. This reflects how much employees enjoy their jobs and effectively illustrates the gap between what employees expect and what they actually get.

## **METHODOLOGY**

### **Data Collection**

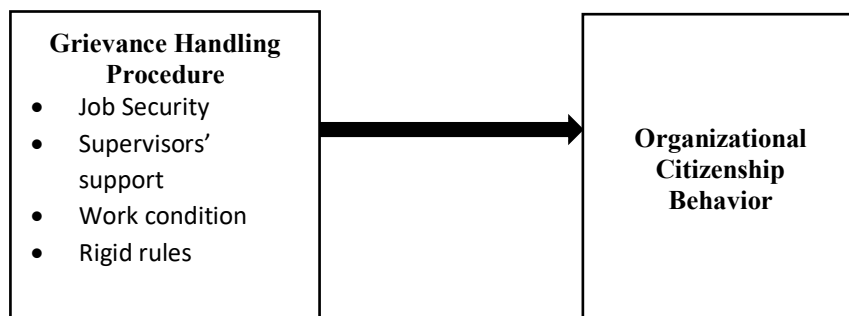
Utilizing quantitative research methods, the study was conducted utilizing the positivist research paradigm. Primary data were gathered online using Google Forms surveys. In order to conduct structured interviews quickly and with minimal effort on the part of the interviewer, self-completion

questionnaires were developed for use with the google form survey method. 285 executives from the MAS holdings, Hela Clothing, and Brandix apparel industries were polled in order to test the stated hypotheses. 297 of the 340 questionnaires that were given out were returned. The questionnaires that were returned had an 87% response rate. However, only 285 of the questions could be used. The questionnaires are divided into two sections: the first section includes demographic information, and the second section includes a Likert scale on a few chosen characteristics.

## Conceptual Framework

The conceptual framework makes the relationship between the variables understandable graphically. Four variables that make up the study's independent variables—supervisor support, job security, working conditions, and strict rules and regulations—have been used to characterize the grievance management process. As the dependent variable, organizational citizenship behaviour is taken into consideration.

**Figure 01: Conceptual Framework**



## Hypothesis of the Study

- H1: Grievance handling procedure positively affects employee organizational citizenship behaviour.
- H1<sub>a</sub>: Supervisor's support positively affects employee organizational citizenship behaviour.
- H1<sub>b</sub>: Job security positively affect employee organizational citizenship behaviour.
- H1<sub>c</sub>: Working conditions positively impact on employee organizational citizenship behaviour
- H1<sub>d</sub>: Rigid rules and regulations negatively impact on employee organizational citizenship behaviour

## **Measures**

The present study has adopted the questions from Rode (2004), Nijman et al (2006), Ashford et al. (1989), Kristensen et al. (2005) and Vazou et al. (2021) for the variables respectively, Organizational citizenship behaviour, supervisor's support, Job security, working condition and rigid rules and regulations. The researchers have used five-point Likert scale for the study. The response rate for the questions ranges from strongly disagree to strongly agree.

## **DATA ANALYSIS AND RESULTS**

Collected data were analysed using SPSS software package. Cronbach Alpha was used to check the reliability of the questionnaires. Relationship between variables was examined through Pearson correlation analysis and the impact of the variables was analysed through regression analysis.

### **Correlation Analysis**

All independent and dependent variable dimensions' Cronbach's alpha values are given above 0.6. This Table 1 highlights the fact that Cronbach's alpha for this instrument was greater than 0.6 and had values of 0.906, 0.799, 0.917, 0.660, and 0.930, respectively, with a significance of p.005. As a result, the research instrument was trustworthy and produced reliable data, and the internal consistency was great if it is above 0.6. As a result, it has been ensured that the scales selected are internally consistent. With a Pearson Correlation Coefficient of +0.765, +0.774, +0.822, +0.481 and +0.872 the relationship between employee organizational citizenship behaviour and the supervisor's support, job security, working conditions and rigid rules and regulations and finally with overall grievance handling procedure which was statistically significance at the 0.01. Of course, grievance handling procedure is needed for organizational citizenship behaviour as per this study.

**Table 1: Correlation Analysis**

	Employee Organizational citizenship behaviour	Supervisor's Support	Job Security	Working Conditions	Rigid Rules & Regulations	Grievance Handling Procedure
Employee Organizational citizenship behaviour	(0.93)	.765**	.774**	.822**	.481**	.872**
Supervisor's Support	.	(0.9)	.652**	.815**	.339**	.910**
Job Security			(0.82)	.763**	.428**	.854**
Working Conditions				(0.91)	.369**	.926**
Rigid Rules & Regulations					(0.67)	.555**
Grievance Handling Procedure						1

Source: Survey Data Analysis (2021)

## Regression Analysis

**Table 2: Model Summary**

Model Summary <sup>b</sup>										
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					
					R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.875 <sup>a</sup>	.766	.757	.35891	.766	81.206	4	9	.000	2.126

a. Predictors: (Constant), Rigid Rules & Regulations, Supervisor's Support, Job Security, Working Conditions

b. Dependent Variable: Employee Organizational citizenship behaviour

Source: Survey Data Analysis (2021)

**Table 3: ANOVA Statistics**

ANOVA <sup>a</sup>						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	41.843	4	10.461	81.206	.000 <sup>b</sup>
	Residual	12.753	99	.129		
	Total	54.596	103			

a. Dependent Variable: Employee Organizational citizenship behaviour

b. Predictors: (Constant), Rigid Rules & Regulations, Supervisor's Support, Job Security, Working Conditions

Source: Survey Data Analysis (2021)

**Table 4: ANOVA Statistics**

<b>Coefficients</b>					
Model		Unstandardized Coefficients		Standardized Coefficients	t
		B	Std. Error	Beta	
1	(Constant )	-.045	.241		-.188
	Supervisor's Support	.260	.091	.240	2.843
	Job Security	.276	.076	.283	3.640
	Working Conditions	.340	.094	.357	3.613
	Rigid Rules & Regulations	.161	.059	.147	2.727
a. Dependent Variable: Employee Organizational citizenship behaviour					

Source: Survey Data Analysis (2021)

The above table 2, 3 and 4 summarizes the findings from the multiple regression models created to examine employee organizational citizenship behaviour and grievance management procedures. The Durbin-Watson value in the model summary table must not be less than 1 or greater than 3. (King, 1981). The independence of the observations has been met if it falls within the specified range.

The table 2 in this study gives a summary of the model, and the R Square statistic, which is 0.766 and has a statistical significance of P 0.05, is the item of importance. This implies that 76.6% of the variations in the organizational citizenship behaviour (outcome) of employees were predicted by factors such

as supervisor support, job security, working circumstances, and strict rules and regulations (predictors). The independence of the observations has been satisfied because the Durbin-Watson statistic was 2.126 and between +1 and +3.

In light of table 4, the supervisor's support, job security, working condition, rigid rules unstandardized coefficient is equivalent to 0.260, 0.276, 0.340 and 0.161. It seems that even if any unit increases in the above said variables, it will lead to increase the times rise in organizational citizenship behaviour. The following regression equation can be derived from the available data to predict employee organizational citizenship behaviour from grievance handling procedures.

$$Y = -0.45 + 0.260 X1 + 0.276 X2 + 0.340 X3 + 0.161 X4$$

## CONCLUSION

Having citizenship behaviour in the organization is important for the employees to get successful organization. The impact of grievance management processes on employee organizational citizenship behaviour with particular reference to the garment industry in the Sri Lanka, four factors made up the grievance management process in this instance: supervisor support, job security, working environment, and strict rules and regulations. All four variables were positively connected with employee organizational citizenship behaviour, as determined by the regression study. The statistical analysis and discussion used to support the conclusion that the supervisor's support implemented by the garment sector has a major impact on the pleasure of its employees.

This study's further conclusion is that the stringent norms and regulations of the garment industry, as well as the job security and working circumstances, have a substantial impact on the organizational citizenship behaviour of their employees. As a result, the study's finding is that the way the garment business in Sri Lanka handles grievances has a big impact on how its employees behave in terms of corporate citizenship. Therefore, all four factors can be seen as important parts of the grievance management process that have a big impact on the way employees behave in terms of organizational citizenship.

## **Implications for the theory and practice**

Theoretical and practical ramifications of this study are also included. Few conclusions can be drawn from research findings. Regarding the theoretical ramifications, let's start by noting the vast number of research on the grievance management process that have been conducted in the West too far. However, researchers in developing countries have applied a haphazard method to their investigation of how grievance handling practices affect organizational citizenship behaviour. Consequently, those two have been combined in this study's Sri Lankan context. Additionally, it leads to the lack of knowledge regarding the causes of corporate citizenship behaviour. Second, by include an eastern nation like Sri Lanka in this study, the generalizability of organizational citizenship behaviour was increased. The study then focused on Sri Lanka, a developing nation with a high labour intensity, adding a geographic dimension. Similar to this, the study advances technique by demonstrating the reliability of the metrics used, which were developed in numerous cultural contexts.

It has various practical ramifications as well, none of which are less significant. Therefore, in order to lessen the adverse consequences of employee outcome, administrators, practitioners, and legislators must apply the best human resource management practices (Kengatharan, 2020). Top-level managers should think about how to improve employee citizenship behaviour and how to lower complaints. The appropriate authorities must have a clear plan for changing employees' work-related behaviours in order to encourage their commitment and make them dependable contributors to the organizations without suffering a loss of happiness, energy, enthusiasm, or engagement.

## **Suggestions for the Future Research**

Like the majority of studies, this one has some restrictions. First, medium level Sri Lankan employees in the garment business served as the study's sample. Additionally, information was conveniently gathered from a variety of district staff. The fact that participants came from a variety of backgrounds makes it rather difficult for this conclusion to be generalized. Few modifiers, such as age or gender, can be used in future investigations with a larger sample size. Second, the impact of the grievance handling process on organizational citizenship behaviour was examined. The grievance handling process has a 76% predictor level for organizational citizenship behaviour. It is possible to use additional predictors. Thirdly, this research is cross-sectional in nature. A longitudinal study ought to be carried out to examine

the relationship between these variables in terms of causality. Fourth, this study concentrated on employees in the private apparel industry. Future study in the telecommunications, aviation, food, and other industries can lead to the external validity of these conclusions.

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# Determining Factors of Failure in Women's Empowerment Micro-Credit Scheme of XYZ Bank

K.A.G Chammi<sup>1\*</sup>, N.S. Nanayakkara<sup>2</sup>

<sup>1\*</sup> Faculty of Graduate Studies, University of Sri Jayewardenepura, Sri Lanka,  
gayana824@gmail.com

<sup>2</sup> Department of Finance, University of Sri Jayewardenepura, Sri Lanka,  
neelangie@sjp.ac.lk

## ABSTRACT

*A primary goal of microcredit finance is women empowerment, and financial institutions offer different credit schemes to achieve this objective. However, the special women's empowerment microcredit loan scheme introduced by XYZ Bank which is one of the two national commercial banks of Sri Lanka failed to succeed due to a higher rate of non-performing loans. Therefore, this study aims to identify the factors that caused the failure of this specific women empowerment microcredit scheme. Four borrower-specific factors namely, borrower's character, non-commitment of the borrower, weaknesses of business operations, fund diversion, and two bank-specific factors namely, features of loan product, insufficient follow-up by the bank were identified through relevant literature, whereas the loan default was acknowledged as the dependent variable. Primary data were collected through a questionnaire distributed among the borrowers of this scheme and analyzed through, descriptive statistics including regression and correlation analyses. Responses were collected from both actual non-performing and performing borrowers, along with interview responses from loan officers to strengthen the findings and recommendations of the study.*

*The study shows that the non-commitment of borrowers, weaknesses in business operations, and insufficient follow-up by bank officers have a significant impact on the occurrence of loan default. Out of six variables, the coefficients of variables namely non-commitment of borrowers, weaknesses in business operations, fund diversion, and insufficient follow-up by bank officers were greater than point nine, confirming that these specific variables have a very strong positive association with the non-performing loan/loan default variable. Further, the  $R^2$  value of this model confirms that the independent variables used for this study explain ninety of the variances of the non-performing loans, and the remaining variance is explained by unidentified variables. Thus, the selected variables can be identified as the most suitable variables for measuring the variance in non-performing loans. The findings of this study will apply to commercial and specialized banks in Sri Lanka to improve their services in the micro-credit sector since the bank considered is one of the main*

*national banks that represent a countrywide customer base. It can be recommended that awareness and training programs for both customers and relevant officials of the bank can be implemented to improve the commitment of borrowers and follow-up procedures of banks.*

**Keywords – Empowerment, women, microfinance, commitment, follow-up procedures**

## **INTRODUCTION**

Microcredit is a vital mechanism in developing economies to reduce poverty and enhance the social well-being of the poor. In Asian societies, the empowerment and resources are mainly concentrated on men, which results in the deprivation of woman's rights (Malik & Luqman, 2005). Samant et. al. (Uttarakhand, 2019) defined women's empowerment as "a system where they enjoy equal rights, realize self-worth, become independent, feel confident, make their choices, and create an environment that is progressive and contributes to nation-building". It can be achieved through power enhancement on economic, social, political, and psychological grounds and since economic power is a foundation for total empowerment, microcredit and enterprise development are recognized as effective empowerment tools for women.

One of the positive impacts of microcredit can be considered as an improvement in women's ability to be influential in family affairs and decision making (Malik & Luqman, 2005), while the negative impact can be pilling up workload and responsibilities at home as a result of their involvement in income generating activities other than their traditional responsibilities in a highly restricting environment for women. A Non-Performing Loan (NPL) is "a loan in which the borrowers are in default to the fact that they did not make the scheduled payments within a specified period of usually 90 days". All the commercial banks in Sri Lanka have experienced a significant increase in non-performing portfolios during the last five years. According to the statistics of the Central Bank of Sri Lanka, the gross Non-Performing Advances (NPA) ratio has been claimed to be 4.9% by the end of 2020 from 4.7% in 2019 (2020).

XYZ bank is one of the leading commercial banks in Sri Lanka and launched a special microcredit loan scheme to finance small enterprises led by women. However, this product was not successful due to the high default rate. As per the information collected from the bank, the NPA ratio of the special microcredit scheme of XYZ bank increased from 5.5% in 2018 to 6.5% in 2019 and this ratio was 40% higher than the bank's overall NPA ratio in 2019.

According to the secondary data collected from the bank 12 non-performing cases were recorded per 100 borrowers in this special women's empowerment loan scheme. Because of this higher default rate, the bank later decided to merge this product with other common SME loan schemes.

Therefore, the purpose of this study is to identify the factors affecting the failure of this women's empowerment microcredit scheme of XYZ bank. In this study, the name of the bank is kept anonymous according to the request of the bank.

The research questions are,

What are the specific factors influencing the failure of the special women's empowerment microcredit loan scheme of XYZ Bank?

What is the nature of the relationship between such specific factors and loan default/non-performing portfolio in micro-finance for women's empowerment?

What are the most critical areas to focus on in the future to succeed in micro-credit schemes for women empowerment?

The objectives of the study were developed based on the research questions above where it identifies the factors, ranks them and analyzes the relationship, and focuses on the areas to succeed in microfinance schemes in the future.

## **LITERATURE REVIEW**

Bank credit has been recognized as the best mechanism to promote economic growth and income level among the poor in society (Khatayee, 2009). Lending is the core business of banking, and it is one of the most intricate services provided by banks. However, performing loans are the real asset of a bank and a high non-performing asset level is an indicator of poor performance. The factors affecting loan default of some loan products may be; borrower-related and borrower's business-related factors, microfinance institute-related factors, or macroeconomic factors.

The Asian Development Bank has defined microfinance as "the provision of a broad range of financial services such as deposits, loans, payment services, money transfers, and insurance to poor and low-income households and their microenterprises" (Sanderatne, 2002). According to Friedmann's (1992) analysis, women's empowerment can be achieved through power enhancement on economic, social, political, and psychological grounds. Since economic power is the base for total empowerment, microcredit/

microfinance and enterprise development are recognized as effective empowerment tools for both men and women. Micro Finance Institutes (MFI) are advised by the government to encourage women to make them financially and socially empowered as most of the poor population comprises women in the world.

Non-performing borrowers are an additional cost to banks and NPLs make the asset quality and profitability of the bank deteriorate. There is empirical literature that has been conducted to identify the factors affecting non-performing loans. However, it is rare to find studies that specifically assess the factors affecting the non-performing of women's empowerment micro-financing loans and factors that lead to the failure of such schemes. According to Viswanadham and Nahid (2015), there are seven principal models of non-performing loans emphasizing different causes, namely; risk premium, principal-agent problem, adverse selection, moral hazard, patronizing effect, and die another day, and Petroski effect. The risk premium model which was recommended by Ewert, and Schenk (2000) and it suggests that financial decisions incur different degrees of risk (Viswanadham & Nahid, 2015).

The idea in the model of the principal-agent problem is that the authority of decision-making of the organization lies in the hands of managers. Managers may pursue their own goals, yet they have to work hard to maximize the profit of the organization, to obtain higher rewards. The concept behind the adverse selection model is that borrowers do not always provide all information required. The model moral hazard describes that the borrowers who can get internal information take hidden actions that increase their default probability.

The model patronizing effect explains that there is a possibility, that lenders are unwilling to collect or recover debts. The unwillingness may arise due to internal factors including poor policies, procedures, rewards, structure, and physical settings etc., and such internal problems either weaken the management or motivate borrowers not to repay the loans. The model dies another day believes that the people in our society give more importance to current consumption. They do not mind spending borrowed funds on consumption if they are not strictly followed up. In the circumstances where credit managers make different types of loans and they expect the same characteristics to affect other types of loans is presented by the model Petroski effect (Viswanadham & Nahid, 2015). According to the theories described in the above models and practical scenarios, the causes behind loan defaults can be categorized as borrower-specific factors, business/enterprise-

specific factors, MFI-specific factors, and other macroeconomic factors.

Borrower-based factors are the internal factors that are related to the attitudes, skills, competencies of the borrower, and the borrower's business performance. Normally banks do not finance projects where the key personnel does not have enough background in the business. Lack of experience in the business is considered risky by the bank and it may lead to failure in projects. Masum (2014) stated that "It is true that youths coming from the business background are familiar with business and banking but there are other ways to get oriented with the same, not necessarily one has to come from business family". Kohansal et.al (2009) found that farmers' income, experience, received loan size, and collateral value have a positive effect on the repayment of loans. The loan interest rate and the number of installments indicate a negative effect on the repayment performance of borrowers.

According to Asfaw et. al. (2016) in their study, poor credit culture of the borrowers and lack of knowledge in their businesses, fund diversion, wilful defaulting, and project management problems are the major customer-specific causes of non-performing loans. Oladeebo (2008) found that socioeconomic factors influenced the repayment of loans by small-scale farmers in the Ogbomosho agricultural zone of Oyo State in Nigeria. The study further emphasized that the level of education is a major factor influencing loan repayment and it positively and significantly influenced repayment of loans in the area.

Borrowers' unwillingness to repay the loans and their over-indebtedness are the most common reasons for loan default. This statement was further proven by the results of the study conducted by Asfaw et. al. (2016). They noticed that willful defaulter is a significant reason for the non-performing of the loans. This unwillingness may come with situations where the security offered as collateral is weak. In such a situation, the customer feels that defaulting the loan will not harm him hence he tends to default the loan. On the other hand, when the cash flow of the business is not impressive, people are unwilling to repay the loans. Lack of commitment/non-commitment of the borrowers is yet another main reason affecting loan default.

Ravichandra (2016), researching the determinants of loan repayment of borrowers used three independent variables namely borrower's characteristics, business characteristics, and loan characteristics. The results concluded that most of the borrowers did not spend the loan amount on the intended and agreed purpose. Business-related problems are also internal

factors which include poor management capability and poor financing performance like poor cash flow, less market share, non-attractive products/services, low market share, and unavailability of required technical know-how and technical experts/skilled labor.

Managerial capabilities play a fundamental role in repaying bank loans. When the management is more professional, the probability of defaulting loan is less (Masum, 2014). Length of business operation, management capability, and type of business are the business characteristics influencing the repayment of loans (Angaine & Waari, 2014). Poor financial performance is another reason for maximum loan default. According to Masum (2014) even if the business is profitable, it may default because of poor cash flow.

Many researchers have proven a positive relationship between the income level/repayment ability of the borrower and the number of transfers into the non-performing category. However, although increasing income and loan amount encourages performing borrowers to repay the loan, they do not have any influence on non-performing borrowers to pay the due amount on time (Fernando & Dedunu, 2017).

Several factors have emerged from the lenders' side that influence the increment of non-performing loans and the failure of some special loan schemes. According to the literature, some of the factors such as loan evaluation and disbursement-related issues, poor monitoring and follow-up actions, and less attractive product features have been reviewed. According to the study by Arega et. al. (2016) poor credit assessment, credit size (including aggressive lending, compromised integrity in approval, rapid credit growth, and bank's great risk appetite), high-interest rate, poorly negotiated credit terms, and light credit terms, and elongated process of loan approval were bank specific causes for the occurrence of non-performing loans.

Monitoring is one of the vital duties of financial institutes after disbursing a loan facility. Through monitoring, banks can ensure that the funds are used for desired purposes. Shiferaw and Abuse (2019) find that the credit term, credit monitoring, collateralized loan, and loan supervision by the institution are assigned as the causes of non-performing loans. Asfaw et. al. (2016) and Arega et. al. (2016) in their research identified that poor credit assessment and credit monitoring were the key causes behind the occurrence of non-performing loans in the Development Bank of Ethiopia. In the study of "analysis of the bank specific factors affecting the non-performing loans in

commercial banks in Sri Lanka” (Karhikasan, 2016), the researcher found that some bank-specific factors such as monitoring of NPLs, interest rate, risk assessment, and focus on rapid credit growth. maximize the cases of non-performing loans.

The action comes after monitoring. Monitoring is done for identifying deviations or exceptions. If there is any exception, then corrective action needs to be taken. If corrective actions are taken on time, the chance of defaulting on the loan reduces. If one or two installments are fallen into arrears, the credit officer/relationship officer should visit the customer and understand where the problem lies.

Ahmed (2017) revealed that bank-specific factors namely deficiency in the credit appraisal standards, poor monitoring, lack of supervision, and bank follow-up as well as borrower-related factors like diversion of funds, wilful default, and some macroeconomic factors like GDP have a momentous impact on NPAs. According to Umoren et. al. (2016) the interest rate negatively influences NPL in the short run. Furthermore, Mwangi (2013) stated that the macro-economic factors have led to the increase of NPLs, and high-interest rates and spread are key factors contributing to high rates of NPLs.

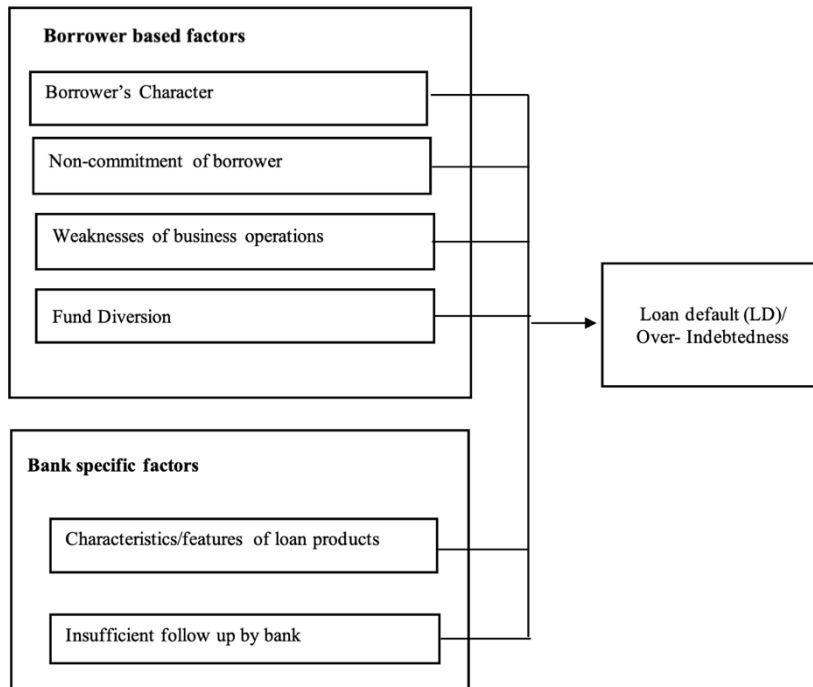
Bhul et. al. (2016) also revealed that the variables like GDP per capita, interest rate, inflation, and the ratio of loans to assets have a noteworthy relationship with non-performing loans. On the contrary, literature has explained that credit risk is not influenced by only external macroeconomic factors (Waqas, et al., 2017). Uma, et al. (2017) selected independent variables of the standard of living, consumer income, the economy of the country, and bank interest rate for the analysis. In this research, they monitored that the bank interest rate affects the rate of the non-performing loan in a positive relationship.

## **METHODOLOGY**

The empirical evidence identified that causes of loan default/NPLs/failure of loan product could be explained by borrower-specific factors, bank-specific factors, and macroeconomic factors. Since plenty of research and studies have been conducted to identify the influence of macroeconomic factors on NPLs/loan default, the scope of this study is rather to study the impact of some borrower-based factors and bank-specific factors on the failure of special women’s empowerment microcredit loan scheme launched by XYZ Bank.

Accordingly, the conceptual framework is graphically illustrated in Figure 4. which is developed based on the literature review. Six variables were identified as independent variables which cover four borrow-specific factors and two bank-specific factors. The dependent variable is the loan default.

Figure 1: Conceptual Framework



Based on the above conceptual framework and scope of the study, six hypotheses were developed considering the six independent variables. Furthermore, this study is a correlational and a causality study that attempts at identifying the relationship between six independent variables and loan default of the special women's empowerment microcredit scheme of XYZ Bank and its impact. Four elements have been identified under each independent variable and a questionnaire has been prepared covering those 24 elements.

The six hypotheses are,

Hypothesis 1a: The character of the borrower has an impact on the default of loans granted for the empowerment of women

Hypothesis 1b: Non- commitment of the borrower has an impact on the default of loans granted for the empowerment of women

Hypothesis 1c: Weakness of business operations has an impact on default of loans granted for the empowerment of women

Hypothesis 1d: Fund diversion has an impact on the default of loans granted for the empowerment of women

Hypothesis 1e: Characteristics of loan product have an impact on default of loans granted for the empowerment of women

Hypothesis 1f: Insufficient follow-up by banks has an impact on the default of loans granted for the empowerment of women

The multiple regression equation of the study takes the form of;

$$LD (\text{Loan default}) = \alpha + \beta_1 CB + \beta_2 NCB + \beta_3 WBO + \beta_4 FD + \beta_5 CLP + \beta_6 IFUB + \epsilon \quad (1)$$

The letters in the equation denotes as Loan Default by LD, Character of Borrower by CB, Non- commitment of the Borrower by NCB, Weakness of Business Operations by WBO, Fund Diversion by FD, Characteristics of Loan Product by CLP and Insufficient Follow-up by Banks by IFUB.

In addition to the above quantitative analysis, a qualitative analysis was carried out via structured interviews with randomly selected borrowers and loan officers to strengthen the results and recommendations of the study. The target population comprises all borrowers who obtain loans under a special microcredit loan scheme for women empowerment and had transferred to the non-performing category as of 31.12.2019. The population is 979 borrowers. Contrarily the population is broad and represents all NPLs under this scheme granted via 582 branches of XYZ Bank Island-wide. Therefore, it was further narrowed down to a target population of NPL borrowers in Western and Southern Provinces, who represent 126 branches. Borrowers from the Western and Southern provinces were selected to minimize the effect of the geographical distribution of the sample. Non-performing borrowers' population as of 31.12.2019 was selected to minimize the effect of the pandemic outbreak of Covid-19.

The sampling method for this study was a convenient sampling method. Ten branches out of 126 branches in Western and Southern Provinces were identified and ten NPL customers from each branch were chosen. Thus, the sample for the study consists of 100 NPL customers from this special loan

portfolio of XYZ Bank. The data was collected by distributing a self-developed questionnaire among the sample covering all independent variables.

## **ANALYSIS AND DISCUSSION**

The reliability of the survey was analyzed using Cronbach's Alpha value was employed with Devellis (1991) and Devon et.al. (2007) argument that the alpha values greater than 0.70 are acceptable. Since the values obtained from all the items used to measure the variables were greater than 0.7, the internal consistency of all the variables in this study was confirmed. Additionally, since all of those values were greater than 0.9, all the items used to measure the variables proved to be confirming that those items measured the variables accurately. Accordingly, each of these variables was used for further analysis, and the internal consistency of the reliability of these research measurements was highly satisfactory and acceptable.

The descriptive analysis of demographic factors reflected that the age distribution of the respondents included 48% in the age group 45-60. Furthermore, the lowest percentage of women who responded was in the 18-35 age group, which is 6% of the total sample. The majority of women are married, which is 76% of the total sample. The majority of the respondents (49%) have studied up to the Advanced Level and 24% have studied up to the Ordinary level. In addition, the minimum representation is at the level of primary education which is 7%, with 9% having studied up to the degree level. Accordingly, the majority of respondents were women with a general level of education. Furthermore, most of the respondents are associated with the hands work business, which represents 28%. Also, 24% are involved in the food processing business and the third majority are involved in the textile business. Also, out of the total sample, 41% represents the business registration as a partnership family. In contrast, 39% out of the total sample covers the above five years tenor of the business.

Factor analysis was conducted to examine the contribution of the selected indicators to the actual measurement of the variables in this study and the rate of variance measurement by each of those travelers. As depicted in Table 4 all the values greater than 0.4 aligns with the criteria. A normality test was performed through skewness and kurtosis values are used for this, and it is depicted in Table 1. In general, if the skewness value is between -3 and +3 and the kurtosis value is between -10 and +10, the database is normally distributed (Brown, 2006). As a result, the skewness and kurtosis values for

all the variables in this table are within the acceptable range, which leads to logical parameter analysis.

**Table 1: Normality test of variables**

<b>Descriptive Statistics</b>				
	Skewness		Kurtosis	
	Statistic	Std. Error	Statistic	Std. Error
Characters of borrower	-.921	.241	-.733	.478
Non-commitment of borrower	-1.188	.241	-.122	.478
Weaknesses in business operations	-1.055	.241	-.440	.478
Fund diversion	-.946	.241	-.828	.478
Characteristics of loan product	-1.020	.241	-.598	.478
Insufficient follow-up by bank	-1.027	.241	-.568	.478
Non-performing/ loan default	-1.063	.241	-.397	.478

In the correlation analysis as depicted in Table 2, all correlation coefficients are positive, confirming that all the independent variables are positively correlated to the dependent variable. Furthermore, all these correlations are greater than 0.8, which is strongly associated with the non-performing loan variable. Out of these, the coefficients of non-commitment of the borrower, weaknesses of bank operations, fund diversion, and insufficient follow-up by the bank are greater than 0.9, confirming that those variables have a very strong positive association with the non-performing loan variable.

**Table 2: Correlation coefficient of the variables**

Variables	Correlation coefficient
Characters of borrowers Vs LD	0.866
Non-commitment of borrower Vs LD	0.909
Weaknesses of business operations Vs LD	0.912
Fund diversion Vs LD	0.911

Characteristics of loan products Vs LD	0.854
Insufficient follow-up by bank Vs LD	0.927

### Hypothesis Testing

To identify the causality between borrower-specific and firm-specific factors on loan default a multiple regression analysis was implemented, and the corresponding output is shown in Table 3. The multiple regression analysis models state that the coefficient value of the characters of the borrower variable is 0.074, which implies that this variable is positively correlated with the non-performing loans variable. Furthermore, the t statistic of this coefficient is reported to be 0.881 and its p-value is 0.380. Accordingly, since the p-value of this coefficient is greater than 0.05, the null hypothesis can never be rejected. That is, even if the characters of the borrower have a positive effect on the non-performing loan variable, that effect is not statistically confirmed. Accordingly, the characters of borrowers are not an ideal predictor for measuring the non-performing loan variable.

**Table 3: Regression analysis results of variables**

Coefficients						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.090	.154		.586	.559
	Characters of borrower	.074	.084	.074	.881	.380
	Non-commitment of borrower	.207	.102	.186	2.021	.046
	Weaknesses of business operations	.318	.089	.316	3.568	.001
	Fund diversion	.059	.109	.061	.541	.590
	Characteristics of	.016	.072	.016	.222	.825

	loan product					
	Insufficient follow-up by bank	.320	.113	.336	2.831	.006
a. Dependent Variable: Nonperforming loan						

The multiple regression output obtained concerning the variables can be expressed as follows;

$$NPL = \alpha + \beta_1CB + \beta_2NCB + \beta_3WBO + \beta_4FD + \beta_5CLP + \beta_6IFUB + \text{error} \quad (1)$$

$$NPL = 0.090 + 0.074CB + 0.207NCB + 0.318WBO + 0.059FD - 0.016CLP - 0.320IFUB \quad (2)$$

The coefficient value of the non-commitment of borrower variable, is reported to be 0.918, which has a greater effect on the non-performing loan variable than the previously mentioned variable. The value of t for the coefficient is 2.021 and the value of P is 0.046, and since the p-value of this hypothetical test is less than 0.05, there is sufficient evidence to reject the null hypothesis at a 95% specific level. That is, it becomes clear that the non-commitment of the borrowers has a positive effect on the non-performing loans and that effect is statistically confirmed. It confirms that the non-commitment of borrowers is more suitable for measuring non-performing loans.

The coefficient of the weaknesses of business operations is 0.318, which indicates that this variable is positively correlated with non-performing loans. In contrast, the t statistic of this coefficient is reported as 2.021, with a p-value of 0.001. Accordingly, since the p-value of this coefficient is less than 0.05, there is enough evidence to accept the alternative hypothesis at a 95% significance level. That is, when the weaknesses of business operations changes, it has a great positive effect on the non-performing loans, and this identified positive effect is statistically confirmed at a 95% confidence level. As a result, the hypothetical test proves that the weaknesses in business operations are a better predictor for measuring non-performing loans.

Fund diversion has been identified in the literature as another important variable affecting the nonperforming variable and the regression coefficient of the fund diversion variable is reported as 0.059. That is, this coefficient is less than all the coefficients mentioned earlier and as a result, it can be concluded that this variable has a less positive effect on the dependent

variable. Furthermore, a hypothetical test can be performed to confirm the positive effect of this coefficient statistically, and the corresponding t value of the coefficient is 0.541. Besides, the corresponding p-value is reported as 0.590. Since the p-value of the coefficient is greater than 0.05, there is no significant effect between the two variables, and in the end, it can be concluded that fund diversion does not have a significant effect on non-performing loans.

The explanatory power or the  $R^2$  value of this model is reported to be 0.903, which confirms a suitable model. In other words, characteristics of the borrower, non-commitment of the borrower, weaknesses of business operations, fund diversion, characters of loan product, and insufficient follow-up by the bank successfully explain 90% of the variance of the non-performing loans, while the remaining 10% of the variance is explained by unidentified variables. Thus, based on the  $R^2$  value obtained by this multiple regression analysis, these independent variables can be identified as viable variables for measuring the variance in non-performing loans.

**Table 4: Model summary results**

Model Summary				
Model	R	R Square	Adjusted R Square	Std. The error in the Estimate
1	.950 <sup>a</sup>	.903	.897	.42905
a. Predictors: (Constant), Insufficient follow-up by the bank, Characters of loan product, Weaknesses of business operations, Characters of the borrower, Non-commitment of the borrower, Fund diversion				

The F value contained in the ANOVA table can be used to check the overall significance of the regression. That is, by performing the F-Test taking into the account F-value, can be tested whether the linear regression model obtained is better suited to the data. According to Table 5, 159.015 out of the total value of 176.135 is described by regression and the error value is only 17.120. Accordingly, the overall model is more significant as most of it is described by regression, and thus this will be further confirmed as the F value becomes significant.

**Table 5: ANOVA table**

ANOVA <sup>a</sup>					
Model	Sum of Squares	df	Mean Square	F	Sig.

1	Regression	159.015	6	26.503	143.970	.000 <sup>b</sup>
	Residual	17.120	93	.184		
	Total	176.135	99			
a. Dependent Variable: Nonperforming loan						
b. Predictors: (Constant), Insufficient follow-up by the bank, Characters of loan product, Weaknesses of business operations, Characters of the borrower, Non-commitment of the borrower, Fund diversion						

Based on the  $R^2$  value obtained by the multiple regression analysis, the six independent variables can be identified as suitable variables for measuring the variance in the non-performing loan variable. Consistent results were obtained by Kousthupamany (2015) in the study of Batticaloa District, Sri Lanka, which revealed that the banks' specific factors such as lack of tight credit monitoring, over or under financing of projects, poor credit evaluation, and diversification had influenced the NPLs in that region. Furthermore, senior managers of the selected banks pointed out that customer-related factors such as poor business knowledge, poor record maintenance, diversion of funds, and willful defaulter were the main reason for the NPLs (Kousthupamany, 2015). Similar observations were found in the study conducted by Shiferaw and Abuse (2019) to identify determinants of loan repayment performance based on small and medium enterprises in Gurage Zone, Ethiopia.

Ravichandran (2016) performed a study to identify the determinants of microcredit loan repayment of microfinance institutions in the Trincomalee District and found that most borrowers did not spend the loan amount for intended and agreed purposes. Furthermore, the results concluded that the inadequate income to repay the loan installment was the main reason for the default of loans. In the research study of Ranatungha (2008) and Anuradha (2018) some pre-loan evaluation factors and post-loan factors were analyzed against non-performing loans. Pre-loan evaluation factors were studied by using the popular loan evaluation model of "CAMPARI" which consists of Character, Ability, Margin, Purpose, Amount, Repayment, and Interest. Poor financial management practices of the borrowers have an impact on NPL in micro-lending and this was confirmed by both loan officers and actual microloan clients in that study (Anuradha, 2018).

The study of Dannet Liv (2013) which explored the drivers of over-indebtedness of micro borrowers in Cambodia found that two variables which

are multiple loans and profit from economic activity are statistically significant in over-indebtedness. Having multiple loans increased a borrower's probability of being over-indebted by six times especially when the borrower had three or more outstanding loans (Liv, 2013). Having insufficient profit from entrepreneurial activities to cover debt obligations increased the chances of being insolvent by 180% while having sufficient profit reduced the likelihood of being insolvent by 59% (Liv, 2013). Unlike listed companies, MSMEs do not have to comply with the financial reporting requirements of the regulators and some of the established MSMEs with sound financial performance are unable to provide the information required by the banks due to their underreporting or withholding profit figures to avoid tax (Gamage, 2015).

The qualitative analysis of this study was carried out through interviews with randomly selected loan officers and actual default borrowers and the outcome revealed that most of the default borrowers did not fully utilize the loan proceeds for the intended purpose. Further, some borrowers did not engage in income-generating activities full time and gave up engagement in such entrepreneurial activities due to childbirths, new jobs, or transfers to a permanent job. In some cases, the borrowers did not have any idea about the business operations and solely obtained bank facilities on behalf of their male partners/ family members because of the attractive features of this women's empowerment loan scheme and the ineligibility of their male partners due to restrictions in the employment and appearing in CRIB as defaulters.

It is noteworthy that many default cases were concentrated in some areas due to aggressive lending practices followed by some branch managers aiming at achieving the targets set by the management of the bank. The opinion of the loan officers was justifiable, and they pointed out that their attention/follow-up for these types of microloans was minimum because of their heavy workload and less contribution to their loan book by these small-sized loans. Furthermore, they also discussed that the lack of information provided by loan applicants, their insufficient financial literacy, and the absence of financial discipline are the main challenges faced by the loan officers in appraising a microloan for MSMEs. Thus, if banks can provide financial training to micro and small loan customers together with banking facilities, it will ensure the loan is used and repaid effectively.

Bank officers should ensure the end use of funds through enhanced monitoring and follow-up procedures. Therefore, it is required to create a relationship culture between loan officers and borrowers rather than simply providing typical banking operations. Thereby the bank officers can guide

and assist the MSME customers and self-employed to manage their businesses profitably. Working together will create a sustainable banking industry.

## CONCLUSION

This study attempted to identify the determining factors of the failure of the special women empowerment loan scheme of XYZ bank and to analyze the relationship between such factors and the failure of the loan scheme. The data was collected by distributing a self-developed questionnaire among the sample covering all independent variables. Multiple regression analysis and correlation analysis were carried out to identify the relationship between independent variables and dependent variables. The results show that non-commitment of the borrower, weaknesses of business operations, and insufficient follow-up by the bank were significant at a 95% confidence interval where the p values of these variables were less than 0.05. However, the result of the correlation coefficient calculated separately for the six independent variables with the dependent variable shows that all those correlation coefficients were positive values confirming that all the independent variables have a positive correlation with the dependent variable/loan default. Furthermore, since all these correlations were greater than 0.8, it is elaborated that the six independent variables are strongly associated with the loan default/non-performing.

A qualitative analysis has been carried out through interviews with randomly selected loan officers and actual default borrowers and the outcome revealed that most of the default borrowers did not fully utilize the loan proceeds for the intended purpose. The loan officers pointed out that their attention/follow-up for these types of microloans was minimum because of their heavy workload and less contribution to their loan book by these small-sized loans.

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# A Comprehensive Literature Review on Financial Inclusion

W.M.M. Senani Werake

*Lecturer (Probationary), Department of Economics, University of Kelaniya,  
Sri Lanka  
senanik@kln.ac.lk*

## ABSTRACT

*The economic growth & welfare of a country depend upon the level of accessibility of people to formal financial services. Financial inclusion is a vital component of any country's social, political, and economic development. Access to formal and semi-formal financial services is limited for a large segment of society in many developing countries, especially the low-income population. This paper aimed to review existing literature on financial inclusion. The article comprehensively discusses research on financial inclusion in terms of its definitions, barriers to financial inclusion, costs and consequences, and determinants and measurements of financial inclusion. Using a thematic approach, it reviewed fifty research papers. The review identifies that definitions of financial inclusion vary by geographical level, taking into account the level of socioeconomic and financial development. Furthermore, there is no universally accepted definition of financial inclusion. Besides, financial inclusion is observed mainly in developed countries with a high degree of financial development; financial exclusion can be seen among low-income households. Further, the result showed that financial innovation, intermediaries, and literacy helps to increase financial inclusion. There is no comprehensive measure that can be used to indicate financial inclusion and it is measured by specific indicators such as the number of bank accounts, and the number of bank branches, and They can provide only a fraction of the information about financial inclusion. However, the review has found that financial inclusion is crucial for inclusive and sustainable growth in developing countries.*

**Keywords:** Financial inclusion, financial exclusion, financial innovations, measurement of financial inclusion, determinants of financial inclusion

## INTRODUCTION

The financial reforms of the 1980s and 1990s that occurred in most economies were expected to improve the financial depth and formal financial services (Seelanatha & Wickremasinghe, 2009). Due to several reasons, financial development has been given more attention in the development process and it has become the core of the development agenda. Finance helps

growth by fund raising and collection, allowing risky investments, particularly by allocating resources for effective use, monitoring the use of funds, and Provision of tools to mitigate risks (Alawadhi et al., 2021). Finance also helps to reduce income inequalities and poverty alleviation through several channels. Finance raises the overall level of income and thus helps in economic growth. The financial sector helps to distribute opportunities more equitably. The financial concept is crucial, especially for low-income earners (Arun & Kamath, 2015). As a country's output changes and countries liberalize their economies, the level of financial development appears to strongly influence the ability of countries, firms, and individuals to take advantage of new growth opportunities. It is said that, if the financial system of a country is fruitful, well organized, and controlled, it brings fast growth in various sectors of the economy through activities like promoting investment, investing in new enterprises, development of trade and business activities, developing agriculture and interest rates, and implementing monetary policy (Bandara, 2011). The main roles of the financial sector are to deploy savings and divert available capital to productive use through loan supply, allow for risk-sharing, and to facilitate the successful transfer of money through payment systems (Colomboge, 2012).

Financial inclusion is a key element of any country's inclusive social, political, and economic development. Citizens' financial access is essential for developing countries' inclusive and sustainable growth. Access to financial services for citizens, particularly low-income and poor, is key to promoting inclusive growth. It is stressed in the 8th goal<sup>105</sup> of the UN's sustainable development goals to "strengthen the capacity of the domestic financial institution to strengthen and broaden access to banking insurance and financial services for all". A study by World Bank (2014) indicates that about 2.5 billion stay away from the formal financial system, cause to financial exclusion. Nearly 50 percent of adults are financially excluded in the world. In most less developing countries, a large portion of society, particularly underprivileged people, has low-level access to banking services,

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<sup>105</sup> This target 8.10 has two indicators namely,

1. Indicator 8.10.1: Number of commercial bank branches per 100,000 adults and number of automated teller machines (ATMs) per 100,000 adults
2. Indicator 8.10.2: Proportion of adults (15 years and older) with an account at a bank or other financial institution or with a mobile- money-service provider

both formal and semi-formal.

Consequently, many of the low-income population have to depend on their own finance or informal sources of finance. The situation is bad in the least developed countries (LDCs), where more than 90 percent of the people have been excluded from access to formal financial systems (Ravikumar, 2017). Developed countries also concern worry because approximately one in every five adults is financially excluded. Hence, there is a widely accepted financial exclusion as the main obstacle to growth and development.

Therefore, the aim of this paper is to review the existing literature on financial inclusion. In this setting, the study aims to identify how the concept of financial inclusion is defined across countries & regions, its determinants, and its measurements.

The remainder of the paper is structured as follows. The paper starts with an introduction to financial inclusion which is the first section of the paper. Sections two and three represent respectively the objectives and methodology of the study. Section four of the paper reviews the chosen literature on financial inclusion, in which the first part discusses the concept of financial inclusion and exclusion, the second part discusses variables used to describe financial inclusion by different researchers, and the third part discusses measures of financial inclusion. Section five of the paper discusses the findings of the review, and the conclusion is given in section six.

### **Research Objectives**

- Understanding the concept of financial inclusion and its significance for the economy
- Identify factors that determine the financial inclusion and exclusion
- Identify the measurement of financial inclusion

## **RESEARCH METHODOLOGY**

The review is done following a thematic approach. In this context, more than fifty research papers and reports on financial exclusion and inclusion were reviewed. Research reports, and journal papers that were published between the years 2000 and 2022. Since the research on financial inclusion is surging in the past decade, utilization of this time frame enables us to recognize the concept of financial inclusion. The review consists of different conceptual definitions of financial inclusion, measurement issues, variables selection, and other specific factors across countries and regions. The review is limited to research papers on financial inclusion in low and middle-income countries.

## **REVIEW OF LITERATURE**

### **Conceptual Definition**

Financial inclusion is defined in terms of exclusion. According to Tabitha & Stella (2019) financial inclusion is "ensuring access to financial services and adequate credit where needed by vulnerable groups such as weaker sections and low income at an affordable cost". In its most basic definition, financial inclusion means a person owing an account at an acceptable financial institution. Financial inclusion describes access to formal financial products and services like bank accounts, insurance, remittance, payment service, financial advisory service, etc. It increases people's ability to save for the future; bank deposit helps a stable deposit base and make investments and access credit. Financial inclusion must be seen as closely linked with the process of financial development. If inclusion means access to banking, all the services provided by the bank such as offering deposit-taking, payment processing, micro-financing, mortgages, and insurance should be closer to the people.

Financial inclusion differs across countries and geographies, depending on the social, economic, and financial development levels (Ravikumar, 2017). Broadly, financial exclusion refers to the inability to access financial services in an appropriate manner. There are several definitions regarding financial inclusion. World Bank (2008) is of the opinion about financial inclusion that wide access to financial services implies an absence of price and non-price obstacles in the use of financial services. It is difficult to define and measure because access has many aspects. The World Bank (2014) defined financial inclusion as "the proportion of individuals and firms that use financial services." Financial inclusion is accessing and using appropriate financial

products and services by individuals and enterprises (World Bank, 2018). According to the World Bank, financial inclusion means that individuals and businesses have access to affordable products and services tailored to their needs. Needs are transactions, exchanges, savings, and giving responsibly and sustainably. The World Bank Group considers financial inclusion a key enabler to reducing extreme poverty and boosting shared prosperity and has put forward an ambitious global goal to reach Universal Financial Access by 2020 (World Bank,2020). According to United Nations (2016), "financial inclusion is the sustainable provision of affordable financial service that brings the poor into the formal economy and productivity." The Alliance for Financial Inclusion (2016) has "four commonly used lenses through which financial inclusion can be defined, in order of complexity: access, quality, usage, welfare." The Consultative Group to Assist the Poor (CGAP) (2013) envisages "a world where everyone can access and effectively use the financial services they need to improve their lives does not mean developing separate financial markets for the poor." The CGAP definition focus on the issue of access to mainstream financial institutions. The positive effects of financial access may be limited if poor households are limited to specialized institutions and financial products, such as Microfinance institutions, but do not necessarily provide a stepping stone to more conventional financial access.

Access to finance refers to the availability of a supply of reasonably priced, quality financial services. In addition, access refers to supply, whereas usage is the intersection of the supply and demand schedules (Claessens,2006). Usage refers to the actual consumption of financial services. Asian Development Bank (2017) has identified dimensions of access problems. Many of the low-income segments of the population do not have access to basic financial services. Even amongst those who have access to finance, most are underserved regarding the quality and quantity of products and services. A significant proportion of low-income households depend on unsustainable, subsidy-dependent, and poorly performing institutions (Ravikumar,2017). Financial inclusion has many dimensions reflecting the range of possible financial services, from payments and savings accounts to credit, insurance, pensions, and securities markets. Another critical dimension is the actual usage of such financial products and services; for example, it increases the number of bank accounts that fail if accounts are rarely or never used.

Financial inclusion has several benefits for poor households. Greater financial inclusion can also give low-income families opportunities to build

savings, invest, and access credit. Also, low-income groups are relatively immune to fluctuation in economic cycles, and including them in the financial sector will improve the stability of the deposit and loan bases in the financial system. As well, greater levels of financial inclusion can facilitate increased participation by different sectors of the economy in the formal financial system (Ozili,2018). Financial inclusion involves increasing the number of individuals with formal bank accounts, contributing to poverty reduction and economic growth.

Empirical studies have shown that financial inclusion is both pro-poor and pro-growth. It benefits households and small and micro enterprises in the country and facilitates economic transactions. Financial inclusion helps low-income families to access financial services like savings, credit, and insurance. (Ozili, 2018). These financial services contribute to access to education, health care, and other necessities to improve their quality of life (Rajeev & Vani, 2017). With access to financial services, Entrepreneurs get an opportunity to use their savings and credit to make productive investments. Financial inclusion is an important tool of inclusive growth as it helps people to invest in the future, manage financial shocks, and smooth household consumption, all of which can contribute to reductions in poverty and inequality (Arandara & Gunasekara, 2020).

Inclusion-oriented financial institutions include MFIs, state-owned banks, post offices offering financial services, credit cooperatives, and community organizations. Among advanced economies, Germany has a long history of developing such institutions, including cooperative, promotional, and regional public savings banks (ADB,2017). India has operated mainly through state-owned agricultural and local banks, such as local area banks, regional rural banks, and united community banks. Outside the commercial banking system, many smaller banks serve the needs of narrower groups of borrowers, including rural cooperative banks, small finance banks, local area banks, and payment banks. Indonesia has established financial institutions aimed at expanding financial inclusion. Thailand has also found several specialized financial institutions that operate as banks and cater to lower-income households and smaller firms, including the bank for Agriculture and Agricultural Cooperatives, Government Saving Bank, and Small and Medium Enterprise Development Bank of Thailand (ADB, 2013). Inclusive financial institutions in Sri Lanka include semi-formal institutions (e.g., community-based organizations, cooperatives, and NGO MFIs); state programs (e.g., Samurdhi); and informal sources of finance (e.g., rotating saving and credit associations). The post office was also upgraded to provide

banking and financial services, and banks employ mobile banking units to reach rural areas (Kelegama & Thilekarathne, 2014).

### **Financial Exclusion**

The term financial exclusion was first recognized in 1993 by geographers concerned about limited physical access to banking services (European Commission, 2008). Financial exclusion refers to individuals and populations without access to common financial services. These include saving accounts, loans, cashless transactions, credit, and other traditional banking services. People are excluded because of their socioeconomic status and because they can't meet the requirements of a formal banking institution. Exclusion poses a massive challenge to populations, as whole groups of people are unable to participate in the financial sector. Financial exclusion prevents these groups from accessing the resources they need to start or expand a business, pay for higher education, or any other actions that could help them work their way up and achieve a better quality of life.

Stephen P. Sinclair (2001) words that financial exclusion means the inability to access necessary financial services in an appropriate form. Exclusion can arise due to problems with access, conditions, prices, marketing, or self-exclusion in response to negative experiences or perceptions". Financial exclusion is "a process whereby people encounter difficulties accessing and using financial services and products in the mainstream market that are appropriate to their needs and enable them to lead a normal social life in the society where they belong" (European Commission 2008). Financially excluded people generally show one or more of the several characteristics: According to European Commission (2008), those are (1) A lack of bank account and lack of access to financial services (2) Dependence on alternative means like informal lenders and financial brokers (3) Lack of financial services like savings, insurance, and pensions (4) Using cash as a primary source for day-to-day payment transactions.

The European Commission has grouped the 25 European countries according to their levels of financial exclusion. These were (1) Low levels of financial exclusion: those with levels of exclusion (Luxembourg, Belgium, Denmark, Netherlands, France, and Sweden) and (2) Medium-low-levels of financial exclusion (Germany, Austria, the United Kingdom, Finland, Spain, and Slovenia) (3) Medium-high level of financial exclusion ( Italy, Ireland, Portugal, Greece, Estonia, Czech Republic, Cyprus, Malta, and Slovakia) (4) High level of financial exclusion (Hungary, Poland, Lithuania, and Latvia).

Financial inclusion is an attention-grabbing phenomenon among people who

were not in paid work and in households where there was no wage earner. As a result, financial exclusion is higher than average among lone parents, the unemployed, and people with disabilities. There was also a connection with age, with the young and old people and the uneducated people being most likely to be financially excluded. The financial exclusion was high among minorities and immigrants (European Commission, 2008). There was a tight relationship between financial exclusion, level of education, and income. The uneducated people were, the lower their household income can be seen as excluded from formal financial services. Students were also far more likely than average to be excluded. There can also be seen that unoccupied people and those looking after the home full-time had high levels of financial exclusion (Claessens, 2006).

### **The Barriers to Financial Inclusion**

The barriers to financial inclusion can be categorized into three groups: access, depth, and efficiency (Karpowicz, 2014). The access barriers are related to the physical infrastructure, documentation requirements by financial institutions, and administrative procedures in accessing finance (Karpowicz, 2014). State of creditors' rights, information disclosure requirements, and contract procedures can be noted as depth barriers. Intermediation efficiency is typically associated with competition and the level of asymmetric information facing financial institutions (Karpowicz, 2014). Financial exclusion can be divided between voluntary and involuntary. Voluntary exclusion may have occurred for religious or cultural reasons or a lack of keenness on financial services. Unintentional exclusion includes a lack of trust in the financial system or barriers such as affordability, availability, irrelevant product design, and inability to fulfil eligibility criteria (Abel et al., 2018).

However, some researchers have identified financial exclusion in different ways. Ravikumar (2017) have been identified financial exclusion in five aspects. Those are (1) access exclusion-; (2) condition exclusion- (3) price exclusion; (4) marketing exclusion (5) self-exclusion. The major barriers to improving financial services are often identified as physical access, high charges and penalties, product conditions, and low-income people's perceptions of financial service institutions. These barriers are arisen from automatically. They are an outcome of the structural operation of the financial services industry.

Financial exclusion can be seen among low-income households. Financial exclusion of low-income customers can result from several factors, including

high-interest rates and higher charges, lack of information, self-exclusion, disability, geographical factors, and cultural barriers. Some of these barriers may be particularly affected by low-income households, especially those living in rural areas with lower financial literacy. Whatever the cost of access, it takes a higher share of the income of the poor. Therefore, distance to facilities, paperwork requirements, and other inclusion obstacles will likely prevent individuals and firms from using formal finance (Karpowicz, 2014).

There are several constraints to financial inclusion in the Sri Lankan context. They are broadly (1) Demand side constraints, (2) Supply-side constraints, and (3) Regulatory constraints (Kelegama, 2014). Studies have identified that demand-side barriers are lack of financial literacy, lack of identity, and lack of collateral. In contrast, supply-side barriers are conventional banking practice, lack of efficient, convenient, and safe payment system, high cost involved in traditional service delivery mechanisms, and limited understanding of the client and their needs.

### **Cost and Consequences of Financial Exclusion**

Broadly, the issue of the cost of financial exclusion may be recognized from two intertextual dimensions. First, the exclusion may have costs for individuals/enterprises regarding the loss of opportunities. Second, from the societal or national perspective, exclusion may lead to aggregate loss of output (Ravikumar, 2017). Access to a bank account, credit, and insurance is now a requirement for personal financial management. Through People being excluded from formal financial services, he or they can lose many opportunities. Financial exclusion can impact costs on individuals, families, and society. These include (1) barriers to employment as employers may require wages to be paid into a bank account; (2) opportunities to save and borrow can be difficult to access; (3) obtaining assets can be complex; (4) difficulty in increasing income to facing the shocks; and (5) exclusion from mainstream society. Loss of business opportunities for banks was another cost of financial exclusion. Banks often prevent extending financial services to low-income groups considering the initial cost of extending services. (Ravikumar, 2017).

Financial exclusion consequences can be determined under the two dimensions. First, financial exclusion generates financial results. Secondly, financial exclusion can cause social consequences (European Commission, 2008). Paying bills without a bank account can be a daunting task. They want to get the support of a third party. It is trouble for bank activities, and it can cause unstable banking. Not having access to formal

financial services and a lack of financial literacy, people will be able to face social conflict. It is a cause of low self-esteem of a person and also causes isolation. That money may be counterfeit money or stolen money. Many people think about this and lose their self-esteem. (European Commission, 2008).

According to Ravi Kumar (2017), financial exclusion has two consequences. First, it may be problematic for day-to-day cash flow management. Households and enterprises deal in cash. Second, due to a lack of financial planning, people become vulnerable in their old age because they can't access bank accounts and lack savings. From the macroeconomic view, a lack of formal savings can be problematic in two aspects. First, Individuals who save through informal means cannot take advantage of interest rates or taxes. Second, informal saving methods have a higher risk than formal saving facilities. This leads to two negative outcomes (a) unfair and higher interest rates charged by informal lenders and (b) the incapability of customers to service the loans or to replay them.

## **Determinants of Financial Inclusion**

### **Innovation and Financial Inclusion**

Innovative products and services include micro products, such as on-frills bank deposits, microcredit and microinsurance, agent banking, and micro branches (ADB,2017). Innovations in banking can compensate for the lack of access to adequate physical infrastructure. In this context, technological modernizations are crucial as technology not only promotes the banking sector's productivity by strengthening the administrative role. It also improves bank operations and helps reduce customer transaction costs. Information and communication technology (ICT) solutions continue to support banks provide systems to get customer data, make certain identification, and facilitate financial transaction services using remote connectivity (Rajeev & Vani, 2017).

Bansal. S (2014) explains the requirement of ICT for financial inclusion in the country and analyses different innovations of ICT which banks are adopting. The researcher emphasized the need to facilitate financial services at a fair cost to the extreme and underprivileged people of the country. And the government should create platforms with broad reach to the agrarian people. Modern ICT can be a tool to build a platform that helps us extend financial services in rural areas. Due to the lack of models and products that

meet the financial needs of low-income families in a country, many people lack access to the formal financial system.

Any country can use mobile Money Systems to promote financial Inclusion for people to smoothen their economic activities. It provides a new mission into new banking technologies and helps the shareholders in the banking industry catch the necessary steps forward. Sri Lanka provides empirical evidence regarding the availability of internet banking and the underprivileged's accessibility to such facilities (Colombage, S.S,2010). Sri Lanka has a diversified financial system consisting of formal, semi-formal, and informal financial markets, mostly serving the credit need of the economy's informal sector. The study's findings explained that although mobile phones have rapidly invaded Sri Lanka during the last decade including rural areas, there is extreme poverty and difficulty in accessing formal banking institutions. The study also revealed the potential to popularize mobile money systems in the country despite the comprehensive use of mobile phones. Therefore, innovation through mobile apps plays a vital role in enhancing financial inclusion.

Yakubi et al. (2019) investigated the current financial inclusion situation and the use of digital financial technologies in the Arab world. The researcher tried to explain the benefits of financial technology for Arab households and the potential for Arab countries to adopt digitalization. The Arab world is currently low level compared to other regions with several aspects of financial inclusion because they haven't been able to reach formal services. Digital technologies are found to be beneficial for enhancing financial inclusion. However, it can be seen that India's financial market is different from Arab.

The fintech market and fintech business units have been growing steadily in India regarding numbers, transactions, and reach (Ravikumar, 2017). The researcher studied and examined the function of financial technology in digital finance and financial access in India. The study's objectives are to study the development and adoption of financial technology in India and to evaluate the role of digital finance companies in promoting digital financial inclusion in India. This study is detailed and is completely based on secondary data. The study revealed the more remarkable improvement of digital finance products and services among customers in India. Innovative digital financial institutions and innovative digital financial products and services are vital in enhancing digital access to finance. As a result of the financial technology companies increasing in India, large innovations have occurred in financial institutions and financial products and services.

Finau et al. (2014) examined that Customers have the potential ability to adopt a mobile money system if they believe the mobile transaction system, have been used to smartphones from a young age, and interview positive thinking with mobile money agents. It is difficult for consumers to use mobile payment systems when they lack security and reliability. A study found that trust was the most powerful factor influencing consumers' willingness to use Smart Phones to make m-Payments (Arunashantha, 2019).

The contribution of financial innovation and financial inclusion to the financial system can be enhancing financial effectiveness and efficiency. A well-organized financial sector is important for the convenience of access to financial information with minimum costs, reduction of transaction costs, reasonable investment decisions, innovation, and growth stability. Financial innovation can be termed as a gateway for underprivileged people to access formal financial services and avail the benefit of finance (Qamruzzaman & Wei, 2019). Ozili (2021) explained the importance of financial innovation for access to finance in Nigeria. Nigerian central banks have emphasized that promoting financial innovation in the economy is important. Further, all financial innovations that improve the degree of access to finance in Nigeria and do not pose any significant risks to the financial system are approved by the Central Bank of Nigeria. Therefore, the central bank of Nigeria accepts financial innovation as a factor determining financial inclusion in that country.

### **Intermediation and Financial Inclusion**

Financial intermediation is the process by which banks, finance companies, microfinance institutions, or other licensed banks take funds from savers and lend them to buyers for investment and other needs. (Gorton, G & Winton, A. 2002). Financial intermediation can make more products and services available to low-income people through the expansion of new bank branches and the entry of new financial service providers into the financial market (Bongomin et al., 2018). Well-growth financial system support brings savings into the proper system and thereby can assist in gathering resources for capital formation. Bongomin et al. (2018) revealed that there is a considerable positive relationship between financial intermediation and financial inclusion. Furthermore, they noted that policymakers and regulators should assure permit financial services providers to allow them to open up several branches for providing diversified products and services that suit the economic status of the underprivileged.

Financial intermediation enhances productivity and efficiency in several

ways such as the supply of liquidity and allocation of risks a can reach (Rajeev & Vni, 2017). There is a requirement for carrying out the action between the banks, the government, and others to facilitate access to bank accounts amongst the financially excluded people. Banks play a major role in the growth of developing economies (Swamy,2010).

## **Literacy and Financial Inclusion**

Financial literacy is one of the critical dimensions of enhancing financial inclusion. Lack of education and awareness about financial services restricts their use of it and consequently wastes a lot of resources. OECD defines financial literacy as "a combination of awareness, knowledge, skill, attitude, and behaviour necessary to make sound financial decisions and ultimately achieve individual financial well-being" (OECD,2022). Financial literacy is the "capacity to have familiarity with and understanding of financial market products, especially rewards and risks, to make informed choices" (Ramakrishnan, 2012). Financial literacy is the skill that people acquire to manage their money wisely with some understanding of financial concepts. (Antony & Josephs, 2019). Khan et al. (2022) revealed that financial literacy is one of the key drivers of financial inclusion. Financial literacy is still low in developing countries and developed countries despite programs being held globally. However, formal financial literacy affects financial inclusion, which strongly affects women's economic empowerment.

A considerable number of countries have done studies on financial literacy and financial inclusion. In Australia, the government established a National Consumer and Financial Literacy Taskforce in 2002 to develop financial education among the people. New Zealand's National Strategy for Financial Literacy was launched in June 2008, By many individuals and organizations. New Zealand's National Strategy for financial literacy focuses on developing quality, delivering financial education, sharing works, and working together to achieve the outcome of a financially literate population. The Organization for Economic Co-operation and Development (OECD) started an inter-governmental project in 2003 to provide ways to improve financial education and literacy standards. Bank Negara Malaysia partnered with the financial industry and other government agencies, introduced many schemes with a high level of transparency and disclosure, and promoted financial literacy programs in school. In Singapore, a national financial education program was launched in 2003, bringing together industry and public sector initiatives to enhance the basic financial literacy of consumers (Ramakrishnan, 2011).

Financial education can promote the financing of start-up small and micro-

enterprises, thereby boosting economic growth. According to the Asian Development Bank report (2017), financial literacy and experience in Asia are generally low, but there is significant interest in financial education. Financial education can promote the financing of start-up small and micro-enterprises, thereby boosting economic growth. Dushku (2021) mentions that women, youth, the elderly, people with less education, the unemployed, housewives, low-income earners, and people living in rural areas have less financial awareness. As for a developing economy, it is an urgent need to enhance financial literacy to accelerate financial inclusion. The entry of new financial firms, the introduction of multifaceted financial products, technological advancement and introducing new products for the financial sector, the growing availability of financial service providers, and the transfer of risk are crucial points related to financial literacy for accelerating financial inclusion (Antony & Josephs, 2019).

### **Measurement of Financial Inclusion**

Considering the past literature on financial inclusion, there is no single measure that can be used to indicate the degree of financial inclusion, although indicators of the banking system, capital markets and protection are widely available, there is very little information on the level of financial inclusion. This helps in setting financial goals and tracking progress toward them (World Bank, 2016).

Bapat & Bhattacharyay (2016) find that the key indicator of financial inclusion is the proportion of households holding bank accounts measured by the ratio of the number of bank accounts to the number of adult members in a household. Different researchers have used different methods to measure the financial inclusion index (IFI). Sarma (2008) calculated a financial index considering three dimensions: penetrations, availability, and data usage to 2004. According to the study, after giving equal weight to this dimension the financial inclusion index can be calculated as follows.

$$IFI = 1 - \sqrt{\frac{(1 - p_i) + (1 - a_i) + (1 - u_i)}{3}} \quad (1)$$

3

$P_i$ ,  $a_i$ , and  $U_i$  denotes the dimension indices for penetration, availability, and usage, respectively. Here, dimensions of financial inclusion indicators are entered with a single number between 0 and 1, with total financial exclusion as number 1 and total financial inclusion as number two. (Sarma, 2008).

Arora (2010) added the variables of Outreach, Ease of Transactions, and Cost and computed the Financial Access Index (FAI) for data about 2007. The researcher calculated the FAI as follows: Each dimension  $D_{il}$  is defined as,

$$D_{il} = (d_{i1} + d_{i2} + d_{i3} \dots d_{in}) / n \text{ and } d_i = (A_i - m_i) / (M_i - m_i) \quad (2)$$

$A_i$  = Actual value of dimension  $I$ ;  $m_i$  = minimum deal of size  $I$ ;  $M_i$  = maximum value of measurement  $I$ ; Assigning weights of 2 to outreach and 1 each to ease and cost of transactions Arora's financial Access Index (FAI) is computed as follows:

$$FAI = D_{i-I} * w_i / D_{i-II} * w_{ii} + D_{i-III} * w_{iii} \quad (3)$$

Gupte, Venkataramani & Gupta (2012) have found that outreach is precisely related to the financial access index and that convenience and cost are inversely related. The financial access index is then converted to a normalized index after ranking the country with the highest financial access index in comparison with other communities. consider the Indian setting, the financial inclusion index has four critical aspects: outreach, usage, ease of transactions, and cost. The UNP has used this method in calculating human development in 2010. This study differs from other studies because it collects several different variables. According to the researcher's methodology, the first step was to build sub-indices for each aspects, and the second step was to calculate the minimum and maximum values. Other maximum and minimum values have been calculated instead of observed maximum and minimum values for 139 countries.

**Table 01- Summary of review papers**

Concept	Author/s
Definition and benefits of Financial Inclusion	Taiabitha, Stella G (2019), World Bank (2014), World Bank (2018), United Nations (2016), The Alliance for Financial Inclusion (2016), The Consultative Group to Assist the Poor (CGAP) (2013), Claessens (2006), Asian Development Bank (2017), Ravikumar, (2017), Ozili (2018), Rajeev & Vani (2017), Arandara & Gunasekara (2020),
Financial Exclusion	Stephen P. Sinclair (2001), European Commission (2008), Karpowicz (2014), Abel et al. (2018), Ravikumar (2017), Kelegama (2014),

Determinants of Financial Inclusion	ADB (2017), Rajeev & Vani, (2017), Bansal. S (2014), Colombage. S.S (2010), Yusefali et al. (2019), Finau et al. (2014), Ravikumar (2017), (Shantha, 2019), Qamruzzaman & Wei (2019), Ozili (2021), (Bongomin et al. (2018), Swamy (2010), OECD (2022), Ramakrishnan (2012), Antony & Josephs (2019), Khan et.al. (2022), Dushku (2021), Antony & Josephs, 2019)
Measurement of financial inclusion	World Bank, (2016), Bapat & Bhattacharyay (2016), Sarma (2008), Gupte et al. (2012) , Arora, (2010)

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*Source:* Author's survey

## DISCUSSIONS OF THE FINDINGS

As emphasized in the literature, citizens' financial inclusion is crucial for developing countries' inclusive and sustainable growth. The definitions of financial inclusion expressed in the focus also vary significantly to include various population segments such as individuals, households, communities, and businesses. The definition of financial inclusion in each country varies based on the level of socio-economic and financial development of the countries.

Financial inclusion can be conceptualized through two characteristics. The first is sound decision-making related financially. Second, people must have access to requirements. Therefore, financial inclusion should be assessed based on two factors: financial ability and access to financial needs.

An exclusion means that people face difficulties in accessing and using products and services in well-organized financial markets. There is no universally accepted definition of financial inclusion as well as financial exclusion. Financial exclusion cannot be given a single definition and can be interpreted relatively. Financial exclusion can be seen in countries with high financial development and relatively less among low-income households. Financial exclusion can mostly be seen among low-income households. Financial exclusion can arise due to several factors, including high-interest rates and higher charges, lack of information, self-exclusion, disability, location, and cultural barriers.

In addition, the cost of financial exclusion may be recognized from a personal and national perspective: individuals lose their opportunities, and a country loses its output. In addition, as we can be identified, due to lack of financial planning, people become vulnerable in their old age and have to deal with only cash because their cash flow management is weak.

The role of financial innovation and financial inclusion in the financial system can be promoted by optimizing financial effectiveness and efficiency- the use of the technology and information backbone of existing and new financial service providers Proper allocation of resources through the market mechanism has become a major responsibility of financial intermediaries in a market economy. Due to the increasing complexity of financial markets, financial intermediaries must develop financial market products and services to meet the needs of borrowers and lenders. It helps to access formal financial services. Financial literacy is one of the key factors influencing financial inclusion. Financial literacy makes a significant contribution to increasing the financial practices of rural or urban low-income families. Quality education regarding different financial services directly influenced financial inclusion and expanded other banking services.

An index computed considering the minimum, and maximum values of countries present an acceptable measure of comparison of financial inclusion. In past literature on financial inclusion measurement, researchers highlighted key measurements of financial inclusion that they used to construct the financial inclusion index. In addition, the researchers note that the number of bank accounts and the number of bank branches was commonly used to measure financial inclusion and thus provide accurate information.

## **CONCLUSION**

The aim of this paper was to review the existing literature on financial inclusion. Using a thematic approach, the paper reviewed more than fifty research papers and identified the conceptual differences between financial inclusion and exclusion, the factors that determine financial inclusion and the variables used to measure financial inclusion.

Based on the review, this study drew several conclusions. First, financial inclusion is often defined in terms of exclusion from financial systems. Second, there is no universally accepted specific definition of financial inclusion and the behaviour of financial inclusion varies from time to time in different geographical areas. Third, financial literacy as well as financial

innovation and financial intermediation help promote financial inclusion in a country and contribute to the efficiency and effectiveness of financial inclusion. Fourth is that most of the financial exclusion of low-income people is due to demand-side barriers and supply-side barriers. Accordingly, lack of financial literacy, lack of identity recognition, and lack of collateral have been identified as demand-side barriers, while lack of conventional banking practice, lack of efficiency and convenience as well as high cost have been identified as supply-side barriers. Fifth is that variables such as bank penetration, outreach, usage, cost, and convenience are widely used to measure to find the level of financial inclusion in a country.

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# **Digitalization as a Driver of Economic Growth: Comparative Study Between Upper Middle-Income Countries and Lower Middle-Income Countries**

Praveen Shanmugalingam<sup>1\*</sup>, Mathusany Kugathasan<sup>2</sup>, Ahashraaj  
Shanmuganeshan<sup>3</sup>,

Abinaya Manorajan<sup>4</sup>, Geethma Yahani Pathirana<sup>5</sup>

<sup>1</sup>SLIIT Business School, Sri Lanka Institute of Information Technology, Malabe, Sri  
Lanka

*bm19533742@my.sliit.lk*

<sup>2</sup>SLIIT Business School, Sri Lanka Institute of Information Technology, Malabe, Sri  
Lanka

*bm19502120@my.sliit.lk*

<sup>3</sup>SLIIT Business School, Sri Lanka Institute of Information Technology, Malabe, Sri  
Lanka

*bm19537566@my.sliit.lk*

<sup>4</sup> SLIIT Business School, Sri Lanka Institute of Information Technology, Malabe,  
Sri Lanka

*bm19537634@my.sliit.lk*

<sup>5</sup> Department of business management, SLIIT Business School, Sri Lanka Institute  
of Information Technology, Malabe, Sri Lanka

*geethma.p@sliit.lk*

## **ABSTRACT**

*Digitalization leads economic competitiveness and long-term growth on economy, especially the development and exhaustive utilization of digitalization, which initiated the beginning of the digital economy two decades ago. This research aims to examine the effect of digitalization on economic growth by concerning Upper Middle-Income (UMI) countries and Lower Middle-Income (LMI) countries. Herein, a panel data analysis has been adapted by consisting of the most recent available data on World Bank Indicators (WBI) which spans from the year 2013 to 2020. This study includes 47 countries consisting of 22 UMI countries and 25 LMI countries. Furthermore, the study included a set of estimation procedures such as descriptive statistic, multicollinearity test and panel specification test. The results of the panel specification test revealed that Fixed Effect (FE) model is more suitable for the current study. The findings indicated that digitalization is positively associated with economic growth in UMI countries and on the other hand the impact of digitalization is minimal for LMI countries. The world has been gone across lots of variations over the previous years as the digitalization has accomplished momentum, quickly propagating across countries which has created a special interest toady on global. As an over-all technology, digitalization encourages economic growth in many forms. Officials and investors should guarantee that digitalization should be prioritized by auxiliary digitalization venture in order to increase the economic*

*growth. Moreover, with respect to the strategy implications, this research recommends that LMI countries' government should encourage and spend more capitals on digitalization which will enable the pathway for economic growth. The findings will help the stakeholders and investors to make a responsible and well-informed investment choices which will enable their business to expand worldwide. Furthermore, the government practitioners can come up with new strategies to improve digitalization on both group of countries which will lead to the economic growth and increase the lifestyle of the people.*

**Keywords: Digitalization, Economic growth, Panel data analysis, Fixed effect model, Middle-Income countries**

## **INTRODUCTION**

Digitalization enables entities to perform their economic activities with other entities across the nations. The evolution of digitalization in the last two decades created great impact on economies worldwide. Digitalization had increased to a hype where many people got easily adapted and it created an impact in all business and industrial units. The expansion of e-commerce and international trade in relation to exports and imports also had a huge effect on the economy due to technology. Economic growth influenced the country where a rise in global transactions occurred because of the key factor digitalization.

Many limited empirical studies focused on digitalization on economic growth. The studies only showed technology as a majority portion in relation to the economy. The research is done to identify the comparison of UMI countries and LMI countries of digitalization on economic growth. Similarly, a related study Habibi and Zabardast (2020) indicated a positive effect of internet on economic advancement considering a country's development level. Myovella et al. (2020) addressed the improvisation of technological advancements in invention of new products and services that increased the economy. The performance of Information and Communication Technology (ICT) in recent decades shows enormous growth in the economy worldwide (Vu et al., 2020). The study by Yousefi (2011) mentioned that internet has capabilities to reduce poverty and empower wealth of nations.

Furthermore, the main purpose of this study is to explore the impact of digitalization towards economic growth of UMI countries and LMI countries. The study mainly focuses on the global perspective, considering data obtained from the WBI from 2013 to 2020. The structure of the study is presented as chapters. First chapter briefly gives an overview of an introduction about the relevant study. Following second chapter provides a literature review in a deeper context. Third chapter discusses about data and

methodologies. Chapter four includes the findings of the conducted panel regression analysis and discussion. Final chapter explains the conclusion of the research and its policy implications.

## **LITERATURE REVIEW**

### **Digitalization**

The digitalization has been considered as the third revolution of internet. Now all the countries are shifted towards the digitalization where everything is digitalized. Today's world has been involved with digitalization which enables the countries to expand their market and business all around the world. Over the last 30 years, digitalization has been identified as the main boosting factor for an economic growth for a country. Indeed, almost half of the world has been adapted to digitalization to improve the economic growth. Digitalization will allow the countries to expand their market and exchange the information among the nations which will have an impact on the modern society. Kurniawati (2021) highlighted due to the digitalization impact, it had created a shift on human development which indicated the varieties of choices to the society such as healthy lifestyle of the people, living standards and education of an individual. The effect of digitalization and internet widens on economic growth has been identified long before. The increase in digitalization will give an opportunity to share the information quickly to the society which forms new communication techniques to the organizations which in turn will create a branch among nations to communicate smoothly.

Roger et al. (2021) mentioned that digitalization plays a significant role in globalization and economic growth. The adoption of digitalization such as smart phones and internet has made the process more reliable and accessible in the working environment. According to Elkjaer and Damgaard (2018), digitalization is a transformative force and a strong driver of economic growth. The digitalization usages which refer to smartphones and internet accesses in day-to-day lifestyle had made the process of data more accurate and reliable. Furthermore, it is stated that digitalization is a tool which transfers the global finance which gives the countries to expand themselves on global economy. Similarly, Westerlund (2020) mentioned digitalization is more important to businesses and countries to face the competitors on the market. Furthermore, the study proposed that digitalization enables a path to countries. Especially, it will help the business and countries to satisfy the society. If we focus on business perspective, digitalization has created and changed the way of doing business which has created a competitive market to the business, but on the other hand digitalization will create a smooth and

easy way to transfer the information among the business and countries. At the same time adopting digitalization will give the opportunities for the countries to expand their market across borders and get the access to the new market. Furthermore, they can gain beneficial learning chances on the digitalization which will lead to innovative and knowledgeable society.

### **Digitalization and Economic Growth**

The rapid growth of digitalization and how it has an effect on the growth of economy has attracted plenty of researchers plus economists who are focusing on the impact of digitalization on economic growth worldwide. To find out how ICT and education will have an impact on the growth of economy, Habibi and Zabardast (2020) obtained panel data analysis which covers the years from 2000 to 2017 which includes Organizations for Economic Corporation and Development (OECD) and Middle East countries. The research includes ordinary least square FE model and Gaussian mixture modeling methods for the analysis. The findings revealed that both Middle East and OECD countries are positively affected by digitalization. Moreover, the findings revealed that OECD countries are having a higher subscription on mobile than Middle East countries. Similarly, Solomon and van Klyton (2020) highlighted that how the usage of digitalization will have an impact on economic growth in Africa, which includes 39 countries, by utilizing the system generalized method of moments estimator with the period from 2012 to 2016. Moreover, this study has included business and government factors to find out how these two elements will determine the effect of digitalization on economic development of a country. The findings suggest that two elements have a huge impact on economic growth.

Castellacci (2011) collected the data from WBI and the United States (US) patent and trademark office from 1985 to 2004 period in order to find out how innovation and human capital technology determine the impact of economic growth. The research has taken Arellano-Bond generalized method of moments techniques with panel data analysis to find out the results. The results indicated that innovation and human capital technology is having a positive impact on the economy which leads to a development on the countries. Furthermore, the results demonstrated that innovation is very high in rich countries, which will create a pathway for those countries to develop and grow themselves. It is also important to highlight that ICT is the major key element for economic growth in a nation.

Cardona et al. (2013) conducted research to find out how ICT will affect

productivity. To support this, the data was collected from 150 literature papers which are from the 1990 to 2007 time period. Furthermore, the researchers had adopted non-parametric approaches on the research. The findings of this study showed that ICT does not have an impact on productivity. The results highlighted, based on the firm level analysis, there is no relationship among ICT and productivity. Indeed, the study stated based on the past literature review, ICT has an impact on economic growth. Similarly, Chowdhury (2006) also obtained firm level analysis to find out whether investing in ICT will be able to increase the productivity and the firm's performance. The data was collected from two East African countries which are Tanzania and Kenya from 1999 to 2000. The findings of this research exposed that investing more capital on ICT will lead a pathway for the countries to expand their market in worldwide. Furthermore, the study suggested that ICT is not having a significant effect on labour efficiency which is an element of economical factor.

Vu et al. (2020) performed a broad literature survey to discover the linkage among ICT and economic growth. The data was collected from 208 academic research papers which were collected based on rigorous screening framework software from the 1991 to 2018 period. The findings showed that economic growth is highly dependent on ICT infrastructure which will give the access to the countries to easily face the competitors on the world market.

Furthermore, Pradhan et al. (2013) demonstrated the link between the usage of internet, economic development, expenditure of government and inflation. This study used panel approach for 34 OECD nations from 1990 to 2010. The result of co-integration test has shown, internet has long run relationship with inflation, growth of economy, and expenditure of government. Also, the panel granger causality test indicates that internet, inflation, and government expenditure impact on economic growth in short term. At the same time, internet and economic growth generate the granger inflation. Moreover, this study concluded that the relationship between economic growth and internet prove the value of internet in OECD countries.

The study of Elgin (2012) examined the link between the volume of the shadow economy and internet usage. Moreover, the use of the internet generated effects on shadow economy. Those are tax effect and productivity effect. The finding of this study shows when the productivity increased shadow economy reduced. On other hand when the tax increase the effect dimension of the shadow economy increased. Moreover, Gross Domestic Product Per Capita (GDPPC) interacts with internet because the productivity effect is higher in developing nations, but the tax effect is more evident in

rich economies. The scale of the shadow economy and internet usage have strong relationship with GDPPC. Using the panel data analysis, Lapatinas (2019) examined that relationship between internet and economic sophistication from 2004 to 2015. The data was collected from the 100 developing and developed countries. The finding of the study shows that the internet significantly affects the sophistication of exported goods. Additionally, this study suggests that the policy which boosts the internet access will results standard level of economic sophistication of a country must be implemented to achieve economic benefits.

The study of Chu (2013) analyzed that effect of internet on economic growth and how it impacts during the recession by using the ordinary least square technique and it consists of 201 countries from 1988 to 2010. The results of study find out that when increasing the internet usage rate by 10 percentage, it increases the GDPPC by 0.57 to 0.63 percentage. This study recommends that using the internet as a tool overcomes the economic recession issues and government should support ICT infrastructure so that more people can use the internet. As a result of network effects, real GDPPC will rise. Moreover, Tripathi and Inani (2016) analyzed the relationship between the growth of economy and internet in 42 Sub-Saharan African (SSA) nations. The finding of the study reveals that usage of internet has positive and important role on the economic development in SSA nations. Also, enhancing the GDPPC is important to developing the use of internet.

Evans (2019) shows the effect between internet and economic growth plus economic wellbeing from 1995 to 2015 by adapting fully modified least square and panel dynamic ordinary least square within a panel causality analysis. Furthermore, this study selected 45 SSA countries for the analysis. The results based on dynamic ordinary least square and fully modified least square analyses revealed that internet is having a positive impact on economic well-being of the nation. Moreover, panel causality analysis results revealed that in short- and long-term internet has a significant impact on economic growth which will expand the economic well-being of the country. Finally, the research concluded that in SSA countries internet plays a significant role which will have an impact on economic growth.

Using a generalized least squares method, Evangelista et al. (2014) investigated the impact of modern technologies on economy of Europe countries. The data was collected from Eurostat which includes 27 European countries from 2004 to 2008. This research has been gone with generalized least square method because of the short period. The findings and evidence revealed that usage of digital encouragement and ICT have a great impact on

economy. Furthermore, the study mentioned that digitalization will increase the productivity and the employment in Europe countries to achieve their goal in sustainability. However, to discover the effect among economic growth, ICT, and energy consumption on long-run, Ishida (2015) conducted research in Japan from 1980 to 2010. The study utilized autoregressive distribution lag testing method to discover the linkage between ICT, energy consumption and economic growth in the country. Furthermore, several new models also have been used on the study which are production model and energy model to investigate the linkage. Additionally, a stationary test and autoregressive distributed lag cointegration test is also tested to get the result. The results highlighted that ICT is insignificant and ICT investment is significant, which shows that the investment on ICT could contribute to a drop in energy utilization and economic growth. As a matter of fact, this study is mainly focused on long-run where most of the previous studies (Evangelista et al., 2014; Chowdhury, 2006) are based on short-run period.

In order to discover the impact of ICT on SSA regions economic growth, Albiman and Sulong (2016) collected the data from WBI from 1990 to 2014. In addition, the period has been divided into two, which will be 1990 to 1999 and 2000 to 2014 based on the research objective. Furthermore, panel data analysis has been adopted with system generalized methods of movement. According to the non-linear effect analysis, the results revealed that ICT proxies are slowing the economic growth in SSA countries. Direct impact analysis revealed the internet and mobile phone lines are the main key trigger factors to an economic growth in the country. Moreover, threshold analysis discovered fixed telephone lines boost the economic growth. In summary, the factors which will be included on digitalization such as internet, mobile phone lines, fixed telephone lines have a great impact on SSA countries economic growth.

Appiah-Otoo and Song (2021) used panel data analysis to inspect the impact of ICT on developed and developing countries economic growth. The data was collected from 123 countries all around the world which includes 20 economically developing nations, 45 economically developed countries and 58 middle-income countries. The findings revealed that ICT increases the economic growth in economically developed countries and middle-income countries. In contrast economically developing nations are not having a positive relationship between ICT and economic growth because low-income countries are still at the beginning stage of internet revolution. To find out the linkage between internet and Gross Domestic Product (GDP), Li (2019) obtained panel data analysis which consists of 65 nations in one belt one road

region from 1996 to 2014. The findings revealed that internet is having a significant effect on economic growth. Additionally, the study has mentioned elements such as labour power, manufacturing arrangement, capital technology, economical level must be explained or included in internet when analyzing the economic growth of one belt and one road region countries.

Bardesi (2020) investigated the effect of internet access on Saudi Arabian economic growth from 1994 to 2018 by collecting the data from WBI and Saudi Telecom. To find the impact of internet usage on Saudi Arabian economy, an ordinary least square method has been adopted in this research. Moreover, for the empirical analysis the researchers had collected the information from Saudi Arabia's official government web page and other publication. The findings showed internet access in Saudi Arabia has a positive impact on the economy. Indeed, in the long term this will increase and develop the economy and the lifestyle of people on the country. Hjort and Tian (2021) discovered the impact of internet connectivity in economic growth. Moreover, this research explores the impact of internet has been analyzed based on two main concepts. The first concept mainly focuses on the impact on supply side which will demonstrate how internet will have an impact on labour productivity, human capital development, firm-work matching, and technology adoption. On the other hand, demand side will be the next concept which focuses on the impact of internet on market access and information frictions. As a summary, the study has been concluded that internet is having an impact on economic growth. Moreover, supply and demand side factors have an impact on labour productivity, human capital development, technology adoption, market access and information friction which will increase the growth on economy.

Stiroh (2002) has highlighted that internet is negatively impacting the economy. Furthermore, African countries have the highest rate on using the internet. Bakari and Tiba (2020) collected data from WBI from 1995 to 2017 from North African countries by utilizing panel data analysis. This study includes several tests which are panel auto-regressive distributed lag model, ordinary least square random effect, auto-regression distributed lag bounds testing approach, full modified ordinary least square, generalized linear model and generalized method of moments. The findings revealed that digitalization and internet has a negative impact on North African countries economic growth. Yousefi (2011) also analyzed the impact of ICT on economic growth which is centered on developed and developing countries. To conduct this study a traditional growth technique has been utilized, which include 62 countries from 2000 to 2006 all most six years of period. The

findings revealed that internet is significant on UMI countries. However, in LMI countries internet is having a negative impact which indicated that the usage of internet is still on the developing stage in LMI countries. Aguerre (2019) analyzed why the digital trade is changing and how, and what is the impact on the economy in Latin America, and the study has utilized participant observation and interviews to collect the data. The findings showed that internet is having a significant impact on economic growth in Latin America.

Kurniawati (2021) discovered the linkage between ICT and economic growth in middle-income and developed Asian countries. The information was collected from WBI for the period of 2000 to 2018 which includes 13 middle-income and 12 high-income countries. Moreover, in this research several additional tests have been tested which includes Levin-Lin-Chu test, panel cointegration test and fully modified ordinary least squares test. The results of this research directed that in developed countries the usage of internet leads to an economic growth, on other hand average earning nations are on their early stages of internet adoption. This illustrates that comparing with average earnings nations, developed countries are more active on internet and digitalization adoption to increase the economic growth.

Digitalization enables a pathway for the countries and business to move quick towards the internet era. It will facilitate smooth and accurate information and encourage the competitiveness in the market. Hadavand (2011) conducted research to discover the effect of internet diffusion on economic growth. In fact, internet diffusion will reflect the impact of the technology on economic growth. To explore the impact of internet diffusion on economic growth 33 countries has been adopted and panel data analysis has been chosen for the analysis. Moreover, the research has been carried out with endogenous theory to examine the effect on internet diffusion on economic growth. The findings revealed that internet is not having a significant impact on middle-income countries when comparing with developed countries. This might occur because of the different education level of people, government regulations and technical and language barriers in middle-income countries.

Furthermore, Johnson (2016) analyzed how internet and human capital have an effect on economic growth. To conduct this research, a panel data method has been adopted for the analysis which will include West African Economic and Monetary Union countries from the 2009 to 2014 time period. According to this research, firstly the autores have used principal component analysis method to construct the human capital index and internet development index. Moreover, a neoclassical Solow model has been used to create a linkage

between internet, human capital and GDP to find out the impact on economic growth. The finding of this study revealed that internet is the main pillar for the economic growth in West African Economic and Monetary Union countries. Similarly, Imasheva and Kramin (2019) investigated how broad band internet will have an impact on Russian regions economic growth. To find that Mankiw, Romer and Weil model was developed which consist of Cobb-Douglas production function method. The data was collected from 80 Russian region countries between 2010 to 2016 period. The findings indicated that internet is the main element which will increase the economic growth. Indeed, it is clear that in the countries of Russian region the development of internet is more important to increase the economic growth and lifestyle of the people region wise.

Comparing with East Asian Countries African countries are considered as the highest internet using country all around the world. Based on that Rangakulnuwat and Dunyo (2018) analyzed the impact of internet on African economy. The data was collected from 19 African countries from the 2003 to 2014 period. Moreover, the research had obtained FE model with iterated generalized least square techniques to find out the impact of internet on African economy. The findings revealed that internet is having an effect on economic growth. Although, the internet is having an effect on economic development, it needs capital and technology to boost the internet to take an effect on the economic growth on African nations. Additionally, the results suggested that African government should encourage the children to study more than secondary level which will increase the knowledge to them to use the internet. Furthermore, the laborers should increase their knowledge on internet to do their work effectively which will directly or indirectly have an effect on African countries economic growth.

Meah (2012) investigated how internet users has an impact on economic widening. Additionally, the research has engrossed on how the internet usage influence Bangladesh. The data was collected from WBI from 1990 to 2011 with adopting panel data analysis for 244 nations all around the world. Furthermore, the research involves of neoclassical growth model to analyze the effect of internet on the economic development. Moreover, the exogenous model and endogenous model have been adapted to identify the short- and long-term effect on the economy. The findings of this research indicated that internet is very important to the economy of Bangladesh.

Magazzino et al. (2021) analyzed the relationship between ICT, economic growth, energy consumption and environment influenced by utilizing multivariate framework. Furthermore, this research includes 16 European

countries from 1990 to 2017. The findings of this research revealed that the usage and adoption of ICT and electricity consumption has a significant effect on GDP which represent the economic development. More importantly electricity consumption, ICT penetration, Carbon Dioxide emission has been adopted as the main variables.

Niebel (2018) highlighted the effect of ICT on emerging and developed, developing nations economic growth. The study consists of 59 countries from the 1995 to 2010 period where the data was collected from Conference Board Total Economy Database. From the results it has been discovered that ICT has a significant effect on economic growth. So, digitalization is having a great effect on economic growth all around the world which demonstrate that digitalization is very important for a country to expand their economy. The studies related to this concept (Kurniawati, 2021; Roger et al., 2021; Elkjaer and Damgaard, 2018 ; Westerlund, 2020 ; Habibi and Zabardast, 2020; Solomon and van Klyton, 2020; Castellacci, 2011; Cardona et al., 2013; Chowdhury, 2006 ; Vu et al., 2020; Evans, 2019; Evangelista et al., 2014; Ishida, 2015; Albiman and Sulong, 2016; Appiah-Otoo and Song, 2021; Li, 2019; Bardesi, 2020; Hjort and Tian, 2021; Stiroh, 2002; Bakari and Tiba, 2020; Yousefi, 2011; Aguerre, 2019; Hadavand, 2011; Johnson, 2016; Imasheva and Kramin, 2019; Rangkakulnuwat and Dunyo, 2018; Meah, 2012 ;Magazzino et al., 2021; Niebel, 2018) are showing us how digitalization have an impact on economic growth but most of them are mainly focusing on high income nations and limited to a set of countries. Furthermore, the current literature review shows us that the impact of digitalization on economic growth in LMI and UMI countries have been not analyzed.

### **Hypothesis Development**

Based on the indepth literature review, the following hypothesis were developed and examined in this study.

*Hypothesis 1: There is a significant impact of digitalization on economic growth of upper middle-income countries*

*Hypothesis 2: There is a significant impact of digitalization on economic growth of lower middle-income countries*

## **METHODOLOGY**

### **Data**

The main purpose of this study was to investigate the impact of digitalization on the economic growth of UMI countries and LMI countries. Since this study is dedicated to country level, quantitative method was applied. This study utilized WBI to collect the secondary data for variables from 2013 to 2020. The sample size of UMI countries were finalized as 22 countries whereas 25 countries were selected as the sample size for LMI countries.

### **Measurement of Variables**

The researchers have taken GDPPC as the main dependent variable which will be measured by constant US dollars. Furthermore, digitalization has been adopted as the main independent variable for the study. Additionally, based on Albiman and Sulong, 2016; Habibi and Zabardast, 2020; Kurniawati, 2021; Rangkakulnuwat and Dunyo, 2018 individual using internet (NETSUB), fixed telephone subscribers (TELESUB), fixed broad band subscribers (BROADSUB), mobile cellular subscribers (MOBILESUB) has been adopted as the proxy for digitalization. More deeply, NETSUB will be measured by the percentage of population.

Furthermore TELESUB, BROADSUB, AND MOBILESUB will be measured by per 100 people. Additionally, secure internet servers (SERVERS) have been adopted as another independent variable which will be measured by per 1 million people. By a deep analysis, gross fixed capital formation (GFCF), inflation (INFLATION) government final consumption expenditure (GOVERNMENT), foreign direct investment (INVESTMENT), exchange rate (EXCHANGE) and labour participation (LABOUR) has been utilized as the control variables for the current study. However, GOVERNMENT, INVESTMENT and GFCF will be measured by percentage of GDP. The rest two control variables such as EXCHANGE rate and LABOUR participation rate will be measured by local currency unit per US dollars and percentage of total population ages 15+ modeled international labour organization estimator consequently. INFLATION will be measured by consumer price index annual percentage.

## DATA ANALYSIS

This study employs panel data regression analysis to investigate the primary objective of this study. Panel regression consist of various model which includes Pooled Ordinary Least Square (POLS) model, FE model and Random Effect (RE) model therefore panel specification test is employed to decide applicable model for this study. Using NETSUB, TELESUB, BROADSUB, MOBILESUB, SERVERS, GFCF, INFLATION, GOVERNMENT, INVESTMENT, EXCHANGE and LABOUR as inputs, an econometric model was established for the GDPPC as follows

$$GDPPC_{it} = \beta_0 + \beta_1 X_{it} \dots \beta_i X_{it} + \varepsilon_{it} \quad (1)$$

where  $GDPPC_{it}$  denotes the Gross Domestic Product per capita as dependent variable;  $X_{it}$  represent the independent variables which includes ( $NETSUB_{it}$ ,  $TELESUB_{it}$ ,  $BROADSUB_{it}$ ,  $MOBILESUB_{it}$ ,  $SERVERS_{it}$ ,  $GFCF_{it}$ ,  $INFLATION_{it}$ ,  $GOVERNMENT_{it}$ ,  $INVESTMENT_{it}$ ,  $EXCHANGE_{it}$  and  $LABOUR_{it}$ );  $i$  is the subscript of entity and  $t$  is time;  $\beta_0$  represent an unspecified intercept for each entity;  $\beta_0 \dots n$ —the coefficients of independent variables;  $\varepsilon_{it}$  represents the error terms.

## RESULTS AND DISCUSSION

Table 1 presents the summary of descriptive statistics of UMI countries. Russia has the maximum value of GDPPC at 15974.65 US\$ in 2013. Moldova has the lowest GDPPC at 2732.461 US\$ in 2015. The average value of NETSUB, TELESUB, BROADSUB, and MOBILESUB for the UMI countries are 51.109, 16.204, 12.813, and 127.213 respectively. The maximum value of SERVERS is 48076.19 million in 2020, it is observed from Bulgaria.

The mean value of GFCF is 23.494 and standard deviation is 7.359. Belarus has the maximum value of INFLATION at 18.31 percent in 2013 and Bosnia and Herzegovina have the minimum value of INFLATION at -1.58 percent in 2016. The minimum value of INVESTMENT is -4.541 percent in 2015 is observed from Iraq. The average value of EXCHANGE for the UMI countries is 128.369 US dollars. The average value of LABOUR for the UMI countries is 56.76 and standard deviation is 9.40.

**Table 1: Brief Summary of UMI Countries**

Variable	Observation	Mean	Std.Dev	Maximum	Minimum
GDPPC	176	7065.939	2583.257	15974.65	2732.461
NETSUB	176	51.10959	17.73233	89.55501	9.200
TELESUB	176	16.20402	11.10399	48.10332	0.9435856
BROADSUB	176	12.81278	8.822151	34.45275	0.4897992
MOBILESUB	176	127.2135	26.59339	186.1586	42.52475
SERVERS	176	2148.074	6368.471	48076.19	0.9047847
GFCF	176	23.49353	7.359636	46.48989	2.44911
INFLATION	176	3.305686	3.351456	18.31226	-1.5841
GOVERNMENT	176	17.89648	7.432766	56.85445	8.321201
INVESTMENT	176	3.417712	3.483917	17.13763	-4.541592
EXCHANGE	176	128.3689	276.337	1192.000	0.710
LABOUR	176	56.76141	9.395704	70.8900	37.30

Table 2 demonstrates the summary of descriptive statistics for the LMI countries. Lebanon has the maximum value of GDPPC at 8058.444 US dollars in 2018 and Tajikistan has the minimum value of GDPPC at 807.103 US dollars in 2016. Compared to the UMI countries, the maximum value of GDPPC is low in LMI countries. The mean value of NETSUB, TELESUB, BROADSUB and MOBILESUB for the LMI countries are low compared to the UMI countries. The maximum value of SERVERS is 3105.788 million, which is fifteen times lower than the maximum value of UMI countries. The maximum value of INFLATION is 84.87 in 2020, it is observed from Lebanon. Mongolia has the minimum value of INVESTMENT at -37.17 percent in 2016. The average value of LABOUR for the LMI countries is 56.98 and standard deviation is 12.92.

**Table 2: Brief Summary of LMI Countries**

<b>Variable</b>	<b>Observatio n</b>	<b>Mean</b>	<b>Std.Dev</b>	<b>Maximu m</b>	<b>Minimu m</b>
GDPPC	200	2724.22 2	1470.56 9	8058.444	807.1026
NETSUB	200	34.3132 4	19.156	84.12036	1.800
TELESUB	200	4.89708 2	4.47987 6	27.05073	0.519216
BROADSUB	200	3.24643 5	3.48428 1	18.08227	0.008660 8
MOBILESUB	200	98.3445 8	28.5586 9	164.4406	13.17658
SERVERS	200	186.985 7	444.622 2	3105.788	0.173569 4
GFCF	200	26.6180 2	8.51944 2	56.62177	5.622553
INFLATION	200	5.69648 7	7.33169 3	84.86433	- 3.749145
GOVERNMENT	200	13.9042 4	6.87150 4	40.55352	4.403315
INVESTMENT	200	3.04824 8	5.04273 4	17.19894	- 37.17265
EXCHANGE	200	1858.56 8	4930.31 6	23208.37	1.624658
LABOUR	200	56.9806 1	12.9211 9	81.73	31.44

### Multicollinearity test

Table 3 and 4 present the results of Variance inflation factor (VIF) for UMI countries and LMI countries respectively. VIF is utilized to check the presence of multicollinearity problems on a regression model. According to that, the variables which have been taken into consideration on both countries have the VIF less than 5 which shows that there is no multicollinearity in the regression model.

**Table 3: Results of VIF for UMI Countries**

<b>Variable</b>	<b>VIF</b>	<b>1/VIF</b>
BROADSUB	3.68	0.271727
TELESUB	2.90	0.344396
NETSUB	2.43	0.410857
GOVERNMENT	2.38	0.420751
LABOUR	1.94	0.515210
EXCHANGE	1.90	0.527264
GFCF	1.70	0.587588
MOBILESUB	1.49	0.673282
INVESTMENT	1.48	0.674006
SERVERS	1.38	0.725277
INFLATION	1.33	0.751467
Mean VIF	2.06	

**Table 4: Results of VIF for LMI countries****Estimation Procedure**

<b>Variable</b>	<b>VIF</b>	<b>1/VIF</b>
BROADSUB	3.22	0.310526
TELESUB	2.16	0.462848
EXCHANGE	2.14	0.466510
NETSUB	2.10	0.476934
SERVERS	2.05	0.488347
LABOUR	1.61	0.619628
MOBILESUB	1.45	0.688294
GOVERNMENT	1.40	0.716265
GFCF	1.23	0.815875
INFLATION	1.16	0.864766
INVESTMENT	1.05	0.952245
Mean VIF	1.78	

The panel specification tests include Hausman test, Breusch-Pagan LM test and Poolability F-test of UMI and LMI countries are specified in Table 5. Estimated output results of Poolability F-test indicate null hypothesis which is rejected at 1% significance level and the FE model is selected. In contrast, Breusch-Pagan test show RE model is the most suitable due to the rejection of null hypothesis at 1 % significance level. Finally, the Hausman test used to identify most appropriate model for the analysis which is the RE model or FE model. From the above estimated results, FE model was more efficient as the 1% significance level of the null hypothesis is rejected for both UMI and LMI countries.

**Table 5: Panel Specification Tests**

Group of countries		Poolability F-test	Breusch-Pagan LM test	Hausman test
		<i>H0: POLS</i>	<i>H0: POLS</i>	<i>H0: RE</i>
		<i>H1: FE</i>	<i>H1: RE</i>	<i>H1: FE</i>
Upper Income	Middle-Income	39.26***	233.32***	144.92***
Lower Income	Middle-Income	50.41***	135.92***	52.96***

Note: \*\*\*represent statistically significance at 1% level

According to panel specification tests, FE model is appropriate panel regression model to apply in this study. Table 6 demonstrates estimated results of FE models for both group of countries. LMI countries and UMI countries show impact of digitalization on economic growth at 5 % significance level.

**Table 6: The Results of the Fixed Effect Model**

Countries	Upper Middle-Income	Lower Middle-Income
Model	(FE)	(FE)
Variable	GDPPC	GDPPC
NETSUB	-13.623 (11.389)	-1.463 (3.246)
TELESUB	53.750*	-45.127**

	(31.133)	(19.131)
<b>BROADSUB</b>	110.914***	-41.237**
	(33.392)	(19.999)
<b>MOBILESUB</b>	3.099	3.888*
	(5.400)	(2.085)
<b>SERVERS</b>	0.055***	0.469***
	(0.017)	(0.120)
<b>GFCF</b>	43.357**	11.837
	(21.571)	(7.266)
<b>INFLATION</b>	-58.878*	-40.837***
	(32.512)	(4.194)
<b>GOVERNMENT</b>	-207.431***	73.575***
	(30.683)	(17.776)
<b>INVESTMENT</b>	-19.771	5.512
	(39.483)	(5.992)
<b>EXCHANGE</b>	-18.456***	-0.266**
	(3.328)	(0.119)
<b>LABOUR</b>	-85.800	13.591
	(55.502)	(23.000)
<b>Constant</b>	15235.350***	1257.418
	(3483.967)	(1427.452)
<b>R-Squared-within</b>	0.4656	0.5488
<b>between</b>	0.0071	0.1042
<b>Overall</b>	0.0129	0.0641

Note: \*\*\*, \*\*, \* represent statistically significance at 1%, 5% and 10% respectively

Estimated outcomes of SERVERS show positive impact towards GDPPC at 1% significance level in both group of countries. Among other main independent variable, MOBILESUB shows positive effect on GDPPC at 10% significance level in LMI countries. Similarly, coefficients of TELESUB and MOBILESUB shows negative impact towards GDPPC at 5%

significance level in LMI countries. Among other control variables, INFLATION and EXCHANGE show negative coefficients on economic growth. Moreover, both variables are significant at 1% and 5% significance levels respectively. However, GOVERNMENT shows positive impact towards GDPPC in LMI countries. Compared to other main independent variables, NETSUB shows negative effect on GDPPC but statistically not significant. GFCF, INVESTMENT and LABOUR shows positive influence on GDPPC in LMI countries with statistically insignificant values.

In UMI countries, estimated coefficients of TELESUB and BROADSUB shows positive impact on economic growth at 10% and 5% significant levels respectively. INFLATION, GOVERNMENT and EXCHANGE shows negative impact on economic growth as control variables. INFLATION shows significant influence towards GDPPC at 10% significance level whereas GOVERNMENT and EXCHANGE are significant at 1 % significance level in UMI countries. Estimated coefficient of GFCF shows positive effect towards GDPPC at 5% significance level. As a main independent variables NETSUB and MOBILESUB show negative and positive impact towards to economic growth. However, these variables are statistically insignificant in FE model. Similarly, INVESTMENT and LABOUR show negative impact towards GDPPC in UMI countries with insignificant value.

Moreover, the findings of this study are consistent with previous literature. To be specific, Myovella et al. (2020) confirms that impact of BROADSUB is higher in the economic growth of OECD countries whereas SSA countries' economic growth is highly impacted by MOBILESUB. Similarly, findings of Habibi and Zabardus (2020) showed that influence of NETSUB and MOBILESUB towards the economic growth is higher in OECD and Middle East countries respectively. Kurniawati (2021) demonstrates that NETSUB is significant and positive on the economic growth of high-income Asian countries. Further, the study highlighted that TELESUB and MOBILESUB are capable of promoting economic growth of middle-income Asian countries.

Overall, the results of FE models show the contribution of digitalization towards the economic growth in UMI countries is effective as most of the main independent variables shows positive coefficients and significant effect towards economic growth compared to LMI countries. In UMI countries, contribution of broad band subscribers on economic growth is higher than other main independent variables whereas mobile cellular subscribers contribute to the economic growth in LMI countries as higher range. It

indicates that LMI countries contain lack of infrastructure related to telecommunications and regulations which contribute to the economic growth in a significant way.

## CONCLUSION

This study has been directed to discover the impact of digitalization on economic factors by utilizing panel data analysis on UMI and LMI countries. The literature which has been provided on this research provides a sufficient number of proofs which indicates how digitalization will have an impact on economic factors. Nevertheless, most of the previous research is focused on developed and developing countries which gives us the opportunity to find out the impact of digitalization on LMI and UMI countries' economic growth. To show how digitalization have an effect on the economic growth in this research the authors have collected the data form WBI for the year of 2013 to 2020.

Commonly, the researchers had concluded that digitalization directed to an economical growth on a country. In this study the researchers have adopted variables based on the literature review which contains NETSUB, TELESUB, BROADSUB, MOBILESUB, SERVERS, GFCF, INFLATION, GOVERNMENT, INVESTMENT, EXCHANGE, and LABOUR. To find the best model for the current research, a panel specification test has been tested and the findings showed that FE model is more suitable for the study. Additionally, Hausman test also tested, and the findings revealed that FE model is applicable based on the findings.

The findings supported the research objective by demonstrating several variables have a significant effect on economic growth. In addition to this, the results of FE supported the results. The findings revealed that SERVER, INFLATION, GOVERNMENT are significant factors at 1%. Furthermore, variables such as TELESUB, BROADSUB, MOBILESUB, EXCHANGE are considered the significant factors at 5% and 10% on LMI countries. Moreover, variables such as BROADSUB, SERVERS, GOVERNMENT and EXCHANGE are significant at 1% furthermore TELESUB, GFCF, INFLATION are significant at 5% and 10% respectively. Furthermore, the influence of SERVERS on economic growth is significant on both countries, but the impact is minimal on UMI countries.

Based on the FE model findings, following are some potential policy results of the research findings which will lead the stakeholders to make

knowledgeable investment choices with respect to the countries. Especially, the infrastructure of digitalization must be improved for an agile and stable economic growth in UMI countries. On the other hand, digitalization in LMI countries have a negative impact on economic growth. Therefore, policy makers and investors should promote the adoption of digitalization on LMI countries which will lead the business on a stable position. Thus, more investment should be undertaken as this will lead a digital divide challenge. Furthermore, the governments should implement a proper regulatory framework and strategies which includes a proper rules and regulations. With the expansion and promotion of digitalization, its influence on economic growth will improve so the LMI nations must utilize approaches to enthusiastically encourage the development of digitalization. Moreover, the government should promote digitalization innovation infrastructures and application also to the level of economic growth in LMI countries. The study thus concludes that digitalization has an impact on economic growth. Moreover, this study contains some limitations. Only eight years were utilized for this study due to data availability. However, future researchers will be able to extend the time period based on the amount of data that is available. Furthermore, some of the countries were not included in the study since the data for those countries were not readily available. Therefore, in future, the researchers can include those countries also. Moreover, this study employed variables based on previous literature. Therefore, the future research can determine which variables are relevant to measure the impact of digitalization towards the economic growth.

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# Impact of Socio-demographic Characteristics on COVID-19 Vaccine Hesitancy in Sri Lanka

H.D.H.P. Wijerathne<sup>1\*</sup>, I.W.C.D. Purijjala<sup>2</sup>, D.S.A. Pathirana and V.R. Dunuwila<sup>3</sup>

<sup>1\*</sup>*Sri Lanka Institute of Information Technology, Malabe, Sri Lanka,  
bm19523460@my.sliit.lk*

<sup>2</sup>*Sri Lanka Institute of Information Technology, Malabe, Sri Lanka,  
bm19516912@my.sliit.lk*

<sup>3</sup>*Sri Lanka Institute of Information Technology, Malabe, Sri Lanka,  
bm19522616@my.sliit.lk*

<sup>4</sup>*Sri Lanka Institute of Information Technology, Malabe, Sri Lanka,  
vandhana.d@sliit.lk*

## ABSTRACT

*The COVID-19 pandemic has posed several unforeseen challenges to the entire world. By providing renewed hope in the fight against the coronavirus, vaccination has been discovered as an effective and important health solution. However, the growing concern about vaccine hesitancy stands out as the major barrier to vaccine uptake, dampening global vaccine coverage. Therefore, the purpose of this study was to investigate the impact of socio-demographic characteristics on vaccine hesitancy among young adults in Sri Lanka. This research was carried out as a quantitative cross-sectional survey, which is primarily based on five districts in Sri Lanka. An online questionnaire collected data from 601 young adults, aged 15 to 35 years, who were selected through crowdsourcing and a simple random sampling technique. Descriptive statistics and probit regression were used to analyze quantitative data utilizing Excel and Stata. The findings demonstrated that vaccine hesitancy gradually increased over the initial doses (37%), booster doses (59%), and the response to future vaccination (60%). It indicated that six out of every ten individuals from the young community of Sri Lanka are hesitant to get the COVID-19 vaccine. Furthermore, side effects and allergies were cited as the primary reasons for vaccine refusal. As per the findings, it is clearly visible that vaccine brand preferences were highly affected by vaccine hesitancy in Sri Lanka, with the major influence of social media information (71%). The fact that vaccination is mandated by universities and workplaces has motivated a majority of young adults (48%) to obtain the COVID-19 vaccine. However, socio-demographic characteristics statistically proved there was a minor impact on vaccine hesitancy in every phase of vaccination, including initial doses (9.6%), the booster dose (7.6%) and the future COVID-19 vaccination stage (8.9%). In the initial dosages, Islamic respondents showed a higher likelihood of*

*hesitancy toward the vaccine compared to the other religious groups. The findings of this study would be imperative to address uncertainty about COVID-19 vaccines by demonstrating clear, transparent, and evidence-based communication to ensure the success of vaccination campaigns.*

**Keywords: COVID-19, Vaccination, Hesitancy, Concerns, Young Adults**

## **INTRODUCTION**

The World Health Organization declared COVID-19 as a global epidemic at the end of 2019 which caused an unprecedented crisis for global public health (WHO, 2019). It resulted in an unprecedented global public health crisis and a massive disease burden, which has negatively impacted almost every sector and every corner of the world. The development and implementation of a vaccine are recognized as one of the most successful public measures to control, eliminate, and eradicate the pandemic. Due to the rapid increase in mortality and morbidity of COVID-19 in Sri Lanka, the government of Sri Lanka launched the national COVID-19 vaccination program in January 2021, which aims to manage the outbreak and prevent transmission while progressively controlling herd immunity.

However, the global COVID-19 vaccination program has been administered world-wide under the COVAX facility, and it has had to face several challenges which may impact its success (Rodriguez-Morales et al., 2022). A significant number of people globally have been hesitant to get vaccinated, which has led to low vaccination coverage. As a result of that, the World Health Organization recognized hesitancy toward COVID-19 vaccination as one of the top 10 threats to global health that have been negatively impacting the attainment of vaccination goals in every nation all over the world (WHO, 2019).

Due to the rapid increase in mortality and morbidity of COVID-19 in Sri Lanka, the government of Sri Lanka launched the national COVID-19 vaccination program in January 2021. Although successfully administering and implementing an effective immunization process by the government, uncertainty about the public acceptance of COVID-19 vaccination stands out as a crucial challenge in Sri Lanka. Most notably, the spread of misinformation, rumors, and myths via social media has created a variety of perspectives on the COVID-19 vaccine.

As a critical challenge, analysis of vaccination-related statistics figures out that the Sri Lankan young population is a high hesitancy group compared to the other priority groups for vaccination. According to the official statistics from the ministry of health, the first dose of COVID-19 vaccination has been

received by 97% of the vast majority of Sri Lankans. Moving on to the second dose of the COVID-19 vaccine, the receiving level was remarkably reduced to 84% among the Sri Lankan population. Beyond that, more than five million gaps have been reported between those who received the booster dose and those who received the initial doses. There has been a spread of different types of perceptions, concerns, and misinformation in society toward getting COVID-19 vaccines. The majority of individuals and social groups have various perspectives about the COVID-19 vaccine such as safety concerns or side effects, efficacy, and vaccine brand preferences towards novel COVID-19 vaccines.

Misinformation and myths spreading on social media and in mass media seem to be severely influencing the majority of people into hesitating against vaccination. It seems that negative perceptions, attitudes, and myths are spreading in society about the COVID-19 vaccine, resulting in lower vaccination acceptance. This situation alarmingly highlights the significant reduction in vaccine acceptance along with subsequent doses of the COVID-19 vaccine that will have a direct negative impact on the 80% vaccine coverage target in Sri Lanka.

A review of the literature highlighted that vaccine hesitancy is a severe public health concern in Sri Lanka (Wijerathne et al. 2021; Wijesinghe et al. 2021) as well as around the world. Therefore, a considerable amount of research and studies have been conducted with the primary intention of evaluating the level of vaccine acceptance and hesitancy and identifying the common concerns around the vaccine against the coronavirus. Available scholarly evidence on the subject area in different countries revealed that vaccine hesitancy was driven by a common set of reasons such as side effects and allergy issues, safety and efficacy issues, and misinformation regarding vaccination (Daly et al. 2021; Fisher et al. 2020).

According to the authors' knowledge, this sort of exploratory study is lacking in the Sri Lankan context and current research is the first study that assesses determinants of COVID-19 vaccine hesitancy among Sri Lankan young adults by evaluating a wide range of sociodemographic predictors. As a timely assessment, it is imperative to explore the underlying concerns and factors influencing COVID-19 vaccines, which would be critical at this time.

This study is aimed at investigating the impact of socio-demographic factors on COVID-19 vaccine hesitancy. The scope of this research would focus on Sri Lankan young adults aged between 15 and 35 years, with a particular focus on the most densely populated districts of Kurunegala, Colombo,

Gampaha, Kandy, and Galle. As a result, hypotheses for the study were formulated to investigate the impact of sociodemographic characteristics such as age, gender, marital status, religion, and level of education on vaccine hesitancy.

In addition, the study has evaluated the level of hesitancy toward COVID-19 vaccines available in Sri Lanka to enhance the understanding of quantitative research observations. Furthermore, this study provided a novel contribution to the current unique range access literature by exploring vaccine hesitancy along with subsequent vaccine doses and vaccine brand preference in exceptional reference to the youth population in Sri Lanka.

This study would provide valuable insights to policymakers and health authorities to restructure inoculation systems, tending to concern about vaccine hesitancy and paying more endeavor improving transparent communication about the different types of currently available COVID-19 vaccines in Sri Lanka. The findings of the study would be encouraged to address negative perceptions, distrust, and misinformation about the COVID-19 vaccine among the Sri Lankan youth generation. That would have a positive impact on achieving sufficient vaccine coverage by improving communication transparency about the different types of currently available COVID-19 vaccines in Sri Lanka.

## **LITERATURE REVIEW**

Vaccine hesitancy has been a serious public health concern for the past few years, according to a review of the literature. After noting that vaccine acceptance rates for the COVID-19 vaccine varied globally, the WHO emphasized vaccine hesitancy as a significant threat to global health (WHO, 2020). In order to assess the level of vaccine acceptance and hesitancy, as well as different types of perceptions, attitudes, and information sources for the COVID-19 vaccine, a significant amount of research and studies have been conducted. Additionally, several studies have looked at how vaccine acceptance and hesitancy change over time, place, and country wealth inequality. In the end, it is intended to present a critical literature review that will assess all the previously mentioned factors.

Researchers from all over the world have produced a wealth of literature to estimate the level of COVID-19 vaccine acceptability, which has revealed a significant difference between countries. According to the studies done so far, the COVID-19 vaccine acceptance indicators can be used as a comparative social measurement to ascertain how well-accepted the vaccine is among people worldwide. As of the end of 2020, the United States has

started conducting research studies on the perception of the COVID-19 vaccine. The self-reported survey by Szilagyi et al. (2020) found that from April to December 2020, vaccine acceptance fell from 74% to 56%.

Studies conducted in Asia suggest that acceptance rates have changed in the past two years. According to Liu et al. (2021), in two concurrent Chinese investigations, acceptability rates were 82% and 67%, respectively (Wang et al., 2021). The willingness to receive the COVID-19 vaccine, as reported by adults living in Hong Kong, is 42% (Yan et al., 2021). By illustrating the same scenario, Wang et al. (2021) found that 44.2% of people were willing to accept the vaccine in the first wave of the epidemic and 34.8% of people were willing to do so in the August to September period of the same year.

India was one of the nations that set a world record from May to August 2021 by reporting the greatest number of coronavirus-infected patients. In light of this circumstance, studies conducted in India have revealed that vaccine acceptance there is higher than in other Asian nations. Since it was difficult to reach the entire population at once, the majority of studies conducted in India focused on different states. As a result, Tamil Nadu, which has the majority of Tamil people and is a rural state in India, was the focus of a study conducted by Danabal et al. in 2021. There was 40.7% overall vaccine hesitancy, and 19.5% of people completely rejected the COVID vaccine. 50% of respondents had favorable views on vaccination. Based on their opinions, respondents were divided into four groups. The first group tended to favor immunogenicity over antibodies and placed little emphasis on side effects. Second, there is little mistrust and a lot of confidence in vaccines. The third group had serious concerns about adverse reactions but little skepticism about antibodies, while the fourth group had a high level of faith in vaccinations but little desire for ongoing immunity. Cluster four, which has a high level of trust in vaccines, was always going to include older people with higher levels of experience, education, and career. More young people, women, people from rural areas, and low-wage workers had serious reservations about vaccines. The most notable vaccine acceptability was found in group 1, while the least was found in group 3. Because the study was geographically restricted, it was disastrous to derive a generalization about vaccine hesitancy and acceptance among the Indian population. Despite being for Tamil Nadu, the survey was not a representative one for the entire state. Despite a few flaws, the findings of this study are important because they demonstrate the effectiveness of the methods and tools used to carry out a survey of this kind to divide the population in a systematic way for a public health approach.

Although vaccine hesitancy is a significant barrier to receiving the COVID-19 vaccine, a significant number of research studies have been conducted to assess vaccine hesitancy rates among various target populations and to look into the reasons for the hesitancy. According to various samples and demographic factors in earlier literature, vaccine hesitancy varied. Depending on the location, even the same sample may have completely different vaccine hesitancy rates. The hesitancy rates, however, were more important for comprehending the success of vaccination programs in various nations. A small number of studies have found that more than 50% of COVID-19 vaccine hesitancy rates exist. In addition to finding demographic factors associated with vaccine hesitancy, such as gender, age, education level, and university status, the study conducted among Algerian medical students found that 85.37% of them had high levels of vaccine hesitancy (Kerdoun et al., 2021). According to the same Turkish study by Yeşiltepe et al. (2021), nursing students exhibited a high hesitancy rate of 56.7%.

The low vaccine hesitancy rate of 25.8% was investigated by HCWs in Saudi Arabia, in contrast. The results show that negative effects, mistrust of vaccine manufacturing companies, and health regulations are the most frequently voiced worries among HCWs (Qunaibi et al., 2021). Furthermore, one in five participants in a study conducted in Ethiopia by Mohammed et al. (2021) expressed reluctance to receive the vaccine, highlighting a 19.1% level of public reluctance toward COVID-19 vaccines. Additionally, the young population of the USA showed an incredibly low hesitancy rate of 15%. (Willis et al., 2021).

Additionally, it found strong correlations between vaccine hesitancy and demographic factors like gender, age, education level, and university enrollment (Bagateli et al., 2021; Rzymiski et al., 2021). When making vaccine-related decisions, socio-demographic factors were crucial. The younger generation's reaction to vaccinations was quite unexpected. Younger people expressed significantly more fear of vaccinations than older people did (Khan et al., 2021). To achieve designated group immunity, one obstacle is the widespread aversion to vaccination among younger people (Shih et al., 2021; Robertson et al., 2021). In addition, younger women have significantly higher rates than younger men (Khan et al., 2021). By supports the findings of numerous studies show that there is an increased vaccine hesitancy among young people and women in Japan (Kadoya et al., 2021).

The concept of vaccine hesitancy is a complex one that depends on the context, the type of vaccine used, and the preferences of the individual. People may therefore be reluctant to receive vaccinations for a variety of

personal reasons and viewpoints. Acceptance of the novel coronavirus vaccine is significantly hampered by this kind of unfamiliar hesitancy. The authors will now review the research on contextual factors and reasons for vaccine reluctance that have been documented in the literature. Most studies found a variety of environmental factors that contribute to vaccine hesitancy. The majority of studies also found that the main causes of vaccine reluctance worldwide were people's worries about side effects, safety, efficacy issues, distrust in health authorities, religious reasons, false information, fear of injection, cultural reasons, and low confidence.

An Ethiopian study that found a low level of vaccine hesitancy serves as proof. According to Dereje et al. (2021), the proportions of hesitation-causing factors are as follows. In Ethiopia, side effects were cited as a key reluctance factor by 43.6% of respondents. Additionally, 21.8% believed that the information available was insufficient to receive the COVID-19 vaccine, and 9% believed that the vaccines were ineffective. Syed Alwi et al. (2021) conducted research in Malaysia and found that 95.8% of respondents showed hesitation regarding side effects. Studies from the past have shown that it was a significant percentage. Lack of information was cited by 80.9% of respondents, followed by multiple religious motivations given by 20.8% and fear of injections by 16.1%. In a survey of adult communities in the USA by King et al. (2021), it was discovered that 56.1% of females would be reluctant to receive the COVID-19 vaccine. 49.2% of respondents said they were worried about side effects, and 59.2% said they distrusted the government. Similar findings were found in a study conducted by Mose et al. in 2022, which showed that 58.8% of Ethiopian medical and health science students would be reluctant to receive the COVID-19 vaccine. The main reasons for vaccine reluctance were identified as fear of adverse reactions (39%), safety concerns (24%), efficacy concerns (20%), and a lack of knowledge (4%).

Other than that, only a few theoretical frameworks for this research field were taken into consideration because COVID-19 vaccine hesitancy was a recently discovered problem. The Health Belief Model (HBM), Theory of Planned Behavior (TPB), and 5C Psychological Antecedents of Vaccination are three of the most widely and frequently used theoretical frameworks that can be identified that are related to evaluating perceptions of the COVID-19 vaccine, according to academic literature. The author, Hossain et al. (2021), carried out research to determine which of the three major theoretical frameworks is best able to explain the variation in vaccine hesitancy. It is discovered that the COVID-19 vaccine resistance is evaluated by the HBM model to vary by 31%. As opposed to the TPB model, which indicated a

variation of 43% in vaccine hesitancy. 32% of the variance in the same sample was explained by new 5C psychological antecedents.

To the authors' knowledge, very little literature has been found that explores Sri Lankan perspectives on the COVID-19 vaccine. The outcomes were mainly taken into account when determining how well-received the COVID-19 vaccine was in Sri Lanka. Wijesinghe et al. (2021) study looked into how well the COVID-19 vaccine was received by Sri Lankan adults. By examining factors related to receiving the COVID-19 vaccine, the authors have widened the scope of their research findings. In order to better understand the health-related behaviors related to vaccinations, the Health Belief Model (HBM) was used in this study. The final vaccine acceptance rate among Sri Lankan adults was recorded as 54 percent along with the online cross-sectional survey conducted at the start of the 2021 period. The highest rate of vaccine acceptance was observed in the 35–44 age group (58.7%), with male respondents reporting a higher acceptance rate than female respondents (57.4%).

The authors have also looked into the major influencing factors for the acceptance of the COVID-19 vaccine, such as local public health workers' recommendations, family doctors' opinions, and additional information about vaccination to consider. The results of the cross-sectional survey performed by Wijesekara et al. (2021) revealed that more hesitant samples were worried about the side effects, the brand of the vaccine, and the length of protection. In contrast, a late 2020 online survey in Sri Lanka of 1080 participants, chosen using the snowball sampling technique, highlighted that 86% of respondents were in favor of the local vaccine, with the majority citing "vaccine trends in spreading the disease in the country" as their justification (Wijesekara et al., 2021, para.4). Despite the fact that the findings drew attention to vaccination-related worries, including side effects and a diminished level of confidence in the vaccine given its quick development.

Overall, many authors have acknowledged that the hesitation surrounding the novel corona vaccine has turned into a significant barrier to the global vaccination program. This suggests that vaccine hesitancy is rapidly rising over time. The author believes that vaccine refusal is steadily rising over time due to a variety of underlying psychological and social factors. In order to investigate underlying worries and factors that will help to understand the global attitude toward COVID-19 vaccination, it is implied that many more country-specific studies are required.

## **METHODOLOGY**

This study was carried out as an online cross-sectional survey among young adults who were living in the most densely populated districts of Colombo, Kurunegala, Gampaha, Kandy, and Galle in Sri Lanka. The primary recruitment was conducted through targeted social media platforms using a crowdsourcing sampling technique. A simple random sampling technique was used for the final recruitment. The minimum sample size for this study was 601, calculated with a 95% confidence interval at a 4% margin error.

The semi-structured questionnaire was aligned based on prior studies and surveys (UNICEF, 2021) and the questionnaire was distributed via social media platforms in the period from March to May 2022. The online questionnaire covered the main three sections, including socio-demographic characteristics, vaccine-related information, and knowledge about COVID-19 vaccines. In the survey, six different socio-demographic variables were assessed, which were age, gender, marital status, religion, and education level of respondents. The study measured vaccine hesitancy for three phases of vaccination, namely: vaccine hesitancy for initial doses (VH\_ID), vaccine hesitancy for booster doses (VH\_BD), and future COVID-19 vaccines (VH\_FD) related to the dependent variable. The research data was primarily analyzed using descriptive statistics and probit regression. The probit regression was used to estimate two possibilities in the dependent variable of the study as a binary variable where "Yes" indicates hesitancy and "No" indicates not hesitant. The quantitative data analysis of the study was performed using excel and STATA software.

## **RESULTS & DISCUSSION**

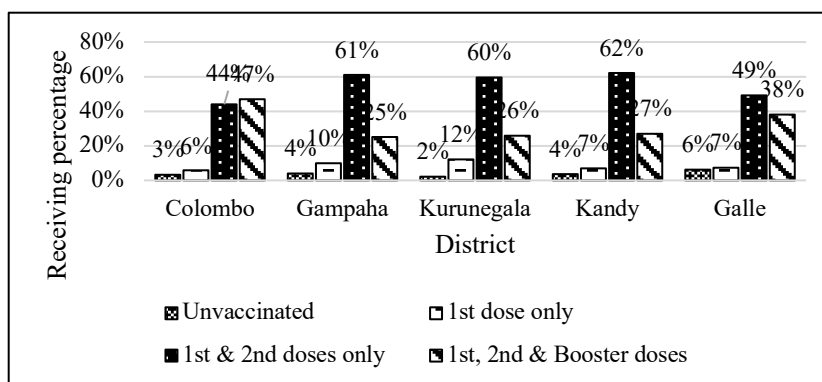
### **Background Characteristics of Study Population**

The study sample comprised 601 participants from the five most densely populated districts in Sri Lanka. The total number of respondents was categorized into four main age categories. The majority of the participants represented the 20 to 24-year age category, which is 34.28%, while the other 65.72% were distributed among the other three categories. The gender distribution consists of 43.26% as male and 48.92% as female. A high proportion (80%) of respondents included the unmarried category, and nearly two-thirds of participants (366, 60.90%) were Buddhist in religion. Other religions incorporated 15.31% of Christians, 14.31% of Muslims, and 9.48% of Hindus. Additionally, current education levels of young adults in Sri Lanka were categorized under five educational levels and most individuals

were college degree holders, which is 47.42%, while the least prevalence of respondents was represented under Professional Qualifications with a percentage of 12.98%. Among the five districts that were selected for the study, Colombo has the highest elevated

portrayal (23.96%) and the other districts, respectively, 22.46% from Gampaha, 21.63% from Kurunegala, 16.14% from Kandy, and 15.81% from Galle.

**Figure 1: The COVID-19 Vaccine Receiving Level of Major Geographic Districts in Sri Lanka**



*Source:* Authors' Compilation

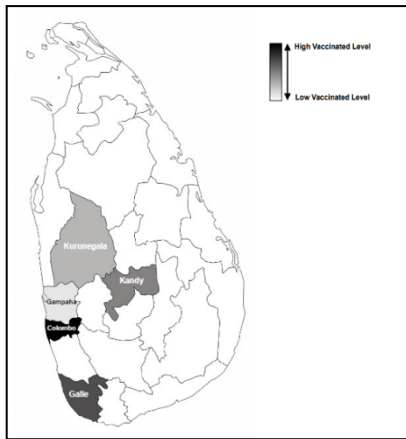
The pattern of COVID-19 vaccine receiving levels that are distributed across the major geographic districts in Sri Lanka has been illustrated into four categories: those who were unvaccinated; those who received only a single dose; those who received both first and second doses of vaccine; and those who extended their vaccination up to booster vaccination.

When considering the proportion of unvaccinated participants, it was reported that approximately less than the 6% unvaccinated rate in all 5 districts. In addition, Findings revealed that 5% to 12% of young adults obtained only a single dose of the vaccine without continuing their immunization process to be fully vaccinated in each of the selected districts. When it came to receiving the second vaccine dose, Gampaha, Kurunegala, and Kandy had reached around 60% of the vaccine acceptance rate, whereas Colombo and Galle had only reported a 50% vaccination level.

However, booster vaccination rates have dropped drastically in every district, which demonstrated that a high level of scepticism existed between the second and booster doses among young adults in Sri Lanka. Therefore, the study further illustrated the distribution of

booster-vaccinated levels in the map below.

**Figure 8: Geographical Distribution of Booster Vaccine Receiving Levels in Sri Lanka**



*Source:* Authors' Compilation

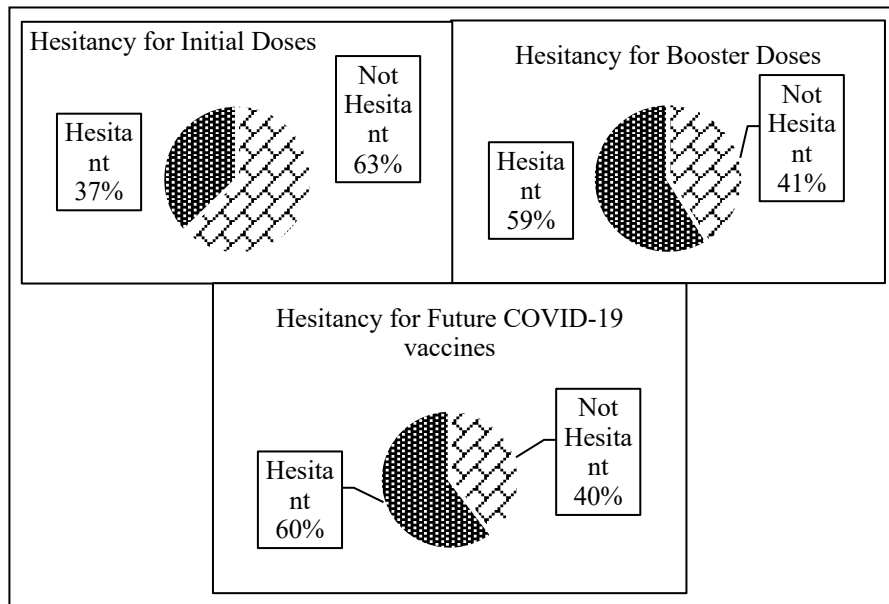
The map depicts the geographical distribution of booster vaccine receiving levels within five selected districts in Sri Lanka according to the data illustrated in Figure 1, which ranges from highly vaccinated to low vaccinated levels. Out of five major geographic districts in Sri Lanka, Colombo district shows a high vaccinated level for booster dose, which is 47%. In comparison to the other districts, Kandy, Kurunegala, and Gampaha had low booster dose vaccination rates of 27%, 26%, and 25%, respectively.

With the intention of demonstrating level of hesitancy for COVID-19 immunizations in each vaccination phase, the above graph displays the rate of hesitation for initial doses and the booster vaccine stage as well prognosis for future vaccinations that may take place in Sri Lanka by assessing respondents' reported future vaccine perception.

During the initial vaccination phase, 63% of the sample had no hesitation about receiving the vaccine, while 37% of the vaccine-eligible sample showed reluctance towards initial doses of the COVID-19 vaccine. However, when it comes to booster dosages, the percentage of non-hesitant people drops dramatically. By showing contrasting results with initial doses of vaccine, the highest proportion of hesitancy was reported in the booster vaccine stage, which is 59%.

## COVID-19 Vaccine Hesitancy Levels by Vaccination Phases

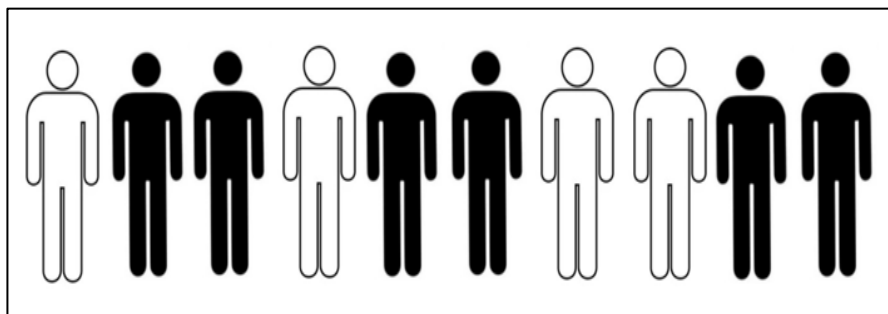
Figure 9: COVID-19 Vaccine Hesitancy by Dosages



Source: Authors' Compilation

Furthermore, according to the progress of the research, there is a trend that shows improved reluctance for future vaccines, as shown in the last pie chart, where hesitancy is further raised compared to booster doses discussed.

Figure 10: Infographics View of the Vaccine Hesitancy Rate for Young Adults in Sri Lanka



Source: Authors' Compilation

The vital finding according to the hesitancy proportion for future doses can be concluded as follows:

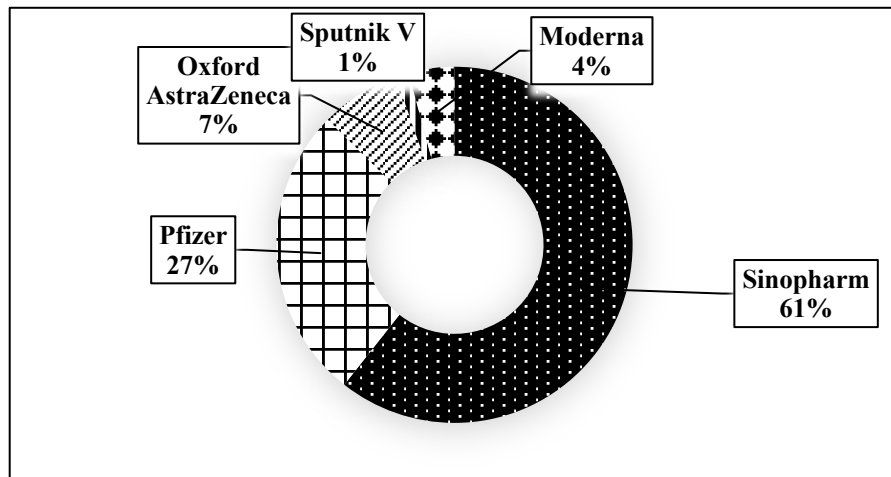
Out of every ten individuals from the young community of Sri Lanka, six people are hesitant to get vaccinated for COVID-19. During the further

spread of COVID in the future, the above-mentioned finding will be very vital for public authorities when urging the general public to receive more vaccine doses

The graph (Figure 5) depicts the proportion of vaccination brand preference of responders who received the vaccine with high hesitancy. The survey responses indicated that four types of COVID-19 vaccine brands were received by the respondents.

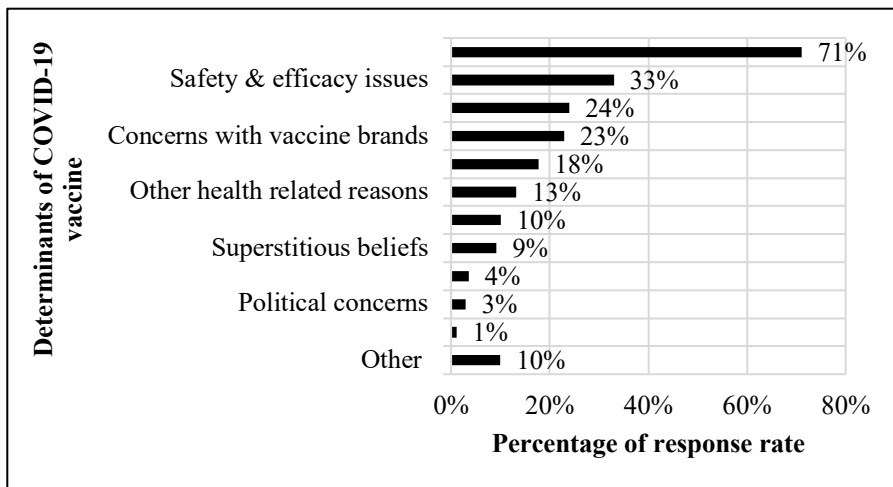
As per the results, most of the respondents had received the Sinopharm vaccine with a high prevalence of hesitancy (61%), which represented two-thirds of the proportion compared to other vaccine brands. Furthermore, 27% of Pfizer vaccine recipients were hesitant to receive the vaccine, whereas the Moderna vaccine had a lower level of hesitancy, which was only 4%.

**Figure 11: COVID-19 Vaccine Hesitancy by Individual Vaccine Brand Preferences**



*Source: Authors' Compilation*

**Figure 10: Determinants of Vaccine Hesitancy**



*Source:* Authors' Compilation

Therefore, it can be concluded that the majority of the Sinopharm-received young adults would not have been confident about the vaccine that they had. The findings of the above charts revealed that the hesitancy rate among Sri Lankan young adults greatly depends on individual brand preferences in Sri Lanka.

As a noteworthy investigation, the study explored the number of underlying concerns that respondents had about COVID-19 vaccines. The above graph obviously shows how the respondents reacted to the concerns found in the past literature and its presentation. As per the findings, the highest percentage of concerns are due to side effects and allergy issues. It shows a level of 71%. Although the remaining reasons show a tremendous hole of under half, the safety and efficacy issues (33%), misinformation (24%), and concerns with vaccine brands (23%) have managed to be significant reasons for vaccine hesitancy. But total percentages of other concerns show less than half the percentage of side effects and allergy issues. Likewise, the least weight concerns are political concerns and religious reasons which are expressed separately at 3% and 1% as it were.

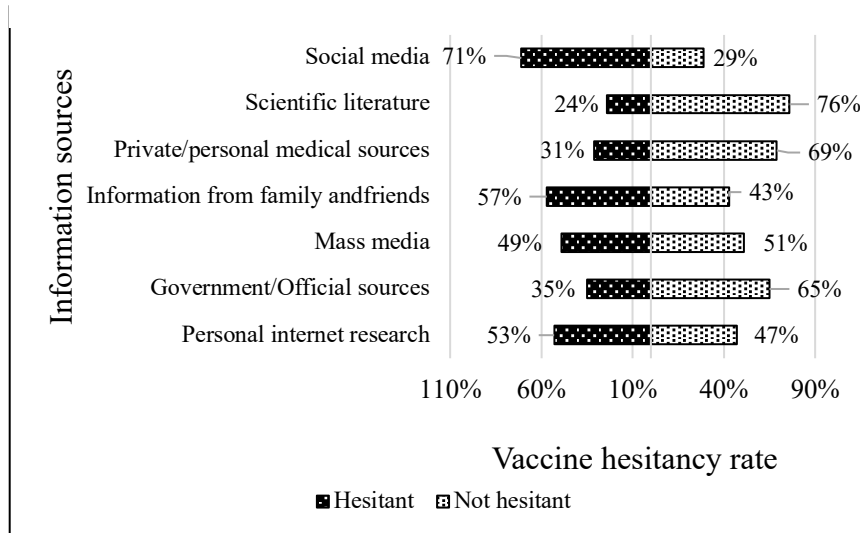
Finally, the findings reflect the most burden reason for Sri Lankan youth population not get vaccinated is side effects and allergy issues while religious reasons not to be a reason for vaccine hesitancy among youngsters.

The information regarding which sources paved the road for people to be skeptical of COVID-19 vaccinations. Figure 7 depicts the seven primary information sources from which respondents received information, as well as

the percentage change in hesitance for each source.

According to our research, the highest percentage of hesitancy level is shown by individuals who use social media as their main source of information. Followed by information received by family and friends which is 57%. Furthermore, the users who conduct their own research and mass media users have a reluctance level of 53% and 49%, respectively.

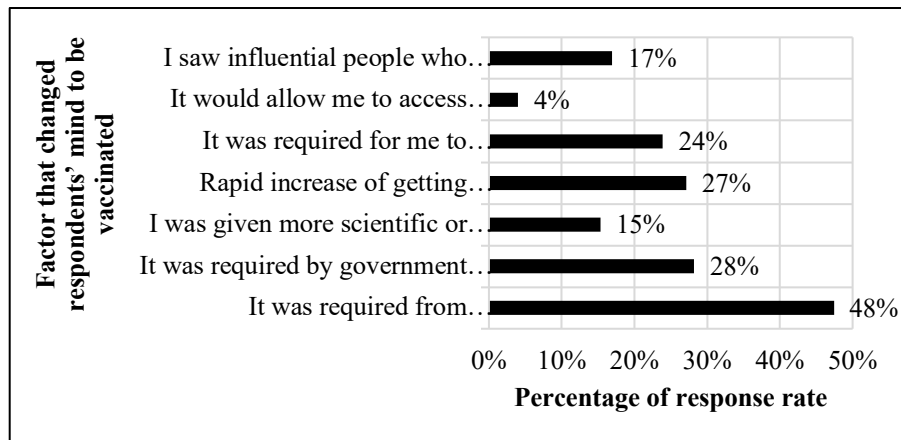
**Figure 11: Information Sources Influenced for COVID-19 Vaccine Hesitancy**



Source: Authors' Compilation

Most importantly, who utilize scientific literature as their resources have the highest degree of non-hesitancy, with 76% compared to the population that uses other forms of information sources. People who utilize private/personal media resources are 69% less likely to be hesitant to take vaccines, whereas those who use official media are just 65% less likely. Aside from people who utilize social media as their primary source of information, the other seven sources led to a non-hesitancy level of more than 43% which is a very positive gesture.

**Figure 14: Factors that Changed Respondents' Mind to be Vaccinated**



*Source:* Authors' Compilation

One of the study's key findings was that Sri Lanka had a relatively high vaccination rate even though there were a number of concerns with the COVID-19 vaccine among young adults. The study continued the further observation in order to properly justify the high level of vaccine acceptance in initial doses. Additionally, factors that changed respondents' mind to be vaccinated incorporates the respondents also who were initially hesitant to have vaccinated but received after for any of the above reasons. According to the findings, the motivation behind why an ever-increasing number of respondents are being immunized is that it has been required in schools, universities, and places of employment. 48% of respondents expressed that reason as their enabling factor for getting vaccinated. The next common reason for receiving the vaccine is, that it was required by government regulations (28%). Though it shows 20% less amount than the previous reason it also was an influenced reason to getting vaccinated Sri Lankan youth. Very few respondents said that having vaccines allowed them to access social activities more freely. As a percentage, it shows 4% of the entire respondents. It shows a value 12 times lower than the one with the highest percentage. According to the respondents' opinion, they have a tendency to receive any COVID-19 vaccine since it was required by any third party.

### **Probit Model Estimation Results**

The probit regression was calculated according to find out the impact of socio-demographic factors on vaccine hesitancy in different vaccine phases. As the dependent variable vaccine hesitancy was identified with three different vaccination phases such as initial doses, booster dose, and future vaccines. Since all the variables are dummy variables one category has dropped from each variable. From the age variable, age 31 to 35 has dropped. From the gender variable males have dropped while married are dropped from the marital status variable. Hindu is dropped from the religion variable and respondents with professional qualification had considered as the dropped variable of education level. Therefore, all the below interpretations are based on relation to the dropped dummy variables.

At the initial doses, socio-demographic characteristics only explain 9.6% of the variance in vaccine hesitancy for the initial doses of the COVID-19 vaccine. According to the Chi-square value (0.000), the model is significant under alpha level 0.01. Only one variable shows statistical significance at this stage, which is Islam. The results prove the rejection of all the alternative hypotheses of this study. The reason is that no evidence to prove there is a significant impact exists on vaccine hesitancy by socio-demographic characteristics. Therefore, all the alternative hypotheses can be rejected. Other than that, an average Islamic respondent has a 373% higher likelihood of hesitancy to receive their first dose of the vaccine compared to a married, Hindu, male respondent between the ages of 31 and 35 with a professional qualification.

**Table 27: Probit Model Estimation Results for Vaccine Hesitancy for Initial Doses**

Variable	Estimates	Robust SE	P>[z]	Marginal effects	Probability
<b>Constant</b>	-0.8157	0.2352	0.001	-	
<b>Age</b>					
Age_15 to 19	0.3367	0.2609	0.197	0.1142	1.400
Age_20 to 24	-2.2646	0.2107	0.209	-0.0897	0.1038
Age_25 to 30	0.0934	0.1623	0.565	0.0317	1.0979
<b>Gender</b>					
Female	0.1808	0.1153	0.117	0.0613	1.1982
<b>Marital Status</b>					
Unmarried	0.2654	0.1780	0.136	0.0900	1.3039
<b>Religion</b>					
Buddhist	0.1332	0.1974	0.500	0.0452	1.1424
Catholic	0.4348	0.2275	0.56	0.1474	1.5446
Islam	1.3168	0.2283	0.000*	0.4466	3.7314
<b>Education Level</b>					
OL_Student	-0.4248	0.3275	0.195	-0.1441	0.6539
AL_Student	-0.3578	0.2197	0.103	-0.1213	0.6992
Undergraduate	0.0562	0.1796	0.754	0.0190	1.0578
Graduated Student	-0.0100	0.2798	0.971	-0.0034	0.9900
<b>Pseudo R<sup>2</sup></b>	0.0967				
<b>No. of obs</b>	601				
<b>Prob &gt; Chi square</b>	0.0000				

Note: \*Significant at the 1% level

$$Y(VH\_ID = 1) = -0.8157 + (0.3367 * Age\_15 \text{ to } 19) + (-2.2646 * Age\_20 \text{ to } 24) + (0.0934 * Age\_25 \text{ to } 30) + (0.1808 * Female) + (-0.2654 * Unmarried) + (0.1332 * Buddhist) + (0.4348 * Catholic) + (1.3168 * Islam) + (-0.4248 * OL\_Student) + (-0.3578 * AL\_Student) + 0.0562 * Undergraduate + (-0.0100 * Graduated Student)$$

Source: Authors' Compilation

**Table 28: Probit Model Estimation Results for Vaccine Hesitancy for Booster Doses**

Variable	Estimates	Robust SE	P>[z]	Marginal effects	Probability
<b>Constant</b>	0.4962	0.2132	0.020	-	
<b>Age</b>					
Age_15_19	0.6237	0.2611	0.017*	0.2225	1.8658
Age_20_24	0.2393	0.2098	0.254	0.0854	1.2703
Age_25_30	0.0518	0.1698	0.760	0.0184	1.0531
<b>Gender</b>					
Female	0.3178	0.1131	0.005*	0.1133	1.3741
<b>Marital Status</b>					
Unmarried	-0.1045	0.1702	0.539	-0.0373	0.900
<b>Religion</b>					
Buddhist	-0.4475	0.1968	0.023*	-0.1596	0.6392
Catholic	-0.0798	0.2243	0.722	-0.0284	0.9233
Islam	0.3642	0.2287	0.111	0.1299	1.4393
<b>Education Level</b>					
OL_Student	-0.8599	0.3042	0.005*	-0.3067	0.4232
AL_Student	-0.4787	0.2178	0.028*	-0.1708	0.6195
Undergraduate	-0.3460	0.1846	0.061*	-0.1234	0.7075
Graduated_Student	0.4407	0.2811	0.117	0.1572	1.5537
<b>Pseudo R<sup>2</sup></b>	0.0762				
<b>No. of obs</b>	601				
<b>Prob &gt; Chi square</b>	0.0000				

Source: Authors' Compilation

Note: \*Significant at the 1% level

\*\* Significant at the 5% level

\*\*\* Significant at the 10% level

$$Y(VH\_BD = 1) = 0.4962 + (0.6237 * Age\_15\ to\ 19) + (0.2393 * Age\_20\ to\ 24) + (0.0518 * Age\_25\ to\ 30) + (0.3178 * Female) + (-0.1045 * Unmarried) + (-0.4475 * Buddhist) + (-0.0798 * Catholic) + (0.3642 * Islam) + (-0.8599 * OL\_Student) + (-0.4787 * AL\_Student) + (-0.3460 * Undergraduate) + (-0.4407 * Graduated\ Student) \quad (2)$$

The socio-demographic characteristics only explain 7.6% of the variance in vaccine hesitancy for booster doses. Since the Chi-square is 0.000, the model fitness can be interpreted as significant under the 0.01 alpha level. Corresponding to the regression model, female and OL student of education level variables are highly significant. Aged 15 to 19, Buddhist religion and AL student of education level seem to be significantly under 0.05 level. Finally, the undergraduate student variable shows marginally significant. Being in the aforementioned category is a significant factor affecting the reluctance to receive the booster dose of the COVID-19 vaccine, as other variables did not demonstrate any significance.

Being a Buddhist respondent or OL student or AL student or undergraduate student is expected to be respectively 63%, 42%, 61%, and 70% less likely to be hesitant for booster dose as compared to someone who is married, Hindu, male younger aged between 31 to 35 with a professional qualification.

The pseudo  $R^2$  value of 8.9% explains the variance of vaccine hesitancy for future doses. Thereby justifying the availability of several other factors such as COVID-19 vaccine literacy and determinants of vaccine hesitancy that could have contributed to vaccine hesitancy. According to the Chi-square value (0.000), the model is significant under alpha level 0.01. As the regression model revealed, the variables female, OL student, AL student, and undergraduate seems to be significant under 0.01 while Catholic and Islam are significant under 0.05. Thereby indicating that being in the above category is a significant factor affecting hesitancy toward future doses of the COVID-19 vaccine. Being an OL student or AL student or undergraduate is expected to be 32%, 43%, and 43% less likely to be hesitant for booster dose as compared to someone who is married, Hindu, male younger aged between 31 to 35 with a professional qualification.

**Table 29: Probit model estimation results for vaccine hesitancy for future doses**

Variable	Estimates	Robust SE	P>[z]	Marginal effects	Probability
<b>Constant</b>	0.4990	0.2218	0.024	-	
<b>Age</b>					
Age_15_19	0.3433	0.2695	0.203	0.1193	1.4095
Age_20_24	0.1211	0.2218	0.585	0.0421	1.1287
Age_25_30	0.0764	0.1746	0.661	0.0265	1.0793
<b>Gender</b>					
Female	0.4852	0.1135	0.000*	0.1687	1.6244
<b>Marital Status</b>					
Unmarried	-0.0483	0.1769	0.784	-0.0168	0.9528
<b>Religion</b>					
Buddhist	0.0013	0.1933	0.994	0.0004	1.0013
Catholic	0.5352	0.2260	0.018**	0.1861	1.7077
Islam	0.5062	0.2212	0.022**	0.1760	1.6589
<b>Education Level</b>					
OL_Student	-1.1098	0.3120	0.000*	-0.3858	0.3296
AL_Student	-0.8278	0.2349	0.000*	-0.2878	0.4370
Undergraduate	-0.8237	0.2035	0.000*	-0.2864	0.4388
Graduated_Student	-0.1054	0.2948	0.721	-0.0366	0.8999
<b>Pseudo R<sup>2</sup></b>	0.0898				
<b>No. of obs</b>	601				
<b>Prob &gt; Chi square</b>	0.0000				

Source: Authors' Compilation

Note: \*Significant at the 1% level

\*\* Significant at the 5% level

$$Y(VH\_FD = 1) = 0.4990 + (0.3433 * Age\_15\ to\ 19) + (0.1211 * Age\_20\ to\ 24) + (0.0764 * Age\_25\ to\ 30) + (0.4852 * Female) + (-0.0483 * Unmarried) + (0.0013 * Buddhist) + (0.5352 * Catholic) + (0.5062 * Islam) + (-1.1098 * OL\_Student) + (-0.8278 * AL\_Student) + (-0.8237 * Undergraduate) + (-0.1054 * Graduated\ Student) \quad (3)$$

## DISCUSSION

For a long time, vaccine hesitancy has been a concern for the entire world. However, with the spread of the COVID-19 vaccination and the several myths surrounding the vaccination, the situation is becoming more contentious. Vaccine reluctance can develop under various circumstances. Especially South Asian countries encounter different forms of vaccine hesitancies (Hawladar et al., 2022). To the authors' knowledge, however, this is the first study that examines vaccine hesitancy for various doses and assesses vaccine hesitancy for upcoming doses for COVID disease. According to the findings, hesitancy for initial doses, booster doses, and upcoming COVID-19 vaccines gradually increased. This research adds Some of the study's conclusions are directly related to earlier work, while others go against what was previously discovered.

According to the findings, hesitancy for initial doses, booster doses, and upcoming COVID-19 vaccines gradually increased. From those findings, a unique situation can be inferred: respondents demonstrated a low level of hesitancy for initial doses and a strong desire to receive the vaccine. However, the hesitation has grown stronger as more doses have been recommended. This reluctance can be explained by how frequently people receive vaccinations. Therefore, the authors stated that Sri Lankan youth might not be immunized if it is available in the fourth or fifth doses.

The choice of brands is another factor in hesitation. Initial vaccination stages in Sri Lanka were fraught with concern, which was very evident. At the beginning of the vaccination campaign in Sri Lanka, the government distributed more Sinopharm vaccines. People were therefore forced to take the government-offered vaccine despite their preference for a different kind of vaccine because they had no other option. The greatest concern, in the beginning, was vaccine brand preference because most younger people sought out mRNA vaccines like those produced by Pfizer. People had to get any vaccine available at the time because those vaccines weren't readily available. However, brand preference had a significant negative impact on all global COVID immunization programs (Rzymiski et al., 2021). The study investigated how people become wary of those vaccines based on past brand preferences, even though brand preference is no longer available in the modern world. The percentage of respondents who expressed hesitation toward Sinopharm (66%) was significantly higher than that of the other brands. Therefore, it can be inferred that most of the young adults who received Sinopharm would not have had faith in the vaccine they had.

According to the study done by Fisher et al. (2020) people from various backgrounds were concerned about COVID-19 vaccination and its unrevealed safety, side effects, and other aspects, before the introduction of COVID-19 vaccines 2020. Numerous studies have identified several factors that were primarily responsible for hesitation (Barry et al., 2021; Doherty et al., 2021). It was discovered that the causes of vaccine reluctance were universal. This study found that side effects, allergies, safety and efficacy issues, and misinformation about vaccination are common among Sri Lankan children.

Since it is one of the most significant topics relating to personal health, accurate information and reliable sources are essential factors to take into consideration. As a result, it's critical to gather and disseminate more accurate and up-to-date information about this vaccine. because the decision-making of those who have received vaccinations depends solely on the accuracy of information (Karabela et al., 2021). The results of this survey, however, showed that there are some issues with how people access information. The cause is that a lot of people rely on news that spreads via social media. Because of this, the authors focused on the information sources that made younger people warier. The findings showed that social media information tended to be less confident about immunization. The most important factor in making vaccination decisions is knowledge. It is very likely that the lack of knowledge about vaccines and comprehension of the process of vaccine development can be identified as the fundamental cause of reluctance (Yan et al., 2021).

Nevertheless, the level of vaccination in Sri Lanka was relatively high, regardless of the reasons for this reluctance. The study's findings also showed that 60% of recipients reached initial dose levels. It was more extensive than the earlier Sri Lankan studies carried out at the end of 2020. (Wijesinghe et al., 2021). In order to find out why hesitant respondents were tempted to receive the vaccine, the study looked into this. The opinion of the respondents is that since it was demanded by a third party, they tended to receive any COVID-19 vaccination. Not only Sri Lanka, but also some African nations demonstrated third-party influence because the majority claimed that they received vaccinations as a result of requirements set by educational institutions, workplaces, governments, and workplaces (Abebe, Shitu & Mose, 2021).

However, the statistical correlation does not indicate a significant influence of socio-demographic factors on vaccine hesitancy. Socio-demographic factors only account for less than 10% of the variation in vaccine hesitancy

across all vaccination phases: initial doses, booster dose, and future doses. This suggests that socio-demographic traits have little bearing on young adults' hesitation to receive a vaccine in Sri Lanka. Wijesinghe et al. (2021) used the evidence of the entire Sri Lankan population to demonstrate the same fact. Additionally, some international studies have demonstrated that decisions regarding vaccination have no discernible effect on socio-demographic factors such as education level religion, marital status, and geographical location (Alhassan et al., 2021; Kobayashi et al., 2021). This suggests that there may have been additional undiscovered causes for the young adults in Sri Lanka who were reluctant to get vaccines.

## CONCLUSION

This study evaluated the reluctance to receive the COVID-19 vaccine among young Sri Lankans by taking into account sociodemographic traits and additional vaccine-related factors. By assessing vaccine hesitancy alongside three phases of vaccination in Sri Lanka, the current study created a novel outcome of vaccine hesitancy. The findings showed that reluctance to receive the vaccine gradually increased through the initial doses, booster doses, and future COVID vaccines. Side effects and allergy concerns, safety and efficacy issues, and misinformation are the main causes of vaccine refusal. It is obvious that vaccine brand preferences, with the primary influence of social media information, had a highly measurable impact on the prevalence of vaccine hesitancy among the young population. A third party's requirements led to the vaccination of the majority of the hesitant respondents. According to the results of probit regression, the initial dose stage, booster dose stage, and future COVID-19 vaccinations administered in Sri Lanka all have lower levels of vaccine hesitancy that can only be explained by socio-demographic characteristics. The authors justify the existence of a number of additional factors, such as COVID-19 vaccine health literacy and vaccine hesitancy determinants, that may have contributed to vaccine hesitancy rather than socio-demographic factors in light of the findings.

The limitations of this study have an impact on the study's results both directly and indirectly. The electronic distribution of the questionnaire primarily resulted in a skewed sample selection. Based on that, the respondents were primarily undergraduate students and members of the 20–24 age group, which may have an impact on how the research findings are estimated. In addition, this study only looked at the five most populous

districts in Sri Lanka, which hindered its ability to reach rural districts and investigate the most vulnerable issues facing young adults there. Since the study explored there has been no statistical impact on socio-demographic characteristics and vaccine hesitancy there can be other unfound reasons for vaccine hesitancy. In this manner, the authors expect to conduct a qualitative study as future research to investigate underlying concerns of vaccine hesitancy among the youngsters in Sri Lanka.

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# **The Influence of Graduate Trainees' Workplace Spirituality, Organizational Commitment and Job Satisfaction on Organization Citizenship Behavior in Matara District, Sri Lanka**

A.H.I Chandradasa<sup>1</sup>, B.L. Galhena<sup>2</sup>

<sup>1</sup>*Department of Human Resource Management, Faculty of Management and Finance, University of Ruhuna, Sri Lanka*

*Isuru@mgt.ruh.ac.lk*

<sup>2</sup>*Department of Human Resource Management, Faculty of Management and Finance, University of Ruhuna, Sri Lanka*

*Blgalhena2@gmail.com*

## **ABSTRACT**

*Employees' infinite generous behaviour patterns play a critical role in establishing a magnificent place of work in the contemporary world. However, it is hard to expect that kind of behaviour from employees as the game of business are frolicked in a dynamic and competitive arena. To thrive in the competitive business, most organizations are exploring new ways of competitive advantage. Workplace spirituality and organizational citizenship behaviour are revolutionary approaches that organizations use to boost their competitive advantage and promote different employee behavioural outcomes. Even though many organizations are working to improve organisational citizenship behaviour, theoretically the knowledge regarding the variables that influence to determine organisational citizenship behaviour is lacking and empirically it is not properly examined and findings regarding the study phenomenon also inconsistent of generalizability to developing economies. In addition to workplace spirituality, organization commitment and job satisfaction are identified from literature that influence determines organization citizenship behaviour and this study aims to explore how workplace spirituality, job satisfaction and organizational commitment influence on the organization citizenship behaviour. Based on the literature survey, conceptual framework was developed and the hypotheses was postulated. The theoretical population of this study is graduate trainees recruited in a bulk in 2020 in Sri Lanka. Primary data of the study was gathered using a web-based self-administered questionnaire prepared by using previously validated items and it was distributed among the study population by employing the snowball sampling technique. 256 Responses were received from newly recruited graduate trainees in Matara District, Sri Lanka. Gathered data were analyzed using SPSS. Study results indicate that workplace*

*spirituality, organization commitment and job satisfaction have a positive influence on organizational citizenship behaviour. This study provides valuable insights and recommendations to policy makers and relevant authorities about the areas that need to improve for make employee mindset towards organization citizenship behavior that might drive organization to more efficient and effective one since organization citizenship behavior provides a roadmap to improve employee productivity, morale enhances social interactions, level of work meaningfulness, reduce stress and finally lead to higher performance.*

**Keywords; Job satisfaction, Organizational commitment, Organization citizenship behavior, Public sector employees, Workplace spirituality**

## **INTRODUCTION**

In recent decades, Organizational Citizenship Behavior (OCB) has become a well-known term and a common component of organizational research (Podsakoff et al., 2000). Bateman and Organ coined the phrase "organizational citizenship behavior" (1983). Organizational citizenship behavior has received the most attention and emphasis in management and organizational literature, with a variety of definitions, conceptualizations, drivers, and outcomes. One common definition that organizational citizenship behaviour is: "Individual behaviour that is discretionary, not directly or explicitly recognized by the formal reward system, and in the aggregate promotes the efficient and effective functioning of the organization" (Organ, Podsakoff, & MacKenzie, 2006). Not only effective functioning this is a well-known concept that enhances the organization's operating efficiency. However, this may be not acknowledged through the institution's payment procedures.

Over the last two decades, organizational citizenship behavior has been intensively explored in the theories of psychology and management as a sort of extra-role behavior (Shafazawana et al., 2016; Khalid et al., 2021). A meta-analysis found that organizational citizenship behaviors had significant connections with a variety of individual and organizational outcomes (Podsakoff et al., 2009). Previously, various scholars (Bateman & Organ, 1983; Organ & Ryan, 1995; Podsakoff et al., 2000) stated that people's voluntary contribution to the business by going above and beyond job requirements is a fundamental component of corporate citizenship behavior. For a variety of reasons, organizational citizenship behavior can promote organizational effectiveness, boost management productivity and cooperation, and simplify the utilization of organizational resources to lead

to productive goals (Podsakoff, et al., 2000). Organizations that want to be more competitive simply require people that can go above and beyond the bounds of their formal tasks or job descriptions and engage in discretionary behaviors like corporate citizenship behavior (Podsakoff, et al., 2000).

A government organization's performance is primarily based on its workers willingly executing the requirements of their jobs within the organization (Di Paola & Tschannen-Moran, 2001). As a result, corporate citizenship behavior receives a lot of attention in terms of the sort of employee job (Bogler & Somech, 2004). Government organizations' tasks and duties are indeed very complicated and demanding when compared to the private sector attributable to the standards, procedures, methods, strategies, and other crucial issues followed by government sector organizations in Sri Lanka (Weerarathna, 2014). Most customers who got services from these government organizations complained about the services they received, and there are numerous recorded instances of their dissatisfaction with the government services supplied by government organizations (Pulasinghage, 2010). The most typical cause of this dissatisfaction is government employees' low efficiency, effectiveness, and productivity (Pulasinghage, 2010). Every government institution acts as an imperative for a state's economic and social growth in a developing economy. Therefore, every government employee's performance is crucial at the same time for organizational success (Ranaweera, 2016).

In this study, researchers try to specifically examine the organizational citizenship behaviour of government employees who were recruited newly as development officers due to several reasons. Compared to the year 2019, in the year 2020, public sector employment increased from 1.467 million to 1.528 million. According to the Central Bank report, 2020 “The increase observed in public sector employment was due to the Government program to provide jobs for 60,000 unemployed graduates and 100,000 persons in the lowest strata of income earners”. The appointments were made on 2<sup>nd</sup> September 2020 and the composition can be viewed as follows.

**Table 1: Graduate trainee recruitment details in Sri Lanka-2022**

<b>Description</b>	<b>Number</b>
No. graduates joined the public sector on 2 <sup>nd</sup> September 2020	50,177
No. of internal graduates	29,156
No. of external graduates	20,322
No. of appointments to monks	1,000
No. of appointments to art graduates	31,172
No. of appointments to commerce graduates	1,839
No. of appointments to management graduates	7,278
No. of appointments to science graduates	4,494
No. of appointments to indigenous medicine graduates	143
No. of appointments to allied health sciences graduates	161
No. of appointments to computer technology graduates	989
No. of appointments to engineering and law graduate	233
No. of appointments to a diploma in accounting	1,906

*Source:* Literature survey, 2022

Initially, graduates were allocated divisional secretariat offices. After the training period appointees will be directed to fill government vacancies available in rural hospitals, regional irrigation offices, rural and estate schools, department of agricultural services, department of wildlife, ayurvedic hospitals, dispensaries etc (Kumari, 2020). As graduates, their knowledge and expertise can be used to provide superior service to their customers and finally enhance the overall performance of the government sector (Kumari, 2020). Currently, these graduates are trained in government and private sector organizations as well as working as permanent employees in government sector organizations. Throughout the last period without a proper plan, they utilized for several institutions to perform several duties and some of these are not relevant to the field in which these graduates specialized (Kumari, 2020). Mainly without proper and effective utilization, it may lead employees towards negative outcomes of the job. However, the realities and changes they have witnessed in the workplace over the last year not only harm the image and status of their professions, but also contribute to issues such as increased job discontent and job stress, as well as decreased devotion to the business (Pienaar & Bester, 2006). Therefore, it is necessary

to take action against the employee group who faced negative consequences and if not, it will lead them to a frustrated employee group it will negatively influence the overall organizations they served and the economy.

According to previous empirical findings, job satisfaction and workplace spirituality appear to have the most consistently positive associations with commitment (Ali et al., 2014; Yahaya & Ibrahim, 2016; Mouloud, Bougherra, dan Samir, 2016) and organizational citizenship behaviors. Various researchers have found links between workplace spirituality, satisfaction, commitment, and these behaviors (Zeinabadi, 2010; Swaminathan & Jawahar, 2013; Shafazawana et al., 2016). In a number of employee groupings, the mechanisms underlying citizenship behavior and job attitudes have been studied. However, the general view is that, within the framework of the corporate environment, good civic behavior and job satisfaction are essential for achieving both organizational and individual objectives (Chughtai & Zafar, 2006; Triatmanto et al., 2019; Hartinah et al., 2020). In these situations, the organizational citizenship behavior of government personnel becomes crucial to attaining their organizational goals and objectives.

Customers who come to them for services, particularly government services intimately related to the people across the nation, will be impacted by the government employees' desire to engage in organizational citizenship behavior. The readiness of government personnel to put up more effort by acts of kindness, such as courteously assisting their clients, responding to their tasks honestly, accurately, equally, and efficiently. This would imply the importance of working as a government sector employee at a government institute. This quantitative study sought to determine how development officers employed by Sri Lankan government institutions reacted to workplace spirituality, job satisfaction, organizational commitment, and organizational citizenship behavior. Regarding this phenomenon Zeinabadi, (2010) examined teachers' organizational citizenship behaviour by linking job satisfaction and organizational commitment, Sawitri, Suswati, & Huda (2016) examined organizational citizenship behaviour and employee performance, Dharma, (2018) examined employee motivation on organizational performance and organization citizenship behaviour and He, J., Zhang, H., & Morrison, A. M. (2019) examined how to cooperate social responsibility impact on organizational citizenship behaviour.

This study mainly focuses on how workplace spirituality, organization commitment and job satisfaction influence generate organisational citizenship behaviour among newly recruited employee groups in the Matara

District, Sri Lanka. There is a limited number of study findings available on workplace spirituality, job satisfaction influence as well as organizational commitment as a direct variable and how influence determines organizational citizenship behaviour. Therefore, theoretically, there is a knowledge gap regarding how workplace spirituality, organizational commitment and job satisfaction influence on organizational citizenship behaviour, especially among public sector employees. Utami et al., (2021) also recommended future studies to examine workplace spirituality and job satisfaction influence on organizational citizenship behaviour due to the potential of job satisfaction and workplace spirituality can generate a greater impact on individuals, the environment, and the organizations. Further, empirical findings regarding job satisfaction, workplace spirituality and organizational commitment influence on organization citizenship behaviour are not properly examined and findings regarding the study phenomenon also inconsistency of generalizability to developing economies. Thus, the study's findings are highly valuable to Sri Lankan government administrators and policymakers who want to understand how workplace spirituality and job satisfaction support organizational commitment and organizational citizenship behavior among public servants. The purpose of this study is to investigate how workplace spirituality, organizational commitment, and job satisfaction influence organizational citizenship behavior among newly hired employee groups in the public sector of Sri Lanka in order to close the aforementioned theoretical and empirical knowledge gap.

The study's literature review, conceptualization, and hypothesis creation were covered in the next section of the article. The methodology was covered in the third section. Results from the empirical research are reported in the fourth part. The limits, opportunities for more investigation, and theoretical and practical consequences were all discussed in the last part.

## **LITERATURE REVIEW**

### **Behavioural Theory of the firm**

Lee and Miller (1999) assert that management expects and promotes individuals to use greater caution when performing their job duties. This quantitative study examined how development officers employed by Sri Lankan government institutions reacted to workplace spirituality, job happiness, organizational commitment, and organizational citizenship behavior (O'Reilly & Chatman, 1986; Organ & Konovsky, 1989). A process-

oriented behavioral model was put out by Argote and Greve (2007) with the goal of uncovering the generating processes and underlying contingencies of the organizational strategy in the public sector. The behavioral approach is fundamentally based on such devotion to process-based justifications of organizational behavior.

To achieve this, four focuses must be created. Concentrate first on a select few significant business choices. Create a process-oriented business model second. Observing a firm's actions as the culmination of a clearly defined series of behaviors while making judgment calls along the way. Third, ensure that organizational business process structure and decision output are accurately represented in the company's models. Lastly, expanding the notion outside the investigations carried out by the businesses. The second and third commitments have gained widespread acceptance in the field of organizational behavior research, which is now a standardized discipline. The goal of this research is to explore this idea as a consequence.

### **Organizational Citizenship Behavior (OCB)**

Shenkar (2005) defines organizational citizenship behaviour as a “form of informal behaviour outside the proper behaviour expected of them to contribute to the organization's right and what is in it”. Capaldi (1992) defines organizational citizenship behaviour as “behaviour that goes beyond formal job requirements that benefit the organization. In other words, organizational citizenship behaviour is not listed directly in the employee's job description”. Nonetheless, it is beneficial since this behaviour contributes to the organization's long-term viability. Employees that engage in such activity positively contribute to the organization by going above and beyond the call of duty while still carrying out their daily tasks (Shenkar, 2005).

There are five dimensions to organizational citizenship behavior: (1) Altruism, defined as "behavior that assists individuals in an organization in making their work easier," (2) Courtesy is defined as "helping fellow employees prevent problems arising from their work by providing consultation and information and respecting their needs." (3) Sportsmanship, defined as "the ability to endure less-than-ideal circumstances without complaining." (4) Civic virtue, defined as "being involved in organizational activities and caring for the organization's survival," and (5) conscientiousness, defined as "doing things that help the organization, such as adhering to the company's regulations."

## **Organizational Commitment (OC)**

Organizational commitment may be shown in an employee's desire to identify with the company, as well as in their sentiments of adoration and devotion. As a result, an employee's psychological connection to the company enables them to continue to identify with the company's employee job (Haque et al., 2019). Klein and Park (2015) define organizational commitment as (1) "a strong desire to remain a member of a specific organization (2) a desire to strive in accordance with organizational desires (3) certain beliefs and acceptance of organizational values and goals." A person's willingness to work for and be a part of a corporation is referred to as organizational commitment (Haque et al., 2019). It is a psychological connection that exists between a worker and the company they work for (Astuty & Udin, 2020; Ingsih et al., 2020). An indicator of behavior that may be used to gauge an employee's propensity to remain with a firm is organizational commitment. Employees who embrace the organization's ideas and objectives, feel a sense of belonging to the organization, and decide to stay with the organization are said to be committed to it.

## **Workplace Spirituality (WS)**

Spirituality is a state or experience that may provide people purpose and direction, as well as a sense of understanding, support, completeness, or connectivity. Connections can be made with oneself, and other people (Belwalkar, Vohra, & Pandey, 2018). Spirituality at work can be defined as "searching for meaning or higher purpose, connectedness, and transcendence" (Fry et al., 2010). It is acknowledged that spirituality plays a significant role in achieving personal goals. Spirituality is connected to management, attitude, work ethic, morale, and job performance (Pio & Tampi, 2018). Spirituality in the workplace has evolved into a management approach for businesses (Belwalkar, Vohra, & Pandey, 2018; Fanggidae, 2018).

Spirituality at work include thoughts and sentiments concerning one's workplace and coworkers. Numerous aspects of a business, including its environment, culture, leadership, and policies, support employees' expression and spirituality-related experiences at work. Therefore, a definition of spirituality in the workplace is a set of organizational ideals represented by a culture that connects with others by bringing happiness and fulfillment.

## Job satisfaction (JS)

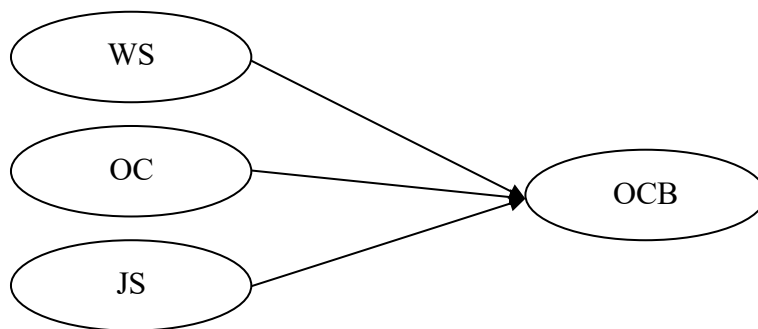
Robbins (2012) (2012) the positive emotional response that a person has to a particular work is referred to as their job satisfaction. Job satisfaction is just a good emotional state of mind brought on by work that makes individuals cherish their jobs (Judge, Zhang, & Glerum, 2020). For managers that adhere to the commitment to give workers challenging and intrinsically satisfying assignments, high employee satisfaction is crucial.

According to Robinson and Morrison, employees are less inclined to engage in civic conduct when they believe their company has failed to uphold its job promises (2000). Although it would seem logical to assume that contented workers are more likely to interact positively, engage in extracurricular activities, assist in improving the performance of other workers, and go above and beyond the official requirements of their jobs to complete the task at hand. Previous empirical studies done by Wagner and Rush, 2000; Kemery et al., 1996 and the conceptual rationale proposed by Organ (1990) emphasized that there is a positive association between job satisfaction with organizational commitment and organisational citizenship behaviour.

## Conceptual Framework

Based on the behavioural theory of the firm and the variables identified from the previous literature following the conceptual model developed in the current study.

**Figure 1: Conceptual framework**



*Source:* Authors constructed, 2022

## **HYPOTHESES DEVELOPMENT**

### **Workplace Spirituality and Organizational Citizenship Behavior (OCB)**

Inner thoughts regarding occupations and coworkers are part of workplace spirituality (Haldorai et al., 2020). Numerous organizational traits, including organizational climate, organizational culture, leadership, and organizational practices, support the practice and expression of spirituality at work (Nurkholis, Dularif, & Rustiarini, 2020). Thus, organizational values that are represented by a culture that interacts with others through bringing contentment and joy may be described as spirituality in the workplace (Nguyen et al., 2020; Pawar, 2009). This organizational citizenship behavior covers a wide range of actions, including helping others, offering to do extra duties, and abiding by workplace rules and regulations. According to empirical research, organizational citizenship behavior is positively impacted by workplace spirituality (Helmy & Wiwoho, 2016); nevertheless, Ali et al., (2014), Kaya (2015), and Djaelani, Sanusi, & Triatmanto (2021) established a clear correlation between the two. It shows that the amount of corporate citizenship behavior increases with employee impression of spirituality in the workplace. Employees who have a deep connection to their place of employment and who strive for a shared objective will thus exhibit strong organizational citizenship behavior. Based on that, the following hypothesis was created.

*H1: Workplace spirituality has a positive influence on organizational citizenship behaviour (OCB)*

### **Job satisfaction and Organizational Citizenship Behavior**

Organizational Citizenship Behavior is viewed as a behavioural effect of an individual's level of job satisfaction. Aside from spirituality and professional joy, employees' sense of belonging to their companies may also contribute favourably to OCB (Wagner and Rush, 2000). It is worth noting that job satisfaction becomes an important element of attitude for employees at work. Job satisfaction is seen as the most important antecedent of organizational citizenship behavior, in the sense that the individual must be satisfied with job-related factors in his employment in order to be more emotionally and psychologically linked to the company (Mouloud, et al., 2016). The previous study's findings emphasized the direct positive influence of job satisfaction on organizational citizenship behaviour and certain research hypotheses evaluated and explore the direct link between these two variables (Mouloud,

et al., 2016; Shafazawana et al., 2016). Based on that following hypothesis is developed.

*H2: Job satisfaction has a positive influence on organizational citizenship behaviour (OCB).*

### **Organizational Commitment and Organization Citizenship Behavior (OCB)**

An employee's relationship with the company, which influences whether they decide to stay or go, is referred to as organizational commitment (Rustiarini et al., 2019). If employees truly believe in their work, they will go above and beyond to ensure the organization's success (Muisyo et al., 2021). Employees are wholly pleased at work when they have a strong connection to the company. We developed the following research hypothesis based on the findings of Djaelani, Sanusi, Trianmanto, and Supriyanto (2020) and Supriyanto, Ekowati, and Maghfuroh (2020), who found a favorable relationship between organizational commitment and organizational citizenship behavior.

*H3: Organizational commitment has a positive influence on organizational citizenship behaviour*

### **METHODOLOGY**

A quantitative technique was used in this study on spiritual leadership and job satisfaction and their link with commitment and organizational citizenship behavior to gain a knowledge of workplace phenomena centered on these notions. As a result, this study used a quantitative deductive research technique. This study specifically looked at the impact of workplace spirituality, organizational commitment, and job happiness on organizational citizenship behavior. The independent variables were workplace spirituality, organizational commitment, and job satisfaction, while the dependent variable was organizational citizenship behavior.

In this study, population was selected as graduate trainees who were hired to government service, in Sri Lanka in the 2020 special gazette. In this study, authors selected this population because they are the newly recruited employees in Sri Lankan government service and using their efforts and expertise can enrich Sri Lankan government services rather than using existing government workers. Most especially, if there are any deviations between job satisfaction and workplace spirituality, the government can arrange necessary actions and leads them to organizational citizenship behaviour and especially government can establish positive norms among

this new employee. From the population, this study selected graduate trainees who were recruited as graduate trainees in Matara District, Sri Lanka as the study population since the highest recruitment of this category is done in Southern province. Thus, the unit of analysis of this study is individual. The minimum sample size determined based on (Cohen, 1988) and indicated for the study is 87 as minimum sample size.

The study's independent variables and the dependent variable were both covered in Section I of the questionnaire. Demographic profile questions were included in Section II of the questionnaire. To measure the items in the measures, respondents were given seven-point Likert scales to reply on. The five-point scale, which ranges from "strongly disagree" to "strongly concur," is assigned a value between 1 and 7. Measurements of the research constructs were made using credible scales from the literature that had been adjusted to meet the situation. Workplace spirituality is measured by using Dan Fry, Vitucci, and Dan Cedillo's (2005) developed scale. This scale has three subscales (vision, hope/faith, altruistic love) and 17 items. Job satisfaction was measured by a scale developed by Schwendimann et al., (2016). This scale has six subscales as nature of work, recognition, growth, work security, relationship, and financial benefits and is measured using 14 items. Allen and Mayer (1993) created a scale to assess organizational commitment; it comprises three subscales that are assessed using nine items each: emotional commitment, continuation commitment, and normative commitment. Poliakoff's (2000) scale, which comprises five subscales (civic virtue, sportsmanship, civility, conscientiousness, and altruism) and 15 items, was used to assess organizational citizenship behavior. The questionnaire was developed as a web-based questionnaire by using Google forms and distributed among samples by using the snowball sampling technique since we asked respondents to pass the questionnaire among other responses 256 responses were gathered and data analysis was done by using SPSS. For test hypotheses multiple regression were used.

## **DATA ANALYSIS**

### **Data Screening and Descriptive Statistics**

SPSS was used to assess the multivariate hypotheses of normality, linearity, homoscedasticity, and multicollinearity. Skewness and kurtosis values varied from -2.00 to +2.00, indicating a normally distributed distribution for the data. Using curve estimates and scatterplots in SPSS, the data's linearity and homoscedasticity were evaluated, and the outcomes showed that the data

complied with the standards in the literature (Hair, Black, Babin, & Anderson, 2014). The greatest value recorded among the constructs when the variance inflation factor was used to assess the multicollinearity of all constructs was 3.854, suggesting that the multicollinearity assumption was still valid after the cut-off value of 5 (Hair et al., 2014). The components' fundamental structure was subsequently discovered using SPSS factor analysis. Each element was thus individually loaded into its matching build. The Bartlett's Test of Sphericity was significant ( $p < 0.05$ ), and the Kaiser-Meyer-Olkin (KMO) score was 0.788, exceeding the minimum permissible value of 0.5. Following the screening of the data, additional calculations of the mean and standard deviation (SD) of the mean descriptive statistics were done for the scale items. Table 2 shows the factor loading, mean, and standard deviation.

**Table 2: The factor loading, mean and standard deviation**

<b>Dimension</b>	<b>Factor loading</b>	<b>Mean</b>	<b>Standard deviation</b>
Vision	.806	6.21	0.65
Hope/Faith	.792	6.07	0.62
Altruistic Love	.764	6.06	0.56
Nature of work	.703	6.20	0.66
Recognition	.842	6.18	0.69
Growth	.690	6.21	0.70
Work security	.756	6.17	0.69
Co-worker Relationship	.842	6.20	0.66
Financial benefits	.733	6.01	0.62
Affective commitment	.752	6.11	0.60
Continuance commitment	.787	6.19	0.65
Normative commitment	.801	6.25	0.69
Conscientiousness	.722	6.23	0.66
Sportsmanship	.764	6.13	0.59
Courtesy	.897	6.36	0.63
Civic virtue	.678	6.28	0.61

*Source:* Survey data, 2022

## Reliability and Validity

The researchers used the Average Variance Extracted (AVE) and the Composite Reliability (CR) values to assess convergent validity (CR). The AVE values should be greater than 0.5, and the CR value should be greater than 0.7, according to the threshold level (Bagozzi and Yi (1988). Convergent validity testing revealed that the data was acceptable in terms of convergent validity, as evidenced by the findings falling within standard ranges. Cronbach's alpha values, which assess data internal consistency, were used to determine data reliability. In general, a Cronbach's alpha value greater than 0.7 indicates that the data is internally consistent (Fornell & Larcker, 1981). The VIF value was used to determine whether there was multicollinearity among the variables. If the VIF value is lesser than 10, the multicollinearity issue is not there as suggested by (Hair, Sarstedt, Ringle, & Mena, 2012). The obtained results showed VIF values less than 5, therefore, it is possible to conclude that there is no multicollinearity. The following table summarizes the results of the convergent validity and reliability tests, as well as the VIF values. The results included in table 3.

**Table 3: Results of Convergent Validity, Reliability and Multicollinearity analysis**

Variable	AVE	CR	Cronbach's Alpha	VIF values
Workplace spirituality	0.744	0.919	0.852	3.473
Job satisfaction	0.725	0.916	0.866	3.695
Organizational commitment	0.732	0.915	0.820	2.566
Organization citizenship behavior	0.708	0.982	0.908	

*Source:* Survey data, 2022

This study established discriminant validity using the Fornell-Larcker criterion. The Fornell-Larcker Criterion (Fornell-Larcker, 1981) states that in order to maintain discriminant validity, the square root of a construct's AVE should be greater than the correlations between constructs, as shown in table

**Table 4: Fornell- Larcker criterion**

Variable	Organization citizenship behavior	Workplace spirituality	Job satisfaction	Organizational commitment
Organization citizenship behavior	0.841			
Workplace spirituality	0.885	0.888		
Job satisfaction	0.815	0.799	0.855	
Organizational commitment	0.672	0.652	0.724	0.731

*Source;* Survey data 2022

Sample profile of the Study

**Table 5: Demographic characteristics**

Respondent characteristics (Category 1)	Respondent characteristics (Category 2)	Frequency	Percentage (%)
Gender	Male	105	41
	Female	151	59
Age	20-29	141	55
	30-39	71	28
	40-49	44	17
Field of Study	Arts	144	56
	Engineering	6	2
	Management	72	29
	Science	34	13
Working experience	Less than 1 year	79	30
	2-5 years	178	70
Highest education qualification	Bachelor level	204	80
	Postgraduate diploma level	39	15
	Master level	13	5

*Source;* Survey data, 2022

In this study, sample represent 105 males and 151 female newly recruited development officers in Southern province, Sri Lanka. From that 141 majority of respondents belongs to 20-29 age category and lowest percentage as 17% represent from 40-49 age category. Concerning the field of study 144 Art graduates, 6 Engineering graduates, 72 management graduates, 34

science graduates represent the sample of this study. Moreover, 178 respondents have 2–5-year previous working experience and 79 respondents have less than 1-year previous working experience. In addition to bachelors' degree, 39 respondents have postgraduate level education qualification and 39 respondents have master level educational qualification.

### Hypotheses testing

Multiple regression analysis was used to evaluate the hypothesis using SPSS, and the findings are displayed in Table 6. The value of the Adjusted R Square is.839. As a result, 83.9% of the variance in the organization citizenship behavior is explained by the regression model. The regression model is statistically significant ( $F = 442.719$ ,  $P = 0.000$ ) using the three independent variables listed in the research model, according to the ANOVA test.

**Table 6: Regression results**

	Unstandardized Coefficients		t	Sig.
	B	Std. Error		
Workplace spirituality	.552	.059	9.346	.000
Job satisfaction	.248	.057	4.846	.004
Organization commitment	.388	.092	4.221	.000
Adjusted R Square	.839			
ANOVA	$F = 442.719$ , ( $P = 0.000$ )			

*Source; Survey Data, 2022*

According to the table 6, Workplace spirituality ( $b=0.552$ ,  $p=0.000$ ), job satisfaction ( $b=0.248$ ,  $p=0.004$ ) and oorganization commitment ( $0.388$ ,  $p=0.000$ ) have significant positive effect on organization citizenship behaviour in government employees in Sri Lanka. Thus, derived H1, H2 and H3 hypotheses were accepted with observed data and re- confirmed the result of behavioural theory of the firm.

## DISCUSSION

This study mainly focuses on how workplace spirituality, organization commitment and job satisfaction influence generate organisational citizenship behaviour among newly recruited employee groups in the

graduate trainees in Matara District, Sri Lanka. Theoretically, there is a knowledge gap regarding how workplace spirituality, organizational commitment and job satisfaction influence organizational citizenship behaviour, especially among public sector employees and empirical findings regarding job satisfaction, workplace spirituality and organizational commitment influence on organization citizenship behaviour are not properly examined and findings regarding the study phenomenon also inconsistency of generalizability to developing countries. Thus, by aiming to fill the above theoretical and empirical knowledge gap this study's objective is to examine how workplace spirituality, organisational commitment and job satisfaction influence generate organisational citizenship behaviour among newly recruited employee groups in the graduate trainees in Matara District, Sri Lanka.

Based on the observed results in this study found empirical support for the relationship between workplace spirituality and organization citizenship behaviour and results indicate that workplace spirituality positively influences organization citizenship behaviour among public sector employees. This finding indicates that if government employees received positive experiences which may provide them purpose and direction, as well as a sense of understanding, support, completeness, or connectivity there is a high tendency to generate organisational citizenship behaviour among themselves. It means a higher level of employee's perception of spirituality as well as fullest consideration of employee's vision, hope/faith, and altruistic love in the workplace has a higher level of organizational citizenship behaviour. This finding was further confirmed by (Helmy & Wiwoho, 2016; Ali et al., 2014; Kaya, 2015; Djaelani, Sanusi & Triatmanto, 2021) in their studies. A public sector organization need to build a strong inner bond and connect each employee to the organization and share a common goal will generate a strong high level of organizational citizenship behaviour. When an organization starts this in the early stage of the employee life cycle it will help to maintain organisational citizenship behaviour throughout employee tenure, and it will be obliged to provide a higher level of service to the customers while successfully achieving per defined objectives of the organization.

Additionally, this study found empirical evidence for the relationship between organizational commitment and organizational citizenship behavior, and the results demonstrate that organizational commitment affects how organizational citizenship behavior develops among public sector employees. This determines if the organization will be able to establish a

psychological connection with an employee that will allow him or her to remain and identify with the organization's employee job. Furthermore, this study showed empirical support for the link between organizational commitment and organizational citizenship conduct, and the findings show that organizational commitment influences the emergence of organizational citizenship behavior among employees in the public sector. As an organization can build strong psychological connections among employees with the organization in the early stage of employment it will enhance the organizational commitment among employee groups and generate a greater level of organizational citizenship behaviour finally it leads to maintaining effective employer-employee relationships and facilitating organizational success.

Finally, this study discovered empirical evidence supporting the link between organizational citizenship behavior and job satisfaction, and the findings show that job satisfaction has a positive impact on the development of organizational citizenship behavior among public sector employees. That means if an organization can emerge and maintain positive emotional situations and feelings among employees within their employment and fulfil employees' values for their jobs, it will generate a higher level of organisational citizenship behaviour. Therefore, enhancing the organization's citizenship behaviour through job satisfaction can be done by addressing employees' nature of work, recognition, growth, work security, relationship, and financial benefits. This finding was previously confirmed by (Mouloud, et al., 2016; Shafazawana et al., 2016) in their studies. Consequently, when recruiting employees to the public sector organization it is necessary to consider their job satisfaction, especially variables identified through the current study that leads employees to organizational citizenship behaviour. It will create employees' behaviours that go beyond formal job requirements that benefit the organization.

### **Theoretical and practical implications**

Previous research has attempted to investigate the influence of workplace spirituality and job satisfaction on organization citizenship behavior in several employees' groups. However, there is no study that tested these among employee group that newly recruited. Further previous studies not tested direct effect of organizational commitment and this study used it as a direct variable and results found that it has a direct influence on organization citizenship behavior. Thus, previous knowledge regarding how to promote organization citizenship behavior by using workplace spirituality, job satisfaction as well as increasing organization commitment is limited.

Consequently, this research study helps to close the existing theoretical and empirical research gap. There is a scarcity of research based on these findings, particularly newly recruited employee group in public sector in developing context and current study findings can be applicable for developing countries like Sri Lanka.

The study's findings derived practical implications. First, from the employer standpoint if they want to promote organization citizenship behavior among their newly recruited employees, they must build willingness from employees' inside to be a part of an organization. For make employees mindset to that it is necessary to increase affective commitment, continuance commitment and normative commitment and finally all together enhance employee willing to be a part of an organization. Further, creating and maintaining experiences that provide positive directions to the employees, necessary understanding, support and build network and connect them to the overall organization will generate the organization citizenship behavior among the employees. Moreover, increase job satisfaction also another factor that employers and address to promote organization citizenship behavior among the employees. Improvement of job satisfaction can perform do by addressing several factors such as nature of work, growth, recognition, work security, co-worker relationship, financial benefit etc. Through improving these factors employers can direct their newly hired employees to organization citizenship behavior.

Generally, in developing context public sector organizations serviced by people as inefficient and ineffective organizations. Several studies provide that state originations are inefficient compared to private sector organizations most of studies highlighted that main issue comes from employees who work in above organizations. Therefore, change from the beginning is better and that change will continue from employment tenure. That change can make if organizations know what exactly drive to their employees to organization citizenship behavior. Thus, this study provides valuable insights about the areas that need to improve for make employee mindset towards organization citizenship behavior that might drive organization to more efficient and effective one since organization citizenship behavior provide roadmap to improve employee productivity, morale enhances social interactions, level of work meaningfulness, reduce stress and finally lead to higher performance.

### **Limitation and future research**

First, this study sample is limited 256 to newly recruited development officers in Matara District, Sri Lanka. A greater sample size would boost

statistical power and produce more reliable results (Hair et al., 2010). Future studies have to use a larger sample size and interview personnel from the public sector from various organizations and places. The data for this study were gathered at a single point in time using a cross-sectional method. Organization citizenship behavior is regarded as a psychological construct that needs extensive empirical research to be properly appreciated. Future research that utilizes a longitudinal study strategy would make a substantial contribution to the area. The core data on the phenomena of interest for the current study were collected using a questionnaire survey. For an example, interviews may allow for a more in-depth evaluation of Organization citizenship behavior. As a result, future studies based on interviews and qualitative analysis of interview data will throw light on this phenomenon.

Further, this study uses only three major variables that found from literature which influence to promote organization citizenship behavior. There are other variables that might be influenced to promote organization citizenship behavior and for future studies suggested to find other important variables that might influence for promote organization citizenship behavior. It would have been preferable if the variable had also been assessed using other evaluations since respondents in the current study provide responses based on self-evaluation. Further, current study focusses about newly recruited employee group. Alone with them going forward is not easy and it is necessary to get everyone's contribution for that. Thus, examine this area from older employees also necessary and will add contribution to the field of study.

## **CONCLUSION**

The perception of individuals regarding public sector services in developing economies are not satisfactory level. For mitigate that institutions can use their employees to provide efficient and effective services to their customers. It is necessary to implement relevant strategies to develop their employees towards that. Workplace spirituality and organizational citizenship behavior are revolutionary approaches that organizations use to boost their competitive advantage and promote different employee behavioral outcomes. However, there is a lack of understanding regarding how to encourage organizational citizenship behavior among workers who are just beginning their careers in the public sector. This study mainly focuses on how organizational citizenship behavior among newly recruited employee groups in the public sector, Sri Lanka, is influenced by workplace spirituality, organization commitment, and job happiness. For that 256 responses were gathered to the

analysis and based on the analyzed results workplace spirituality, organizational commitment and job satisfaction have positive influence on organizational citizenship behavior. Study results provide valuable insights to public sector institutions to promote or generate organizational citizenship behavior and how change employee behavior towards that starting from early stage of their careers.

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# Examining Factors Influencing the Behavioral Intention of Using Mobile Banking: A Structural Equation Modelling Approach

H N. Ratnayake<sup>1\*</sup> and S.S. Kodithuwakku<sup>2</sup>

<sup>1\*</sup> *Department of Business Management, Faculty of Management Studies, Rajarata University of Sri Lanka, Mihintale - 50300, Sri Lanka*

*hashanr@mgt.rjt.ac.lk*

<sup>2</sup> *Department of Agricultural Economics & Business Management, Faculty of Agriculture, University of Peradeniya, Old Galaha Road, Peradeniya - 20400, Sri Lanka*

*sarathsk@pdn.ac.lk*

## ABSTRACT

*Technology has evolved rapidly over the past few years. As a result, the banking sector has experienced a growth of mobile banking, which has proven to be an integral part of how customers access banking services. Although mobile banking has enabled banks to reduce operating costs while expanding their access to customers, mobile banking usage has been much lower than expected, especially in developing countries like Sri Lanka. Failure to adequately utilize mobile banking services has resulted in a loss of desired benefits to commercial banks and their customers. Even though there are several recent studies on the intention and adoption of mobile banking, it is essential to develop and test a comprehensive model related to the behavioural intention of using mobile banking in the Sri Lankan context. This study aimed to identify factors influencing the behavioural intention of adopting mobile banking among banking customers in Sri Lanka. The population of the study was Sri Lankans who have an active bank account and use a smartphone or similar portable smart device. The study sample was 913 individuals selected by employing a convenience sampling technique. An online distributed structured questionnaire was used for data collection purposes, and the analysis was conducted by applying covariance-based structural equation modelling. The results revealed that attitudes towards mobile banking have a significant direct influence on behavioural intention of using mobile banking, followed by trust in mobile banking and relative advantage of mobile banking, respectively. Overall, the findings emphasized that all the factors considered here are essential in determining the behavioural intention to use mobile banking. The outcome of this study is vital to various stakeholders, such as banking service providers, relevant authorities and prospective researchers. Especially the bankers could use these findings to enhance their services.*

**Keywords:** Behavioural Intention, Mobile Banking, Sri Lanka.

## INTRODUCTION

The banking sector has utilized advances in technology in various ways to serve its customers better, and mobile banking, characterized as a means for customers to experience banking services through a mobile phone or similar portable device, is an evolving medium for banking (Barnes & Corbitt, 2003). In the short period of time since its launch, mobile banking has become popular among worldwide clients, offering customers an easy and fast way to access banking services from anywhere at any time (Ravichandran & Madana, 2016). Furthermore, mobile banking has enabled banks to reduce operating costs and expand their access to customers while providing a wider range of banking services to existing customers at no additional cost (Martins et al., 2014).

Despite many valuable services, the mobile banking market is slightly smaller than expected, especially in developing countries, where transactions through mobile banking are still very low relative to overall banking activities (Dasgupta, 2011; Huili & Chunfang, 2011). According to Nawaz and Yamin (2018), the usage of online banking, mobile banking and telephone banking services by customers is less than 10 per cent of the total number of banking customers, which is significantly lower than expected. Besides, the monetary value, as well as the volume of mobile banking transactions, accounted for less than 5 per cent of total banking transactions in 2020 (Central Bank of Sri Lanka, 2021), and this figure can be considered a significant understatement during a period where the country has been partially or completely banned from travelling due to the coronavirus pandemic and customers have been encouraged to do their banking using online methods.

Banks have introduced mobile banking services to reduce operational costs by dropping the number of physical branches and human resources, and they have spent a substantial initial cost to implement these services. Failure to adequately utilize mobile banking services by bank customers will not bring the desired benefits to commercial banks as well as their customers and instead may result in heavy losses to banks due to the costs associated with launching mobile banking services (Ravichandran & Madana, 2016). The past few years have seen some growth in mobile banking in Sri Lanka, especially as many commercial banks have facilitated their customers to conduct banking transactions through mobile banking applications (Central Bank of Sri Lanka, 2021). However, a significant number of customers are

expected to use mobile banking in order for banks to reap the expected benefits of investing in building infrastructure for customers to enable mobile banking. Therefore, it is very important to investigate the factors influencing the behavioural intention of using mobile banking when implementing the necessary marketing strategies.

Although there are several published studies on intention to use mobile banking in the context of bank customers in Sri Lanka (Ayoobkhan, 2018; Nawaz & Yamin, 2018; Ravichandran & Madana, 2016), as this is an area of mixed social and technological factors, the findings change over time due to the changes in demographic factors and the technological advancements. Considering the need for more detailed research on behavioural intention to use mobile banking among Sri Lankan bank customers, this study aimed to explore the factors influencing the behavioural intention of using mobile banking in the Sri Lankan context.

The remainder of this article is organized as follows. The next section contains a review of the literature and hypotheses development. Afterwards, the research methodology adopted is discussed. The results are presented and discussed in the subsequent section, and the final section summarizes and concludes the study.

## **LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT**

### **Theoretical Framework**

The study of user responses and behavioural intentions to novelty or technological development is an important investigation in this era of innovation. Many of the models and theories introduced by previous research are based on theories related to information technology, information systems, and human behaviour.

The study of information technology and human behaviour can be aided by the Technology Acceptance Model (TAM) proposed by Davis (1989), which elaborates on the behavioural intention to use technology and actual usage. According to Rana et al. (2013), TAM is more popular and accepted than any other model in the field of human intention to use information technology, and several studies (Aboelmaged & Gebba, 2013; Ravichandran & Madana, 2016) which demonstrate human intention and actual usage of electronic medium of banking such as telebanking, online banking and mobile banking have been used this model. However, the TAM alone has not been able to succeed in empirical research on the user intention of mobile banking, and as

a result researchers have developed and tested various models of the technology acceptance phenomenon (Kishore & Sequeira, 2016). Moreover, Venkatesh and Davis (2000) developed the Technology Acceptance Model 2 (TAM2) based on TAM. Venkatesh and Bala (2008) further developed this model and came up with the Technology Acceptance Model 3 (TAM3) which is more comprehensive model than the previous.

Attitudes and subjective norms appear to be decisive factors of the intention when reviewing the literature on human behaviour. The Theory of Reasoned Action (TRA) proposed by Fishbein, and Ajzen (1975) makes it clear that behaviour of a person is determined by their intentions to perform, and that these intentions are based on subjective norms and attitudes.

The Theory of Planned Behaviour (TPB), which is an extension of TRA introduced by Ajzen (1991), is another frequently cited and powerful model for predicting human social behaviour. Teo et al. (2012) have proposed a model by combining TAM with TPB in their study on user acceptance of mobile banking. The TPB explains how attitudes, subjective norms, and perceived behavioural control are interrelated and how they influence for intention and thereby behaviour. Kazemi et al. (2013) tested this theory in their study of mobile banking adoption and have examined that attitudes and perceived behavioural control were critical factors influencing mobile banking adoption and the impact of subjective norms was insignificant.

The Innovation Diffusion Theory (IDT) introduced by Rogers (1962) is one of the oldest social science theories that explains how people adopt new ideas, behaviour or product as part of a social system. This model critically explains five main factors that influence adoption intention of an innovation which are relative advantage, compatibility, complexity, trialability and observability. Khraim et al. (2011) tested this theory in their research on adoption intention of mobile banking services by Jordanian consumers and observed that trialability, complexity and relative advantage were significantly influenced on the endogenous construct.

Although there are many models to explain technology acceptance by humans, it is not easy to find a perfect model to explain all situations (Alkhalidi & Kharma, 2019). However, the Unified Theory of Acceptance and Use of Technology (UTAUT) proposed by Venkatesh et al. (2003) could cover many aspects of the sociological phenomena of technological acceptance by a human. Since UTAUT is the essence of Social Cognitive Theory (SCT), TAM, TPB, IDT, TRA, the Model of PC Utilization (MPCU), the combined theory of planned behaviour and technology acceptance model

(C–TPB–TAM), and the Motivational Model (MM), it provides an integrated view by excluding the redundancy of these acceptance theories (Dwivedi et al., 2011). In developing the mobile banking adoption model, Oliveira et al. (2014) considered four variables from UTAUT and observed that performance expectancy and facilitating conditions were the most important constructs explaining behavioural intention of mobile banking.

## **Hypotheses Development**

The antecedents of behavioural intention of using a new technology identified in the theoretical review have been applied and tested by many research studies in different contexts over time. Among the many critical factors, the most relevant constructs of the behavioural intention for using mobile banking have been selected for the present study, considering the significance they showed in recent studies, especially in the context of the Internet-based applications. The following are hypotheses based on theoretical and empirical studies.

**Subjective Norm:** Subjective norm is the opinion of a person that people who are most important to a person support a certain behaviour and that they should or should not approve of that behaviour (Venkatesh et al., 2003). This is extracted from theoretical models such as TRA, TPB, and TAM2, and in mobile banking, this can be considered as the influence and support of important people such as family and friends to use mobile banking. According to Abdullah and Ward (2016), the subjective norm is found to be a key determinant of both perceived usefulness and attitudes. Meanwhile, Raeisi and Lingjie (2016) identified social influence as an influential factor on behavioural intention in mobile commerce. Furthermore, Kumar et al. (2020) observed a positive effect of subjective norms on perceived usefulness as well as intention to adopt mobile banking. Besides, Mutahar et al. (2017) investigated that subjective norms have a positive and significant effect on perceived ease of use. Based on the above facts following hypotheses can be proposed.

*Hypothesis 1a (H1a): Subjective norms positively affect behavioural intention of using mobile banking.*

*Hypothesis 1b (H1b): Subjective norms positively affect attitudes towards mobile banking.*

*Hypothesis 1c (H1c): Subjective norms positively affect perceived usefulness.*

*Hypothesis 1d (H1d): Subjective norms positively affect perceived ease of use.*

**Self-Efficacy:** Self-efficacy can be defined as an individual's assessment of his or her ability to perform a specific task (Kumar et al., 2020). In the mobile domain, self-efficacy is defined as the extent to which a person believes he or she is capable of organizing and executing a set of actions to accomplish a task using a mobile device (Jaradat & Faqih, 2014). Singh and Srivastava (2018) observed that self-efficacy significantly affects perceived ease of use of new technology. Additionally, Abdullah and Ward (2016) identified a positive relationship between self-efficacy and perceived ease of use as well as positive association between self-efficacy and perceived usefulness in their study on technology adoption by students. Moreover, self-efficacy is a determinant of perceived ease of use in the TAM3, which is a well-known theoretical model in phenomena of technology acceptance by people. This enabled to formulate the following hypotheses.

*Hypothesis 2a (H2a): Self-efficacy positively affects perceived usefulness.*

*Hypothesis 2b (H2b): Self-efficacy positively affects perceived ease of use.*

**Perceived Usefulness:** Perceived usefulness is one of the main determinants of technology acceptance explained in TAM. According to Davis (1989), perceived usefulness is the extent to which a person believes that a system improves performance on a task. Perceived usefulness has a positive effect on user's behavioural intention of various technology-related systems (Venkatesh & Bala, 2008). Additionally, perceived usefulness is an antecedent of attitudes towards using a system (Davis, 1989). Moreover, Jaradat and Faqih (2014) identified a positive and significant effect of perceived usefulness on behavioural intention to use mobile payment systems in Jordan. Besides, Wang et al. (2008) observed a positive association between perceived usefulness and the relative advantage of a new technology. Accordingly, following hypotheses can be proposed.

*Hypothesis 3a (H3a): Perceived usefulness positively affects behavioural intention of using mobile banking.*

*Hypothesis 3b (H3b): Perceived usefulness positively affects attitudes towards mobile banking.*

*Hypothesis 3c (H3c): Perceived usefulness positively affects relative advantage.*

**Perceived Ease of Use:** Perceived ease of use is the extent to which a person believes that the use of technology will be easier (Davis, 1989). According to Davis (1989), when users perceive a system as easy to use, it influences the formation of positive attitudes towards the system. Furthermore,

Abdullah and Ward (2016) confirmed a significant association between perceived ease of use and attitudes towards a system. The effect of perceived ease of use on perceived usefulness has been suggested and tested by Davis (1989) in the TAM which is a recognized base theory on user acceptance of new technologies. Yuan et al. (2016) identified a positive and significant effect of perceived ease of use on perceived usefulness in their study on intention to continue using mobile banking among bank customers in China. Moreover, findings of much research (Aboelmaged & Gebba, 2013; Al-Husein & Sadi, 2015; Mutahar et al., 2017) have shown that perceived ease of use has a significant impact on the perceived usefulness. It can therefore suggest the following hypotheses.

*Hypothesis 4a (H4a): Perceived ease of use positively affects attitudes towards mobile banking.*

*Hypothesis 4b (H4b): Perceived ease of use positively affects perceived usefulness.*

**Attitudes towards Mobile Banking:** The association between attitudes and behavioural intention has been well studied in the behavioural literature (Ajzen, 1991; Davis, 1989). In the study of behavioural intention to use mobile banking among bank customers in Iran, Kazemi et al. (2013) observed that attitudes towards mobile banking is the main determinant of behavioural intention. Furthermore, Deng et al. (2010) and Chaouali et al. (2017) also identified a positive effect of attitudes towards mobile banking on intention of using mobile banking. Additionally, the study by Chang et al. (2017) showed a positive relationship between attitudes and behavioural intention towards using online platforms by students. Based on this, the following hypothesis can be proposed.

*Hypothesis 5 (H5): Attitudes towards mobile banking positively affect behavioural intention of using mobile banking.*

**Relative Advantage:** According to Rogers (2003), relative advantage refers to the extent to which an innovation is more productive, efficient, lower-cost, or otherwise improves upon existing practices. In mobile banking, the ability to save time is one of the most prominent aspects of relative advantage (Raeisi & Lingjie, 2016). The study by Wang et al. (2008) provides empirical evidence for the association between relative advantage of a new technology and intention of using the particular technology. Puschel et al. (2010) identified that the relative advantage of mobile banking positively affects attitudes towards mobile banking. These facts lead to formulating the following hypotheses.

*Hypothesis 6a (H6a): Relative advantage of mobile banking positively affects behavioural intention of using mobile banking.*

*Hypothesis 6b (H6b): Relative advantage of mobile banking positively affects attitudes towards mobile banking.*

**Awareness of Mobile Banking:** Awareness refers to how much a user knows about the technology, its properties, how to use it and its potential risks (Alkhalidi & Kharma, 2019). Motivating customers to switch from their traditional banking methods to mobile banking is challenging due to poor awareness of these services among Sri Lankan customers (Nawaz & Yamin, 2018). Alkhalidi and Kharma (2019) identified the effect of awareness on behavioural intention of using mobile banking through effort expectancy. Moreover, findings of several research (Safeena et al., 2011; Shankar & Kumari, 2016) showed the effect of awareness of mobile banking on behavioural intention of using mobile banking. According to Lee et al. (2003), awareness has a positive effect on attitudes. Walugembe et al. (2015) revealed that awareness of a particular technology or service affects trust in that technology. Furthermore, Elhajjar and Ouaida (2020) observed that awareness of mobile banking has a positive and significant effect on perceived ease of use during their study on mobile banking adoption intention of Lebanese clients. Accordingly, the following hypotheses are proposed.

*Hypothesis 7a (H7a): Awareness of mobile banking positively affects behavioural intention of using mobile banking.*

*Hypothesis 7b (H7b): Awareness of mobile banking positively affects attitudes towards mobile banking.*

*Hypothesis 7c (H7c): Awareness of mobile banking positively affects trust in mobile banking.*

*Hypothesis 7d (H7d): Awareness of mobile banking positively affects perceived ease of use.*

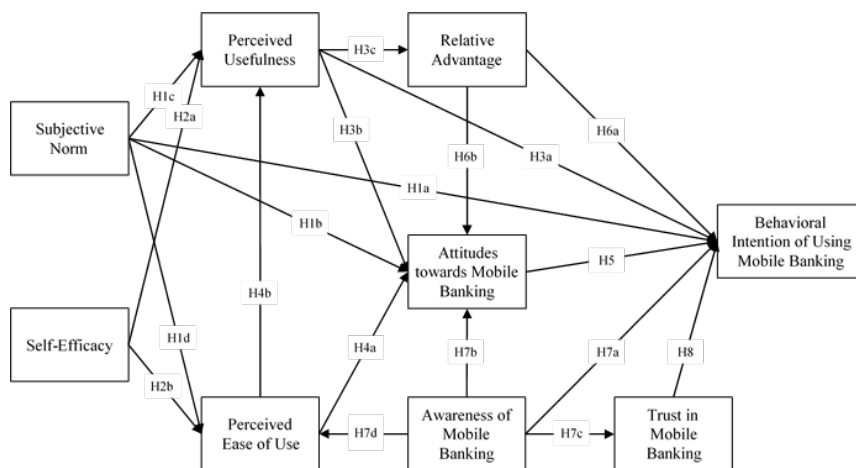
**Trust in Mobile Banking:** Trust is a psychological state consisting of a willingness to take risks based on positive expectations about the intentions or behaviour of another party (Rousseau et al., 1998). Simply, it means a feeling of confidence or assurance. The intention to use mobile banking and many other services is strongly influenced by trust (Kumar et al., 2020). Nawaz and Yamin (2018) revealed that trust strongly affects behavioural intention of using mobile banking. Moreover, Chiu et al. (2017) observed a positive effect of trust on intention to adopt mobile banking. Meanwhile, the findings of several other research (Oliveira et al., 2014; Zhou, 2011) revealed

that trust positively affects intention to use mobile banking and is the most influential factor on intention. Hence the following hypothesis is assumed.

*Hypothesis 8 (H8): Trust in mobile banking positively affects behavioural intention of using mobile banking.*

The conceptual model of the research is shown in Figure 1 and was developed with the aid of important constructs identified from related theories and empirical findings.

**Figure 1: Conceptual Framework**



Source: Author Compilation

## RESEARCH METHODOLOGY

### Research Design

This study adopted a quantitative research methodology and used a standard structured questionnaire distributed over the Internet in data collection and followed corresponding quantitative data analysis procedures.

### Population and Sample

The population of this study was Sri Lankan citizens having an active bank account in any commercial bank and using a smartphone or similar portable smart device. Due to the unavailability of sampling frame the sample of the study was selected using convenience sampling which is a non-probability

sampling technique. Based on the previous studies in a similar background (Nawaz & Yamin, 2018), the statistical tool used for data analysis (Hair et al., 2019) and the complexity of the model (Memon et al., 2020), targeted for 1000 responses and were able to collect 913 valid records within six weeks of questionnaire distribution.

### **Method of Data Collection**

A self-administered structured questionnaire was used in primary data collection for this study as it is a well-accepted method for collecting standardized quantitative data from a large number of respondents in a research study employing a survey strategy (Saunders et al., 2019).

The questionnaire was designed in three sections with close-ended questions. The first section consisted of short questions to get an insight about bank and mobile device usage of respondents while the second section consisted of survey questions to measure latent constructs by asking to indicate the level of agreement to a set of statements describing the intentions of using mobile banking. The final section of the questionnaire consisted of several questions to help understand the personal information and background of the respondents and some important demographic characteristics are presented in Table 1. Measurement scales for latent constructs were absorbed from prior studies and slight amendments were made where necessary. Since Sri Lanka is a multi-ethnic country and the various ethnic groups living here tend to speak their mother tongue, the survey questionnaire was translated into Sinhala and Tamil. The initial questionnaire was shared among experts in the field of research as well as relevant subject areas to obtain comments and suggestions and the revised questionnaire was pilot tested to ensure reliability and validity. Following a reliability test based on Cronbach's Alpha, internal consistency reliability was confirmed for all measurement items and finalized questionnaire was distributed among target population through online communication platforms. Further, the respondents were requested to share the link of the questionnaire with as many of their contacts living in Sri Lanka as possible.

### **Method of Data Analysis**

The main objective of this study was to determine the factors influencing the behavioural intention of using mobile banking. Previous studies have shown that Covariance-Based Structural Equation Modelling (CB-SEM) is best suited for confirming key factors and predicting and explaining target constructs in an empirical model (Collier, 2020; Hair et al., 2019). Therefore, CB-SEM approach was applied using IBM SPSS Amos 21.0 software

package in data analysis and model evaluation. In Addition, Microsoft Excel 2016 and IBM SPSS Statistics 26.0 software packages were used for auxiliary purposes.

**Table 1: Demographic Characteristics of the Sample (n = 913)**

Demographics		Frequency	Percentage
Gender	Male	507	55.53
	Female	397	43.48
Age	16 - 25 years	281	30.78
	26 - 35 years	446	48.85
	36 - 45 years	102	11.17
	46 - 55 years	48	5.26
	56 - 65 years	24	2.63
	66 years and above	11	1.20
Highest Level of Education	G.C.E. (O/L) or lower	20	2.19
	G.C.E. (A/L)	128	14.02
	Certificate	15	1.64
	Diploma	114	12.49
	Bachelor's degree	474	51.92
	Master's degree	135	14.79
	Doctorate or higher	15	1.64

*Source:* Survey Data

The measurement model for the study was established using the procedure recommended by Hair et al. (2019) and there were nine latent constructs. After constructing the measurement model, the normality of the collected data was examined as multivariate normal distribution of the data is one of the key assumptions of Structural Equation Modelling (SEM). It was observed that the distribution has not achieved multivariate normality although the conditions for univariate normality were satisfied. According to Collier (2020), most of the time data in social sciences research takes non-normal distribution and his suggestion to proceed with non-normal data is to use bootstrapping techniques in assessing the structural model. Therefore, structural model analysis in the present study was conducted using bootstrapping technique.

To test the measurement model, factor loadings, also known as standard regression weights, were estimated for each item as part of confirmatory factor analysis. Except for the second element used to measure self-efficacy (SE2), as other elements presented factor loadings greater than 0.5, SE2 was eliminated due to low factor loadings.

The overall goodness of fit of the model was assessed using model fit measures. The re-specified model to improve the model fit presented a Chi-square value of 4333.144 and the degrees of freedom was 1324. The probability level for the Chi-square was significant which needs to be insignificant. Several model-fit measures obtained under absolute fit indices, incremental fit indices and parsimony fit indices are shown in Table 2.

**Table 2: Goodness of Fit Indices for Measurement Model**

Goodness of Fit Index		Observed Value	Recommended Value
Absolute fit indices	CMIN/ DF	3.273	$\leq 5.000$
	AGFI	0.804	$\geq 0.800$
	SRMR	0.058	$\leq 0.090$
	RMSEA	0.052	$\leq 0.080$
Incremental fit indices	TLI	0.931	$\geq 0.900$
	CFI	0.936	$\geq 0.900$
	RFI	0.903	$\geq 0.900$
	NFI	0.911	$\geq 0.900$
Parsimony fit indices	PGFI	0.736	$\geq 0.500$
	PRATIO	0.925	$\geq 0.500$
	PNFI	0.842	$\geq 0.500$
	PCFI	0.866	$\geq 0.500$

*Source:* Survey Data

The value obtained for CMIN/DF in the present study was less than 5.0 and was close to 3.0 which indicated an acceptable fit of the model (Bentler, 1990; Hair et al., 2019). Furthermore, the value obtained for Adjusted Goodness of Fit Index (AGFI) was greater than 0.8 and hence indicated a good fit (Hair et al., 2019). The observed Standardized Root Mean Residual (SRMR) was less than the recommended maximum value of 0.09 (Hair et al., 2019). In addition, Root Mean Square Error of Approximation (RMSEA) also acceptable since the observed value was less than 0.08 which recommend by most of the researchers and authors (Byrne, 2010; Hair et al., 2019; Meyers et al., 2016). The values obtained for Tucker Lewis Index (TLI), Comparative Fit Index (CFI), Relative Fit Index (RFI) and Normed Fit Index (NFI) were greater than 0.9 and therefore they were in accordance with the recommended values (Bentler & Bonett, 1980; Bentler, 1990;

Meyers et al., 2016). According to Meyers et al. (2016) the recommended minimum value for Parsimony Goodness of Fit Index (PGFI), Parsimony Ratio (PRATIO), Parsimony Normed Fit Index (PNFI) and Parsimony Comparative Fit Index (PCFI) is 0.5 and therefore, the values obtained for these indices indicated a good fit.

Measurements must be reliable and valid to proceed with SEM and primarily, construct reliability and construct validity were examined. Convergent validity and discriminant validity were assessed for construct validity while internal consistency reliability was assessed referring to Cronbach's Alpha. Both Composite Reliability (CR) and Average Variance Extracted (AVE) were considered when assessing convergent validity, and construct reliability was assessed using CR. Table 3 depicts the values obtained for AVE, CR and Cronbach's Alpha.

**Table 3: Internal Consistency Reliability and Convergent Validity**

Latent Construct	Cronbach's Alpha	CR	AVE
Subjective Norm (SN)	0.913	0.904	0.654
Self-Efficacy (SE)	0.855	0.861	0.561
Perceived Usefulness (PU)	0.948	0.945	0.773
Perceived Ease of Use (PE)	0.921	0.919	0.654
Attitudes towards Mobile Banking (AT)	0.900	0.908	0.665
Relative Advantage (RA)	0.957	0.956	0.783
Awareness of Mobile Banking (AW)	0.932	0.932	0.733
Trust in Mobile Banking (TR)	0.928	0.927	0.718
Behavioural Intention of Using Mobile Banking (BI)	0.948	0.951	0.736

*Source:* Survey Data

*Notes:* CR - Composite Reliability; AVE - Average Variance Extracted.

Cronbach's Alpha of self-efficacy was 0.855 while other constructs exceeded 0.9, therefore Cronbach's Alpha surpasses the recommended minimum level of 0.7 for all constructs (Hair et al., 2019). Self-efficacy reported a CR of 0.861, while all other constructs reported values above 0.9, exceeding the minimum acceptable value for CR of 0.7 (Hair et al., 2019). Meanwhile, the AVE obtained for all constructs recorded values greater than the minimum acceptable value of 0.5 (Hair et al., 2019). Additionally, it can be observed

that the CR for each construct was higher than the AVE for the respective constructions. This implies that the measurements have achieved convergent validity while satisfying the construct reliability.

Discriminant validity was assessed using the Fornell-Larker criterion (Fornell & Larker, 1981) and the Heterotrait-Monotrait (HTMT) ratio (Henseler et al., 2015). The Fornell-Larker criterion has recently been criticized and a new method, the HTMT ratio, is increasingly used to assess discriminant validity. The results of the discriminant validity assessment using the Fornell-Larker criterion and the HTMT ratio are presented in Table 4 and Table 5, respectively.

**Table 4: Fornell-Larker Criterion for Discriminant Validity**

Factor	SN	SE	PU	PE	AT	RA	AW	TR	BI
SN	0.809								
SE	0.442	0.749							
PU	0.399	0.486	0.879						
PE	0.407	0.496	0.823	0.809					
AT	0.424	0.492	0.833	0.863	0.815				
RA	0.425	0.437	0.746	0.743	0.852	0.885			
AW	0.380	0.250	0.404	0.593	0.555	0.517	0.856		
TR	0.394	0.344	0.451	0.561	0.593	0.563	0.694	0.848	
BI	0.466	0.461	0.726	0.726	0.820	0.776	0.549	0.651	0.858

Source: Survey Data

Notes: Values on the diagonal are square root of AVE. The rest of values are correlation of each latent variable with other latent variables.

**Table 5: Heterotrait-Monotrait Ratio for Discriminant Validity**

Factor	BI	TR	AW	RA	AT	PE	PU	SE	SN
BI									
TR	0.645								
AW	0.542	0.682							
RA	0.771	0.557	0.509						
AT	0.819	0.589	0.549	0.850					
PE	0.719	0.553	0.583	0.735	0.858				
PU	0.716	0.443	0.395	0.735	0.824	0.808			
SE	0.462	0.343	0.248	0.437	0.494	0.495	0.482		
SN	0.454	0.383	0.368	0.414	0.415	0.395	0.385	0.434	

*Source:* Survey Data

Although discriminant validity using the Fornell-Larker criterion was not fully established in the present study, all ratios based on the HTMT ratio were below the required threshold of 0.90 (Henseler et al., 2015). Therefore, it can state that discriminant validity was established.

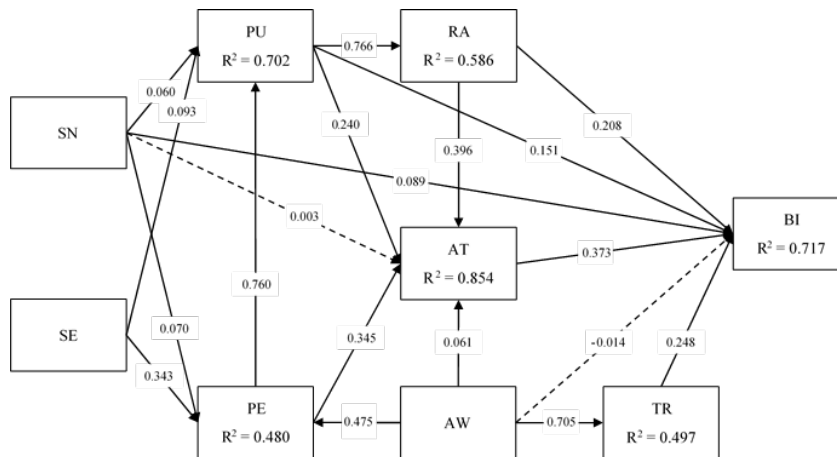
The structural model for the proposed conceptual model in the present study was constructed by adding constraints to the measurement model and the model fit of the structural model was evaluated using the same criteria applied to assess the measurement model. As the structural model obtained an acceptable model fit, the hypothesized relationships were evaluated based on the path coefficients and its respective t-statistics and p-values.

## RESULTS AND DISCUSSION

### Hypotheses Testing

This study assessed factors affecting behavioural intention of using mobile banking and tested 19 hypotheses including sub-hypotheses. A summary of the hypotheses results is presented in Table 6 and Figure 2 depicts the hypotheses testing results. All strait arrows indicate accepted hypotheses and dashed arrows indicate rejected hypotheses while the values obtained for the path coefficient for each relationship are shown in the middle of the arrows.

**Figure 2: Hypotheses Testing**



*Source:* Survey Data

The impact of subjective norm on behavioural intention of using mobile banking was positive and significant ( $\beta = 0.089$ ,  $p < 0.001$ ), supporting H1a. This result is in harmony with the findings of Puschel et al. (2010), which revealed that the effect of subjective norm on the behavioural intention to use mobile banking is relatively small. Although this result agrees with the outcomes of Kumar et al. (2020), they observed a relatively high impact of subjective norm on behavioural intention to use mobile banking. Accordingly, it is apparent that bank customers intend to use mobile banking based on the encouragement of their close friends, relatives and others who can influence their behaviour.

Contrary to the findings of Abdullah and Ward (2016), this study revealed that the influence of subjective norms on attitudes towards mobile banking was positive but not significant ( $\beta = 0.003$ ,  $p > 0.05$ ). Hence H1b was not supported. The majority of respondents in this study reported a relatively high educational background while most of them were young individuals between the ages of 26 and 46. To a large extent, social influence in changing the attitudes of young, educated people may be negligible.

**Table 6: Hypotheses Testing**

Hypothesis	Path	Path Coefficient	S.E.	C.R.	p-Value	Decision
H1a	SN → BI	0.089	0.018	3.679	0.000	Accept
H1b	SN → AT	0.003	0.013	0.151	0.880	Reject
H1c	SN → PU	0.060	0.019	2.257	0.024	Accept
H1d	SN → PE	0.070	0.022	2.027	0.043	Accept
H2a	SE → PU	0.093	0.040	3.155	0.002	Accept
H2b	SE → PE	0.343	0.048	8.563	0.000	Accept
H3a	PU → BI	0.151	0.050	3.092	0.002	Accept
H3b	PU → AT	0.240	0.040	5.325	0.000	Accept
H3c	PU → RA	0.766	0.028	25.999	0.000	Accept
H4a	PE → AT	0.345	0.042	8.308	0.000	Accept
H4b	PE → PU	0.760	0.039	21.813	0.000	Accept
H5	AT → BI	0.373	0.070	6.078	0.000	Accept
H6a	RA → BI	0.208	0.045	4.964	0.000	Accept
H6b	RA → AT	0.396	0.029	12.837	0.000	Accept
H7a	AW → BI	-0.014	0.029	-0.385	0.700	Reject
H7b	AW → AT	0.061	0.016	2.610	0.009	Accept
H7c	AW → TR	0.705	0.034	19.945	0.000	Accept
H7d	AW → PE	0.475	0.024	14.037	0.000	Accept
H8	TR → BI	0.248	0.027	7.699	0.000	Accept

Source: Survey Data

Notes: The results of hypothesis testing reported in this table is based on bootstrapping method using 2000 subsamples. S.E. - Standard Error; C.R. - Critical Ratio.

In the present study, subjective norm reported a positive and significant influence on perceived usefulness ( $\beta = 0.060$ ,  $p < 0.05$ ), supporting H1c. Although Kumar et al. (2020) identified a positive association between subjective norm and perceived usefulness, the observed effect was significantly higher. However, the population in the study of Kumar et al. (2020) were prospective mobile banking users while this study considered banking customers using a smartphone or similar portable smart device and this may account for the observed difference in the strength of the relationship.

According to the observations of this study, subjective norm reported a positive and significant influence on perceived ease of use ( $\beta = 0.070$ ,  $p < 0.05$ ), supporting H1d, but this is relatively low compared to the effect shown by awareness and self-efficacy on perceived ease of use. However, compared to the influence of subjective norm on perceived usefulness, the effect of subjective norm on perceived ease of use was slightly higher. This result is consistent with the findings of Mutahar et al. (2017) who studied the effect of subjective norm as external variable on TAM in the context of mobile banking acceptance in Yemen.

The analysis revealed a positive and significant effect of self-efficacy on perceived usefulness ( $\beta = 0.093$ ,  $p < 0.01$ ). Hence, H2a was supported. However, compared to the effect of perceived ease of use on perceived usefulness, the effect of self-efficacy on perceived usefulness is significantly smaller. This result is in harmony with the findings of Abdullah and Ward (2016). As opposed to this result, Jaradat and Faqih (2014) noted that there is no such effect of self-efficacy on perceived usefulness.

Consistent with the findings of Kumar et al. (2020), the results of the current study showed a positive and significant effect of self-efficacy on perceived ease of use ( $\beta = 0.343$ ,  $p < 0.001$ ). Therefore, H2b was supported. However, the strength of this relationship is slightly higher in the current study than in observations of Kumar et al. (2020), which may be due to contextual differences in the two studies.

Many researchers have examined the influence of perceived usefulness on behavioural intention to use mobile banking and the present study revealed that the effect of perceived usefulness on behavioural intention of using mobile banking is positive and significant ( $\beta = 0.151$ ,  $p < 0.01$ ), which supports H3a. This result agrees with the findings of recent studies (Kumar et al., 2020; Nawaz & Yamin, 2018), which imply that if bank customers find mobile banking useful, they intend to use it.

The present study revealed that the effect of perceived usefulness on attitudes towards mobile banking is also positive and significant ( $\beta = 0.240, p < 0.001$ ). Hence, H3b was supported. Coinciding with the findings of Lule et al. (2012), who studied the intention to adopt mobile banking among Kenyan bank customers, this effect on attitudes towards mobile banking is relatively small compared to the effect of relative advantages and perceived ease of use. Additionally, this observation is in harmony with the findings of Deb and Lomo-David (2014) who studied mobile banking adoption among bank customers in India.

Consistent with the findings of Wang et al. (2008), who studied the conceptual differences between perceived usefulness and relative advantage, the results of this study reported a positive and significant influence of perceived usefulness on relative advantage ( $\beta = 0.766, p < 0.001$ ). Therefore, H3c was supported.

The present study has shown a positive and significant effect of perceived ease of use on attitudes towards mobile banking ( $\beta = 0.345, p < 0.001$ ), supporting H4a, which is consistent with the findings of Puschel et al. (2010) regarding mobile banking users. Furthermore, this finding is aligned with the results of several recent studies (Abdullah & Ward, 2016; Aboelmaged & Gebba, 2013; Lule et al., 2012) in the field of technology acceptance by individuals. Moreover, this result further strengthened the path from perceived ease of use to attitudes drawn from well-known base theory, TAM (Davis, 1989), in the context of behavioural intention of using mobile banking by Sri Lankan bank customers.

Consistent with the findings of Aboelmaged and Gebba (2013) who identified perceived ease of use as a key determinant of perceived usefulness, the present study revealed that perceived ease of use is a superior determinant of perceived usefulness while confirming H4b. Moreover, this result agrees with the findings of Yuan et al. (2016) and Chang et al. (2017) while supporting the association between perceived ease of use and perceived usefulness presented in TAM (Davis, 1989).

The present study revealed that attitudes towards mobile banking is the most influential factor on behavioural intention to use mobile banking ( $\beta = 0.373, p < 0.001$ ). H5 was therefore supported. This observation is consistent with the findings of Puschel et al. (2010) and Kazemi et al. (2013), who also identified attitudes as the dominant factor affecting intention to use mobile banking. Moreover, many recent studies (Aboelmaged & Gebba, 2013; Chaouali et al., 2017; Deng et al., 2010) have identified that attitudes towards

mobile banking have a positive effect on behavioural intention to use mobile banking.

The impact of relative advantage on behavioural intention of using mobile banking was positive and significant ( $\beta = 0.208$ ,  $p < 0.001$ ) by supporting H6a. This observation coincides with the findings of studies by Cheah et al. (2011) and Khraim et al. (2011). Furthermore, this finding provides a new meaning to the explained association between the relative advantage and adoption intention to technology in the well-known IDT (Rogers, 1962). Accordingly, if bank customers find mobile banking relatively more effective and convenient than other banking systems, they will definitely intend to use mobile banking whenever possible.

The present study revealed that relative advantage is a key determinant of attitudes toward mobile banking ( $\beta = 0.396$ ,  $p < 0.001$ ). Therefore, H6b was supported. This result is consistent with the findings of Puschel et al. (2010), where researchers observed that relative advantage is a highly influential factor influencing attitudes towards mobile banking.

The impact of awareness of mobile banking on behavioural intention of using mobile banking was negative but insignificant ( $\beta = -0.014$ ,  $p > 0.05$ ). Hence, H7a was not supported. Contrary to this observation, Safeena et al. (2011) and Shankar and Kumari (2016) stated that awareness of mobile banking has a positive and significant influence on behavioural intention of using mobile banking. However, it can be observed that there exists a significant indirect effect of awareness of mobile banking on behavioural intention to use mobile banking, especially through trust in mobile banking.

Although the influence of awareness of mobile banking on attitudes towards mobile banking was very low ( $\beta = 0.061$ ,  $p < 0.01$ ), this finding added a value to the results of the research by supporting H7b. This result supports the findings of Lee et al. (2003), but their study was on consumer attitudes towards online shopping malls. Contrary to these findings, Burak and Ipek (2021) observed that there was no significant effect of awareness on attitudes.

The findings of present study shown that awareness of mobile banking has a high impact on trust in mobile banking ( $\beta = 0.705$ ,  $p < 0.001$ ), supporting H7c. This result is consistent with the findings of Walugembe et al. (2015), but their study was on e-shopping acceptance among the Ugandan people.

According to observations, awareness of mobile banking was the main factor determining perceived ease of use ( $\beta = 0.475$ ,  $p < 0.001$ ). Therefore, H7d was also supported. Although this result agrees with the findings of Elhajjar and

Ouaida (2020), awareness of mobile banking was not the key factor determining perceived ease of use in their study.

The impact of trust in mobile banking on behavioural intention of using mobile banking was positive and significant ( $\beta = 0.248$ ,  $p < 0.001$ ) by supporting H8. This finding is in harmony with the results of studies by Nawaz and Yamin (2018) and Kumar et al. (2020) which revealed that trust is an instrumental factor in determining behavioural intention of using mobile banking. Moreover, this result is consistent with many empirical studies (Oliveira et al., 2014; Zhou, 2011). However, contrary to all the above, the findings of Singh and Srivastava (2018) and Akhter et al. (2020) were not aligned with this result of the present study.

### **Explanatory Power of the Structural Model**

The explanatory power of the structural model was studied with the aim of gaining an understanding of how variation in behavioural intention to use mobile banking can be explained by its exogenous constructs. Table 7 presents the squared multiple correlation coefficients of ultimate endogenous construct and internal endogenous constructs.

**Table 7: Explanatory Power of the Structural Model**

Explanatory Power	Observed Value
$R^2_{BI}$	0.717
$R^2_{AT}$	0.854
$R^2_{TR}$	0.497
$R^2_{RA}$	0.586
$R^2_{PU}$	0.702
$R^2_{PE}$	0.480

*Source:* Survey Data

The squared multiple correlation coefficient for behavioural intention of using mobile banking was 0.717 and accordingly, the overall explanatory power of the model is 71.7 per cent and this appears that the constituents in the model could explain a substantial portion of the variance in behavioural intention of using mobile banking, which is the ultimate endogenous variable. The conceptual model undoubtedly exceeds the minimum criteria for the coefficient of determination, which should be greater than 0.10 for social sciences studies (Falk & Miller, 1992). However, Holmes-Smith et al. (2006) and Kline (2016) suggested that 0.30 is the minimum acceptable value for

the coefficient of determination for social sciences research as well as some natural sciences studies. In comparison with recent empirical studies on intentions to use mobile banking (Akhter et al., 2020; Alalwan et al., 2016; Kumar et al., 2020; Nawaz and Yamin, 2018), it can be observed that the present model is superior in terms of explanatory power.

In addition, the squared multiple correlation coefficient of attitudes towards mobile banking was 0.854, which indicates that 85.4 per cent variance in attitudes towards mobile banking can be explained by the exogenous constructs in terms of attitudes towards mobile banking. This is an important implication for the Sri Lankan banking sector as attitudes towards mobile banking showed the strongest relationship among the six predictors of behavioural intention of using mobile banking considered in this study.

Furthermore, the squared multiple correlation coefficient of trust in mobile banking was 0.497, which means that awareness of mobile banking explained 49.7 per cent of the variance in trust in mobile banking. This implies that awareness of mobile banking plays a vital role, although it does not have a direct impact on behavioural intention of using mobile banking. Therefore, implementation of proper awareness programs about mobile banking will lead to promotion of mobile banking among bank customers.

Additionally, the squared multiple correlation coefficient of relative advantage was 0.586, indicating that 58.6 per cent of the variance in relative advantage could be explained by perceived usefulness. Combining this result and the observed significant influence of relative advantage on the behavioural intention of using mobile banking, in promoting mobile banking, it can be suggested to implement mobile banking services in a manner that improves the performance of banking activities.

The squared multiple correlation coefficient of perceived usefulness was 0.702, which indicates that subjective norm, self-efficacy and perceived ease of use can explain 70.2 per cent of the variance in perceived usefulness. As there is a significant relationship between perceived usefulness and behavioural intention of using mobile banking, a suggestion can be made to focus on determinants of perceived usefulness when promoting mobile banking.

Meanwhile, the squared multiple correlation coefficient of perceived ease of use was 0.480 and this means that 48.0 per cent variance in perceived ease of use can be explained by subjective norm, self-efficacy and awareness of mobile banking. As perceived ease of use was the most influential factor in determining behavioural intention of using mobile banking in terms of total

effect, it is important to focus on the determinants of perceived ease of use when promoting mobile banking.

## **SUMMARY AND CONCLUSIONS**

### **Overview of the Study**

This study aimed to examine the factors influencing the behavioural intention of using mobile banking in the context of bank customers in Sri Lanka. The researcher followed quantitative methods using survey strategies to address the research questions. The population of the study was Sri Lankans with an active bank account and using a smartphone or similar portable smart device. Since there was no sampling frame that conformed to the needs of the research population, the present study used convenience sampling to select an adequate sample from the target population. A self-administered structured questionnaire distributed online was employed in primary data collection and 913 valid responses were obtained within six weeks from mid of December 2021. The investigations were performed using an extensive empirical model based on TAM, TPB, and several other leading theoretical frameworks in the field. Analyses were conducted by applying CB-SEM to achieve the primary objective of the study.

The results of the present study indicated that attitudes towards mobile banking have a significant direct influence on behavioural intention of using mobile banking followed by trust in mobile banking and relative advantage of mobile banking, respectively. The findings also implied that subjective norm has significant effect on behavioural intention of using mobile banking but when compared with other predictors it reported a less value. Contrary to many previous empirical findings, the present study indicated that there is not significant direct influence of awareness of mobile banking on behavioural intention of using mobile banking.

The findings of this study emphasized that almost all the factors considered here are very important in determining the behavioural intention of using mobile banking. Moreover, the overall explanatory power of the proposed model was observed to be higher than the predictive power reported by many recent empirical studies conducted in a similar context. This means that the considered exogenous constructs of the ultimate endogenous construct can better explain the variance in the behavioural intention of using mobile banking.

The present study contributes to the banking and finance sector by introducing the factors that influence the behavioural intention to use mobile

banking in the context of Sri Lanka, which will be critical in formulating marketing strategies to increase the use of mobile banking among bank customers. Moreover, this study contributes to the research community by presenting an extensive empirical model related to the behavioural intention of using mobile banking.

### **Limitations of the Study**

Despite the best efforts of researchers, any social science study has its limitations. The current study also has some limitations, which the researchers are willing to acknowledge.

This study used convenience sampling; a non-probability sampling technique due to the unavailability of a sampling frame. However, non-probability sampling techniques are not significantly effective in representing the target population. As a result, there is a problem in generalizing the result to the entire Sri Lankan population, even if the sample size is large enough and dispersed sufficiently. Therefore, the results of the study should be carefully interpreted when drawing generalizations.

Additionally, this study considered only Sri Lankan bank customers. Consequently, the output of the study well represents the Sri Lankans. Therefore, it should be careful when it tries to generalize the results to other countries.

Although it was planned to distribute the questionnaire to the target population using both online and offline methods, due to the pandemic situation in the country, the questionnaire had to be distributed only through online mode. If there were any possibility of controlling the data using both online and offline methods, the behaviour of the sample might differ from this.

### **Recommendations for Future Research**

One of the most important suggestions for future researchers is to test the same conceptual model with data collected using probability sampling techniques. It will increase the generalizability of the results. Furthermore, if possible, applying both offline and online methods to collect data will reduce the bias that happens during the data collection. Additionally, future researchers can focus on collecting adequate amounts of data covering both users as well as non-users of mobile banking and study how the effect of identified factors vary based on users and non-users.

The behavioural intention of using mobile banking may vary depending on

the demographic factors of the individuals. Several studies have been found that have considered the moderating effect of demographic factors on the behavioural intention of using mobile banking, but such studies are rare in the context of banking customers in Sri Lanka. Therefore, focusing on the moderating effect of demographic factors would be a good research direction for future researchers.

Factors influencing the behavioural intention of using mobile banking may vary by country, region and its socio-economic culture. Therefore, the conceptual model developed in this study can be tested in other countries.

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# **Impact of Entrepreneurship Education on Unemployment Reduction among Management Graduands in State Universities, Sri Lanka**

W.A. Maduni Hansika\*

University College of Kuliyapitiya, Sri Lanka

madunihansika@yahoo.com

## **ABSTRACT**

*High graduate unemployment is one of the main issues that the government is experiencing presently. Through data relevant to further analysis of graduate unemployment in state universities in Sri Lanka, it was found that unemployment among management graduates is considerably high compared to the other academic streams. Accordingly, high unemployment among management graduates is the main research problem in this study. To provide scientific answers to the high unemployment among management graduates in Sri Lanka, for the study, the research has selected management graduands in State universities in Sri Lanka by employment stratified random sampling technique. The population of the study consisted of 19562 graduands and by adopting Krejcie and Morgan's table the researcher has selected 400 graduands as the sample of the study. Regression analysis was used to test the impact of entrepreneurship education on unemployment reduction among management graduands in state universities in Sri Lanka to perform statistical analysis, the researcher has adopted the SPSS 23 version. A previously developed standard questionnaire was used to collect data. According to the multiple regression coefficients of 0.772, it shows a positive relationship between entrepreneurship education and unemployment reduction among management graduates in state universities, in Sri Lanka. Among the four variables of entrepreneurship curriculum, teaching methods of entrepreneurship, university role in promoting EE and business plan exploration, university role in promoting EE and entrepreneurship curriculum have significant impacts of unemployment reduction among management graduands in state universities, Sri Lanka rather than the teaching methods of entrepreneurship and business plan exploration. According to the study, 60% of the unemployment reduction can be explained by entrepreneurship education. Finally, it is recommended that the relevant authorities need to make wise policy decisions by focusing on entrepreneurship education as a way of reducing unemployment by having more focus on the roles of universities and entrepreneurship curricula.*

**Keywords: Entrepreneurship Education, Management Graduands, Sri Lanka State Universities, Unemployment Reduction**

## INTRODUCTION

When it comes to the unemployment rate among management graduates in Sri Lanka, the rate is comparatively higher than unemployment among other streams. Management is a common area that everyone must know. The students who are conducting their higher studies in the field of management can gain every single piece of information relevant to management and it will be very helpful to conduct all the activities including personal activities efficiently and effectively.

However, since the graduate unemployment among management graduates in Sri Lanka is comparatively high, there should be some solutions to reduce this unemployment rate. There can be a lot of factors affecting the unemployment rate among management graduates in Sri Lanka. Among those factors, personal factors, social factors, university related factors can be considered as main elements. However, there is another important factor that can have a considerable influence towards the reduction of the unemployment rate among management graduates in Sri Lanka. That is entrepreneurship education.

### Research Problem

According to the graduate unemployment situation in Sri Lanka, there is a significant number of graduates who become unemployed annually. According to the statistics of the Sri Lanka Labor Force Survey Reports, we can find the number of unemployed graduates in Sri Lanka.

**Table 1: Graduate Unemployment Situation in Sri Lanka**

Year		2016/2017	2018	2019	2020
Total	Unemployed	34,316		42,024	50,000
Graduates			40,000		

*Source:* Sri Lanka Labor Force Survey Reports

According to table 1, we can identify that the number of unemployed graduates is continuously increasing annually. This is a macro problem that the government should concentrate on because when it comes to the graduands, the government is spending a considerable amount on their studies and if they become unemployed after completing their studies, it is a double cost incurring activity which gives no results and additionally this will create a burden to the country as well. The following table presents the data

regarding employment and unemployment status by academic streams.

**Table 2: Employment and Unemployment Status by Academic Streams**

<b>Stream</b>	<b>Employed (%)</b>	<b>Employed as a Volunteer (%)</b>	<b>Unemployed (%)</b>
<b>Architecture</b>	100	-	-
<b>Computer Science / ICT</b>	100	-	-
<b>Education</b>	100	-	-
<b>Allied Science</b>	95.7	-	4.3
<b>Engineering</b>	92.2	1.1	6.7
<b>Law</b>	85.7	-	14.3
<b>Science</b>	83.0	1.8	15.2
<b>Agriculture</b>	82.6	1.4	15.9
<b>Management</b>	71.9	0.4	27.7
<b>Arts</b>	45.0	4.0	50.4
<b>Performing Arts</b>	37.1	5.7	57.1

*Source:* Tracer Study of Graduates, 2021 – University Grants Commission

According to the data of the Tracer study of graduates, University Grants Commission (Table 1.2) about employment and unemployment status of graduates according to the academic streams, the highest unemployment rate was recorded in Performing arts and as a percentage it is 57.1%. Only 37.1% of students are employed and 5.7% of students represent the volunteer category. The second highest unemployment category represents the Arts stream and the employment rate among Arts graduates recorded as 45% and 50.4% of graduates are unemployed in the Arts stream. In the Management stream, 27.7% of graduates are unemployed and 0.4% of graduated work as volunteers and 71.9% of graduates are employed. It is widely accepted that social sciences and humanities streams have the highest unemployment rate. However, as per the recently available data, unemployment among management graduates is considerably high and that will be the main research problem of the study.

Most of the employers are demanding more management graduates because of the knowledge that management graduates possess. But, even under such a circumstance management graduates have a high rate of unemployment as

well. Accordingly, the high unemployment rate among management graduates is the main problem area that the researcher wishes to address.

### **Research Questions**

- I. Is there a significant effect of entrepreneurship curriculum on unemployment reduction among management graduands in State Universities, Sri Lanka?
- II. Is there a significant effect of teaching methods of entrepreneurship on unemployment reduction among management graduands in State Universities, in Sri Lanka?
- III. Is there a significant effect of the university's role in promoting entrepreneurship education on unemployment reduction among management graduands in State Universities, in Sri Lanka?
- IV. Is there a significant effect of business plan exploration on unemployment reduction among management graduands in State Universities, Sri Lanka?
- V. What are the best predictor elements that contribute to the unemployment reduction among management graduands in State Universities, in Sri Lanka?
- VI. What are the lowest important elements that contribute to the unemployment reduction among management graduands in State Universities, in Sri Lanka?

### **Research Objectives**

Objectives of the research can be divided into two categories as Primary objectives and Secondary objectives. Objectives of the present research can be elaborated as follows.

#### **Primary Objective**

The primary objective of the study is to investigate the impact of entrepreneurship education on unemployment reduction among management grandaunts in state universities, in Sri Lanka.

#### **Secondary Objectives**

There are a few secondary objectives of the study and those can be stated as follows.

- I. To develop a new model for entrepreneurship education in universities that will contribute to reduce the unemployment

reduction among management graduands in State Universities, in Sri Lanka

- II. To investigate the impact of entrepreneurial curriculum on unemployment reduction among management graduands in State Universities, Sri Lanka
- III. To investigate the impact of teaching methods of entrepreneurship on unemployment reduction among management graduands in State Universities, Sri Lanka
- IV. To investigate the impact of the university's role in promoting entrepreneurship education on unemployment reduction among management graduands in State Universities, Sri Lanka
- V. To investigate the impact of business plan exploration on unemployment reduction among management graduands in State Universities, Sri Lanka
- VI. To find the best impact elements that contribute to the unemployment reduction among management graduands in State Universities, Sri Lanka
- VII. To find the lowest impact elements that contribute to the unemployment reduction among management graduands in State Universities, Sri Lanka

Accordingly, the present study aims at achieving the above objectives.

## **Research Hypotheses**

### **Hypothesis 01**

**H0** – There is no significant impact of effect of entrepreneurship education on unemployment reduction among management graduands in state universities, in Sri Lanka.

**H1** – There is a significant impact of the effect of entrepreneurship education on unemployment reduction among management graduands in state universities, in Sri Lanka.

### **Hypothesis 02**

**H0** – There is no significant impact of effect of entrepreneurship curriculum on unemployment reduction among management graduands in state universities, in Sri Lanka.

**H1** – There is a significant impact of effect of entrepreneurship curriculum on unemployment reduction among management graduands in state

universities, in Sri Lanka.

### **Hypothesis 03**

**H0** – There is no significant impact of effect of teaching methods of entrepreneurship on unemployment reduction among management graduands in state universities, in Sri Lanka.

**H1** – There is a significant impact of effect of teaching methods of entrepreneurship on unemployment reduction among management graduands in state universities, in Sri Lanka.

### **Hypothesis 04**

**H0** – There is no significant impact of effect of the university's role in promoting entrepreneurship education on unemployment reduction among management graduands in state universities, in Sri Lanka.

**H1** – There is a significant impact of effect of university role in promoting entrepreneurship education on unemployment reduction among management graduands in state universities, in Sri Lanka.

### **Hypothesis 05**

**H0** – There is no significant impact of effect of business plan exploration on unemployment reduction among management graduands in state universities, in Sri Lanka.

**H1** – There is a significant impact of effect of business plan exploration on unemployment reduction among management graduands in state universities, in Sri Lanka.

## **METHODOLOGY**

### **Research Design**

#### **Types of the Study**

The objective of the study was to identify the impact of entrepreneurship education on unemployment reduction among management graduates in state universities, in Sri Lanka. For this, four variables (entrepreneurial curriculum, teaching methods, university role in promoting EE and business plan exploration) that are considered to be important in unemployment reduction among management graduates in state universities, in Sri Lanka have been recognized as important factors. Therefore, the type of investigation of this study was Survey.

## Research Setting

This is a field study since it examines the impact of entrepreneurship education on unemployment reduction among management graduates in state universities, in Sri Lanka in a natural working environment and none of the variables were controlled or manipulated. As the study was conducted in a natural environment where events normally occur, that is non - contrived setting. No artificial or contrived setting was created for the study.

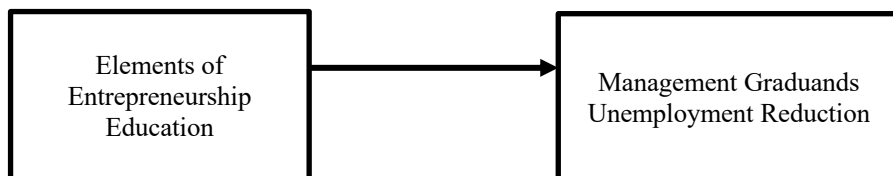
## Unity of Analysis

The unit of the study was individuals' i.e. final year management undergraduates in Sri Lanka.

## Research Model

The research model of the present research can be shown as figure 3.1 by demonstrating the relationship between the dependent, independent and moderate variables that are involved in the research problem statement.

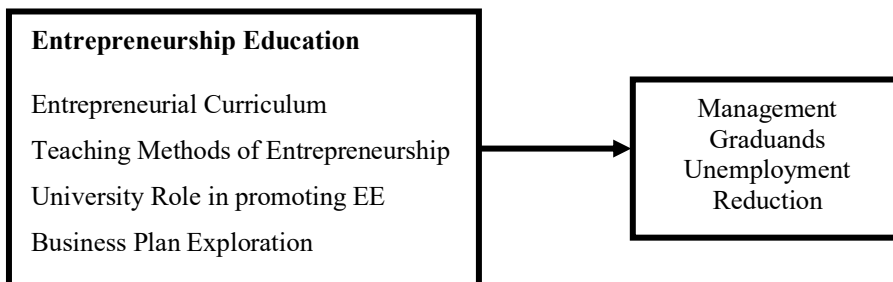
**Figure 1: Research Model**



## Conceptual Model

The conceptual model includes the conceptual thoughts in relation to the relationship between entrepreneurship education and unemployment reduction among management graduates in state universities, in Sri Lanka. The figure shows the conceptual model of the present research.

**Figure 2: Conceptual Model**



## Sampling Design

The sampling method and structure of the population as well as the sample of the present research will be elaborated in this section.

## Population and Sampling

The target population for this study was the final year management undergraduates in Sri Lankan universities and it consist of approximately 19562. The research has selected the final year management undergraduates as the population for the study since they are now ready to start their employment and some have started their employment already.

**Table 4: No. of Management Graduands in 2018 Academic Year**

University	Total
Colombo	1798
Sri Jayewardenepura	4581
Kelaniya	2330
Wayamba	1834
South Eastern	884
Sabaragamuwa	1362
Peradeniya	595
Jaffna	1980
Ruhuna	1200
Eastern	982
Rajarata	1516
Uwa Wellassa	500
<b>Total</b>	<b>19562</b>

*Source:* University Grants Commission Report, 2019

## Sampling Procedure

Sample refers to a subset of the population (Sekaran and Bougie, 2011). Therefore, some number of management undergraduates in Sri Lankan universities from the above population have to be selected as a sample of this study. According to the nature of this research it is advisable to use a stratified random sampling method. The sample will be selected according to

Morgan's table produced by (Krejcie and Morgan, 1970) and 377 has been given as the appropriate sample size for the population of 20000. Even though the population of the preset research will be **19562** the researcher has decided to select 400 as the sample allowing invalid and incomplete questionnaires which can be given by the respondents. Accordingly following equation has been utilized to calculate the sample size of each category proportionately.

**Table 5: Structure of the designed sample**

<b>University</b>	<b>Total</b>
<b>Colombo</b>	37
<b>Sri Jayewardenepura</b>	94
<b>Kelaniya</b>	48
<b>Wayamba</b>	38
<b>South Eastern</b>	18
<b>Sabaragamuwa</b>	28
<b>Peradeniya</b>	12
<b>Jaffna</b>	40
<b>Ruhuna</b>	25
<b>Eastern</b>	20
<b>Rajarata</b>	31
<b>Uwa Wellassa</b>	10
<b>Grand Total</b>	<b>400</b>

*Source: Adopted by Author,2022*

**Sample size = (Population of each category/19562) x 400**

The structure of the sample which was calculated upon the proportions of the population using the above equation can be illustrated in the last decimal place.

### **Data Collection**

As the generalized questionnaire will be the primary data collection tool of this study, mainly the questionnaire will be used to collect relevant data from the relevant respondents' i. e final year management undergraduates in Sri

Lankan universities. The questionnaire will be produced to respondents in English medium. The objective of the present research will be explained to the respondents. The researcher will provide sufficient time and instructions in order to complete the questionnaire. A total of 400 questionnaires will be distributed in order to collect the relevant data.

### **Validity and Reliability of the Instrument**

This section is committed to explaining to what extent this empirical research results were valid and reliable. The reliability and validity of the questions were tested for the purpose of proving the degree of validity and reliability of the questionnaire.

**Table 6: Validity and Reliability**

<b>Question Item</b>	<b>Validity</b>	<b>Reliability</b>
<b>Unemployment Reduction</b>	58.16%	0.75
<b>Like to be employed</b>	0.724	0.765
<b>Starting a business after graduation</b>	0.698	0.732
<b>Never thought entrepreneurship as a career choice</b>	0.642	0.759
<b>Cannot take the risk of being an entrepreneur.</b>	0.673	0.654
<b>Being an entrepreneur is the best way to get rich</b>	0.714	0.741
<b>Amazed at the success of those with their own businesses</b>	0.655	0.783
<b>Entrepreneurship Curriculum</b>	63.45%	0.72
<b>Course is organized</b>	0.888	0.861
<b>Gain new experience</b>	0.884	0.754
<b>More interested</b>	0.756	0.789
<b>Can hone entrepreneurship skills</b>	0.712	0.835
<b>Better understanding about business</b>	0.764	0.828
<b>Knowledge has increased</b>	0.861	0.768

<b>Can apply to different situations</b>	0.658	0.876
<b>Teaching Methods of Entrepreneurship</b>	79.87%	0.79
<b>Lecturers have successfully applied the course</b>	0.657	0.791
<b>Lecturers are experienced in teaching</b>	0.894	0.854
<b>Entrepreneurship courses are delivered by lecturers is not interesting</b>	0.650	0.718
<b>Lecturers bring students to visit the industry</b>	0.675	0.745
<b>Practical training helps a lot in understanding</b>	0.811	0.852
<b>Lecturers have the best way of delivering</b>	0.798	0.876
<b>Lecturers are good at engaging students</b>	0.644	0.794
<b>University Role in promoting EE</b>	64.07%	0.76
<b>Entrepreneurship has frequently been a topic</b>	0.912	0.768
<b>My university's focus is on entrepreneurship</b>	0.619	0.831
<b>Subject of entrepreneurship should be made compulsory</b>	0.786	0.647
<b>Policy at my university promotes entrepreneurship education</b>	0.764	0.787
<b>University does not have enough facilities to promote entrepreneurship activities</b>	0.823	0.871
<b>University environment inspires me to develop innovative ideas</b>	0.648	0.633

<b>University is the best place to be train.</b>	0.745	0.633
<b>Business Plan Exploration</b>	69.13%	0.74
<b>Create realistic ideas</b>	0.761	0.769
<b>Generate profitable business ideas</b>	0.869	0.856
<b>Demonstrate greater entrepreneurial characteristics</b>	0.621	0.732
<b>Improve intellectual capital</b>	0.756	0.811
<b>Improve entrepreneurial skills</b>	0.886	0.871
<b>Enhance psychological characteristics</b>	0.764	0.865
<b>Improve entrepreneurial aspirations</b>	0.655	0.758

*Source:* Survey Data, 2022

### **Sample Characteristics Analysis**

Under sample characteristics analysis, the researcher has adopted several techniques to analyze the demographic characteristics of the respondents.

### **Multivariate Assumptions**

Under multivariate assumptions, the researcher has adopted the normality test, and linearity and used graphs such as histograms, and scatter diagrams to explain the data.

### **Univariate Analysis**

First of all, the personal characteristics of the respondents are analyzed using frequency distributions. The frequency plots for each and every item is expressed in percentage and presented in table and diagrams such as Pie charts & graphs. These charts help to understand the data easily. The measure of central tendency is made for every variable in the research model. Since these are measured with 5 points Likert Scale, the value is taken as the measure of the central tendency for this analysis. Similarly, the standard deviation and the variance were taken as the measure of dispersion for this analysis

## **Decision Rule and Methods of interpretation**

The variables in the research model were measured by the use of a questionnaire with five point scales. The five point scales for the variable of employer branding and job satisfaction were ranged from “Strongly Agree” to “Strongly Disagree” with the point of 5 to 1 respectively for positive statements. The mean of these 5 point scales is 03 ( $[1 + 2 + 3 + 4 + 5] / 5 = 3$ ). Hence, this mean value is taken as the deciding factor which determines whether the respondents are in favor of the particular variable or not.

## **Bivariate Analysis**

According to the conceptual model, the management graduates' unemployment reduction is the dependent variable, while four variables of entrepreneurship education (entrepreneurship curriculum, teaching methods of entrepreneurship, university role in promoting entrepreneurship education and business plan exploration) are the independent variables. The main objective of this research is to investigate the impact of entrepreneurship education on unemployment reduction among management grandaunts in state universities, in Sri Lanka. Therefore, in this research the bivariate analysis was made to determine whether there is an impact of entrepreneurship education on unemployment reduction among management grandaunts. Here, statistical techniques such as correlation analysis are selected to do the above bivariate analysis.

## **Multivariate Analysis**

Multivariate analysis (MVA) techniques allow more than two variables to be analyzed at once. Two general types of MVA techniques: Analysis of dependence & Analysis of interdependence. The ultimate goal of these analyses is either explanation or prediction, i.e., more than just establishing an association. There are two general types of multivariate analysis.

- Analysis of dependence: Where one (or more) variables are dependent variables, to be explained or predicted by others. e.g. Multiple regression, Discriminant analysis, Manova, Partial Least Square.
- Analysis of interdependence: No variables are thought of as “dependent”. Here we look at the relationships among variables, objects or cases. E.g. cluster analysis, factor analysis, and principal component analysis.

In this study, the researcher has adopted multiple regression analysis to do the multivariate analysis.

## Methods of Data Analysis

The data which will be gathered from the respondents will be analyzed through the adoption of Statistical Package for Social Sciences (SPSS) version 23. The regression analysis will be used to explore the possible impact among several independent, moderate and dependent variables.

### Pilot Study

Before collecting data from 400 respondents, the researcher decided to collect data from 35 respondents in order to identify.

### Goodness of the Data (Reliability Analysis)

Reliability will be examined on all items included in section two of the questionnaire of the present study. As a test of Cronbach's alpha was adopted to represent internal consistency. Cronbach's alpha coefficient values for each variable are available in table 3.5.

**Table 8: Results of reliability test**

<b>Variables</b>	<b>No of items</b>	<b>Cronbach's alpha value</b>
<b>Entrepreneurship Curriculum</b>	7	0.75
<b>Teaching Methods of Entrepreneurship</b>	7	0.72
<b>University Role in EE</b>	7	0.80
<b>Business Plan Exploration</b>	7	0.79
<b>Unemployment Reduction</b>	7	0.76

*Source:* Survey data, 2022

According to the above table, Cronbach's alpha coefficient for all the variables has shown an acceptable level (above 0.70).

## DATA PRESENTAION AND ANALYSIS

### Univariate Analysis

#### Sample Characteristics Analysis

The data collected on personal characteristics such as gender, age, and the university is presented and analyzed in this section.

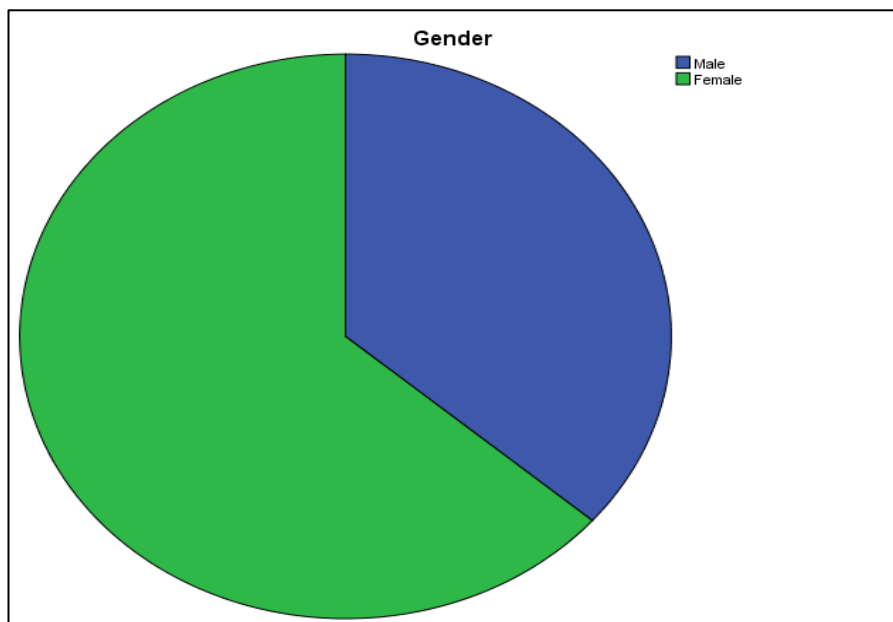
#### Composition of the Sample according to Gender

**Table 9: Composition of the Sample According to Gender**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	138	36.3	36.3	36.3
	Female	242	63.7	63.7	100.0
	Total	380	100.0	100.0	

*Source:* Survey Data, 2022

**Figure 3: Composition of the Sample According to Gender**



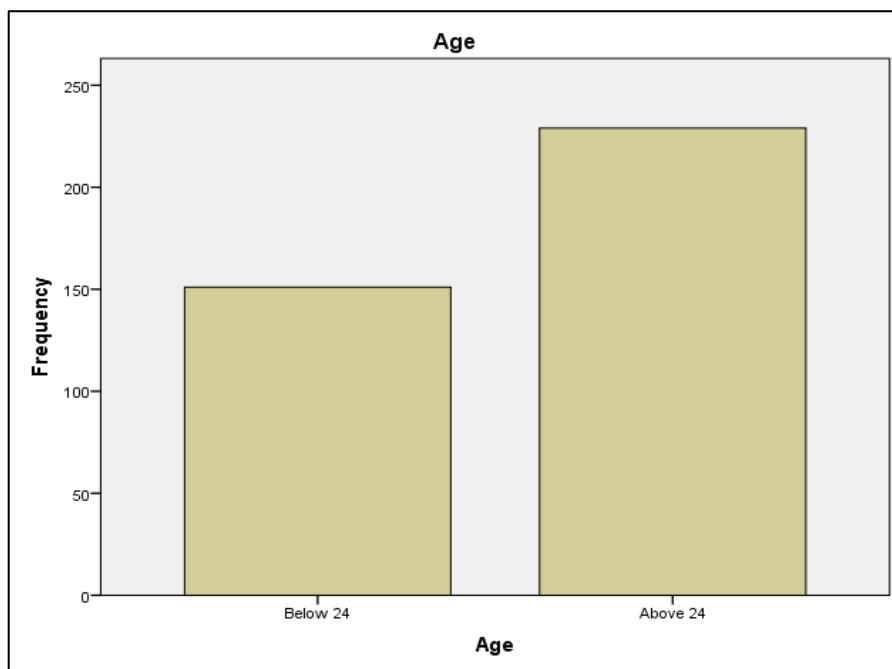
*Source:* Survey Data, 2022

The gender of the respondents of the sample was categorized as male and female. Table 4.1 and figure 4.1 present the gender distribution of the total sample. According to table 4.1 and figure 4.1, 63.7% of the respondents were female but 36.3% of the respondents were male. Accordingly, the reason for this situation might be the high percentage of female students in management faculties in Sri Lankan public universities.

### Composition of the Sample According to Age Level

In this study, the age group of the sample is ranked from below 24 and above 24 years. As per figure 4.2, the majority of responders belong to those above 24 and that is 60.2% and the below 24 age groups represent the lowest percentage which is 39.7%.

Figure 4: Composition of the Sample According to Age Level



Source: Survey Data, 2022

## Frequency Distribution Analysis for Dependent Variable and Independent Variables

**Table 10: Frequency Distribution Analysis for Dependent Variable**

### Statistics

Unemployment Reduction		
N	Valid	380
Mean		3.4289
Median		3.6000
Mode		4.00
Std. Deviation		.83417
Skewness		-.639
Std. Error of Skewness		.125
Minimum		1.60
Maximum		4.60

*Source:* Survey Data, 2022

In this study management graduands unemployment reduction is the dependent variable while entrepreneurship curriculum, teaching methods of entrepreneurship, university role in promoting EE and the business plan exploration are the four dimensions of entrepreneurship education and are the independent variables. In this section the frequency distribution analysis was done individually for the dependent variable and independent variables. The frequency distributions are presented in the tableau.

## Frequency Distribution Analysis for Independent Variables

**Table 11: Statistics of the Distribution of Independent Variables**

Statistics		Entrepreneurship Curriculum	Teaching methods of Entrepreneurship	University Role	Business Plan Exploration
N	Valid	380	380	380	380
Mean		3.7000	3.4066	3.4398	3.3737
Median		4.0000	3.6667	3.7143	3.6000
Mode		4.00	3.83	3.86	4.00
Std. Deviation		1.06491	.83678	.78752	.84538
Skewness		-.577	-.600	-.658	-.506
Std. Error of Skewness		.125	.125	.125	.125
Minimum		1.00	1.50	1.43	1.40
Maximum		5.00	4.83	4.86	4.60

*Source:* Survey Data, 2022

### Bivariate Analysis

This section is focused to examine the relationship between entrepreneurship education and Management graduands' unemployment reduction by using Correlation analysis. In addition to that, the researcher attempts to investigate the relationship of entrepreneurship curriculum, teaching methods of entrepreneurship, university role in promoting EE and the business plan exploration with the dependent variable (Management graduands unemployment reduction). According to Sekaran and Bougie (2011), Correlation analysis explains the relationship between two variables. The correlation coefficient indicates the strength and the direction of the relationship can be computed by applying a formula that takes into consideration the two sets of figures.

## Correlation between entrepreneurship curriculum and management graduands unemployment reduction

**Table 12: Correlation between Entrepreneurship Curriculum and Management Graduands Unemployment Reduction**

### Correlations

		Unemployment Reduction	Entrepreneurship curriculum
Unemployment Reduction	Pearson Correlation	1	.692**
	Sig. (2-tailed)		.000
	N	380	380
Entrepreneurship curriculum	Pearson Correlation	.692**	1
	Sig. (2-tailed)	.000	
	N	380	380

**\*\*.** Correlation is significant at the 0.01 level (2-tailed).

*Source:* Survey Data, 2022

According to table 12, Pearson Correlation Coefficient is 0.692 which is positive. The found relationship is statistically significant since the correlation is significant at 0.01 levels. Therefore, there is statistical evidence to claim that entrepreneurship curriculum and management graduands unemployment reduction are positively related.

## Correlation Between Teaching Methods of Entrepreneurship and Management Graduands Unemployment Reduction

**Table 13: Correlation between Teaching Methods of Entrepreneurship and Management Graduands Unemployment Reduction**

**Correlations**

		Unemployment Reduction	Teaching Methods of entrepreneurship
Unemployment Reduction	Pearson Correlation	1	.747**
	Sig. (2-tailed)		.000
	N	380	380
Teaching Methods of entrepreneurship	Pearson Correlation	.747**	1
	Sig. (2-tailed)	.000	
	N	380	380

**\*\*.** Correlation is significant at the 0.01 level (2-tailed).

*Source:* Survey Data, 2022

To identify whether there is a relationship between teaching methods of entrepreneurship and management graduands' unemployment reduction, Correlation Analysis (2 – tailed test) was done. According to table 13, the Pearson Correlation coefficient(r) between the above two variables is 0.747 and this represents that there is a strong positive relationship between teaching methods of entrepreneurship and management graduands unemployment reduction.

In order to find out whether the correlation coefficient derived is statistically significant, a significance test was carried out. Since the significant value is less than 0.01 the correlation coefficient is statistically significant. Therefore, there is statistical evidence to claim that there is a positive relationship between teaching methods of entrepreneurship and management graduands' unemployment reduction.

## Correlation between University Role in Promoting EE And Management Graduands Unemployment Reduction

**Table 14: Correlation between University Role in Promoting EE and Management Graduands Unemployment Reduction**

### Correlations

		Unemployment Reduction	University role in promoting EE
Unemployment Reduction	Pearson Correlation	1	.796**
	Sig. (2-tailed)		.000
	N	380	380
University role in promoting EE	Pearson Correlation	.796**	1
	Sig. (2-tailed)	.000	
	N	380	380

**\*\*.** Correlation is significant at the 0.01 level (2-tailed).

*Source:* Survey Data, 2022

According to the above table 14, the Pearson Correlation coefficient(r) between the two variables is 0.796, which is positive. Accordingly, it shows that there is a strong positive relationship between the university's role in promoting EE and management graduands' unemployment reduction. The found relationship is statistically significant as the correlation is significant at 0.01 levels (2-tailed). Hence, there is statistical evidence to claim that the university's role in promoting EE and management graduands unemployment reduction is positively related.

## Correlation between Business Plan Exploration and Management Graduands Unemployment Reduction

**Table 15: Correlation between Business Plan Exploration and Management Graduands Unemployment Reduction**

Correlations		Unemployment Reduction	Business plan exploration
Unemployment Reduction	Pearson Correlation	1	.699**
	Sig. (2-tailed)		.000
	N	380	380
Business plan exploration	Pearson Correlation	.699**	1
	Sig. (2-tailed)	.000	
	N	380	380

**\*\*.** Correlation is significant at the 0.01 level (2-tailed).

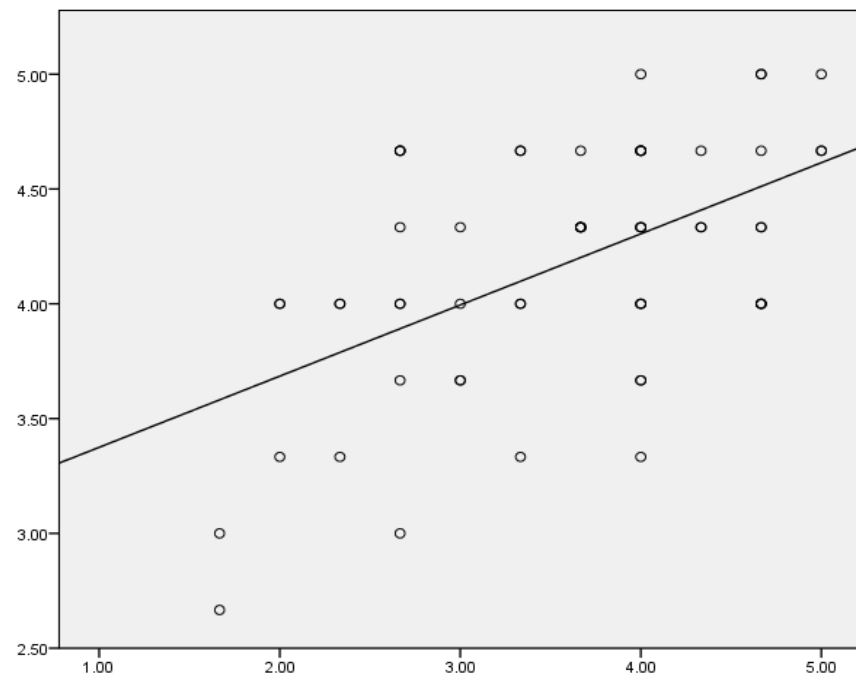
*Source:* Survey Data, 2022

Correlation Analysis (2-tailed test) was done in order to find whether there is a relationship between Business Plan Exploration and management graduands' unemployment reduction. According to the above table, the Pearson Correlation coefficient(r) between the above 2 variables is 0.699 at a significance level of 0.01 indicating a moderate positive relationship between Business Plan Exploration and management graduands unemployment reduction. Therefore, there is statistical evidence to claim that there is a relationship between Business Plan Exploration and management graduands unemployment reduction.

According to Sekaran and Bougie (2011), a Pearson correlation matrix will indicate the direction, strength and significance of the bivariate relationships among all the variables that were measured at an interval or ratio level. As per figure 5, the scattered diagram indicates that there is a positive relationship between entrepreneurship education and the management graduands unemployment reduction in state universities in Sri Lanka.

Figure 5: Scattered Diagram Showing Relationship between Entrepreneurship Education and the Management Graduands Unemployment Reduction in State Universities in Sri Lanka

## Entrepreneurship Education



Source: Survey Data, 2022

## Curve Fit Analysis

Table 16: Results of regression analysis

Statistics					
Variables	Entrepreneurship Education	Entrepreneurship Curriculum	Teaching Methods of Entrepreneurship	University Role in promoting EE	Business plan exploration
Method	Linear	Linear	Linear	Linear	Linear
R Square	.527	.569	.512	.761	.558
Adjusted R Square	.526	.569	.510	.760	.557
F	421.59	222.43	395.8	1201.5	477.9
Significance	.000	.000	.000	.000	.000
B-Constant	.489	.727	.661	-0.605	.626
b - value	.758	.975	.714	.950	.736

Source: Survey Data, 2022

As per table 16, the regression equation of Entrepreneurship Education can be stated as follow.

$$\text{Management graduands unemployment} = 0.727 + 0.975(\text{Entrepreneurship Education}) \quad (1)$$

The b value of the equation is 0.758. As indicated by R Squared, 52.6 % of the variance of management graduands unemployment reduction is explained by Entrepreneurship Education with the standardized beta of 0.527. The F value is 421.59, which is significant at 1% which implies that Entrepreneurship Education has significantly explained 52.6 % of the variance of management graduands unemployment reduction in state universities in Sri Lanka.

As per table 16, the regression equation of the Entrepreneurship Curriculum can be stated as follow.

$$\text{Management graduands unemployment} = 0.727 + 0.975(\text{Entrepreneurship Curriculum}) \quad (2)$$

The b value of the equation is 0.975. As indicated by R Squared, 56.9 % of the variance of management graduands' unemployment reduction is explained by Entrepreneurship Curriculum with the standardized beta of 0.569. The F value is 222.43, which is significant at 1% which implies that the Entrepreneurship Curriculum has significantly explained 56.9 % of the variance of management graduands unemployment reduction in state universities in Sri Lanka.

As per table 16, the regression equation of Teaching Methods of entrepreneurship can be stated as follow.

$$\begin{array}{l} \text{Management} \\ \text{graduands} \\ \text{unemployment} \end{array} = 0.661 + 0.714 (\text{Teaching Methods}) \quad (3)$$

R Squared, 51.0 % of the variance of management graduands' unemployment reduction is explained by Teaching Methods of entrepreneurship with the standardized beta of .512. The F value is 395.8, which is significant at 1% which implies that Teaching Methods of entrepreneurship have significantly explained 51.0 % of the variance of management graduands unemployment reduction in state universities in Sri Lanka.

As per table 16, the regression equation of the University's Role in promoting EE can be stated as follow.

$$\begin{array}{l} \text{Management} \\ \text{graduands} \\ \text{unemployment} \end{array} = 0.626 + 0.950 (\text{University Role in Promoting EE}) \quad (4)$$

The b value of the equation is 0.950. As indicated by R Squared, 76.0 % of the variance of management graduands unemployment is explained by the University's Role in promoting EE with the standardized beta of 0.761. The F value is 1201.5, which is significant at 1% which implies that the University's Role in promoting EE has significantly explained 76.0 % of the variance of management graduands unemployment reduction in state universities in Sri Lanka.

As per table 16, the regression equation of Business Plan Exploration can be stated as follow.

The b value of the equation is 0.736. As indicated by R Squared, 55.7 % of the variance of management graduands' unemployment is explained by

(5)

Management graduands unemployment = 0.626+0.736 (Business Plan Exploration)

Business Plan Exploration with the standardized beta of .558. The F value is 477.9, which is significant at 1% which implies that relationship management has significantly explained 55.7 % of the variance of management graduands unemployment reduction in state universities in Sri Lanka.

### Multivariate Analysis

Based on the conceptual model developed under chapter three, the researcher has selected the multiple regression model to analyze the linear relationship between the independent variables (entrepreneurship curriculum, teaching methods of entrepreneurship, university role in promoting EE and business plan exploration) and dependent variable (management graduands unemployment reduction in state universities in Sri Lanka.).

### Multiple Regression Analysis

Sekeran and Bougie (2011) specified that the multiple regressions as a multivariate technique that is used very often in business research that assess the degree and the character of the relationship between the independent variables and dependent variable.

Table 17: Regression between Independent Variables and Dependent Variable

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.772a	.596	.569	.53234

a. Predictors: (Constant), Entrepreneurship education, teaching methods of entrepreneurship, university role in promoting EE and business plan exploration

b. Dependent Variable: Unemployment Reduction

Source: Survey Data, 2022

The ‘R’-value of the table explains the multiple regression coefficients which is 0.772 and it shows a positive relationship between independent variables and dependent variables. According to the above table, the ‘R<sup>2</sup>’ value is 0.596. Accordingly, a 60% unemployment reduction can be explained by the above mentioned four independent variables jointly and the remaining unexplained 40 % might be due to other factors that were not considered in this study.

Table 18: Analysis of Variance

**ANOVA<sup>a</sup>**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	31.782	8	6.356	22.430	.000 <sup>a</sup>
	Residual	21.538	76	.283		
	Total	53.320	81			

a. Predictors: (Constant), Entrepreneurship education, teaching methods of entrepreneurship, university role in promoting EE and business plan exploration

b. Dependent Variable: Unemployment Reduction

*Source:* Survey Data, 2022

An analysis of variance (ANOVA) helps to examine the significant mean differences among more than two groups on an interval or ratio- scaled variable. According to table 18, the statistical significance is less than 0.05. Based on that researcher can conclude that the overall model applied is significantly good enough in predicting the outcome variable.

### Hypothesis Testing

In this section the hypothesis testing was carried out by using the results of Regression analysis.

#### Testing Hypothesis 01

**H0** – There is no significant impact of entrepreneurship education on management graduands' unemployment reduction in state universities in Sri Lanka.

**H1** - There is a significant impact of entrepreneurship education on management graduands' unemployment reduction in state universities in Sri Lanka.

As per the result of simple regression analysis between the two variables the regression coefficient (b) is 0.758, which is significant at 1% (Sig. T = 0.000).

As far as above both tests are concerned, the null hypothesis is rejected and the alternative hypothesis is accepted. Therefore, there are statistical evidence to claim that there is a significant impact of entrepreneurship education on management graduands' unemployment reduction in state universities in Sri Lanka.

### **Testing Hypothesis 02**

**H0** – There is no significant impact of entrepreneurship curriculum on management graduands unemployment reduction in state universities in Sri Lanka.

**H1** - There is a significant impact of entrepreneurship curriculum on management graduands unemployment reduction in state universities in Sri Lanka.

As per the result of simple regression analysis between the two variables the regression coefficient (b) is 0.975, which is significant at 1% (Sig. T = 0.000).

As far as above both tests are concerned, the null hypothesis is rejected and the alternative hypothesis is accepted. Therefore, there are statistical evidence to claim that there is a significant impact of entrepreneurship curriculum on management graduands unemployment reduction in state universities in Sri Lanka.

### **Testing Hypothesis 03**

**H0** – There is no significant impact of teaching methods of entrepreneurship on management graduands' unemployment reduction in state universities in Sri Lanka.

**H1** - There is a significant impact of teaching methods of entrepreneurship on management graduands' unemployment reduction in state universities in Sri Lanka.

As per the result of simple regression analysis between the two variables the regression coefficient (b) is 0.714, which is significant at 1% (Sig. T = 0.000).

As far as above both tests are concerned, the null hypothesis is rejected and the alternative hypothesis is accepted. Therefore, there is statistical evidence to claim that there is a significant impact of teaching methods of entrepreneurship on management graduands' unemployment reduction in state universities in Sri Lanka.

### **Testing Hypothesis 04**

**H0** – There is no significant impact of the university's role in promoting EE on management graduands' unemployment reduction in state universities in Sri Lanka.

**H1** - There is a significant impact of the university's role in promoting EE

on management graduands' unemployment reduction in state universities in Sri Lanka.

As per the result of simple regression analysis between the two variables the regression coefficient (b) is 0.950, which is significant at 1% (Sig. T = 0.000).

As far as above both tests are concerned, the null hypothesis is rejected and the alternative hypothesis is accepted. Therefore, there are statistical evidences to claim that there is a significant impact of the university's role in promoting EE on management graduands unemployment reduction in state universities in Sri Lanka.

### **Testing Hypothesis 05**

**H0** – There is no significant impact of business plan exploration on management graduands' unemployment reduction in state universities in Sri Lanka.

**H1** - There is a significant impact of business plan exploration on management graduands' unemployment reduction in state universities in Sri Lanka.

As per the result of simple regression analysis between the two variables the regression coefficient (b) is 0.736, which is significant at 1% (Sig. T = 0.000).

As far as above both tests are concerned, the null hypothesis is rejected and the alternative hypothesis is accepted. Therefore, there are statistical evidences to claim that there is a significant impact of business plan exploration on management graduands unemployment reduction in state universities in Sri Lanka.

## **CONCLUSION & RECOMMENDATIONS**

### **Discussion on the Impact of Entrepreneurship Education on Management Graduands Unemployment Reduction in State Universities in Sri Lanka.**

After analyzing the collected data, it was identified that there is a significant impact of entrepreneurship education on management graduands' unemployment reduction in state universities in Sri Lanka. According to the results of regression analysis, entrepreneurship education has a positive impact on management graduands unemployment reduction with the strength of b value of 0. 758.

### **Discussion on the Impact of Entrepreneurship Curriculum n**

### **Management Graduands Unemployment Reduction in State Universities in Sri Lanka.**

After analyzing the collected data, it was identified that there is a significant impact of entrepreneurship curriculum on management graduands unemployment reduction in state universities in Sri Lanka. According to the results of regression analysis, entrepreneurship curriculum has a positive impact on management graduands unemployment reduction with the strength of b value of 0. 975.

### **Discussion on the Impact of Teaching Methods of Entrepreneurship on Management Graduands Unemployment Reduction in State Universities in Sri Lanka.**

After analyzing the collected data, it was identified that there is a significant impact of teaching methods of entrepreneurship on management graduands' unemployment reduction in state universities in Sri Lanka. According to the results of regression analysis, teaching methods of entrepreneurship has a positive impact on management graduands unemployment reduction with the strength of b value of 0. 714.

### **Discussion on the Impact of University Role in Promoting EE on Management Graduands Unemployment Reduction in State Universities in Sri Lanka.**

After analyzing the collected data, it was identified that there is a significant impact of the university's role in promoting EE on management graduands unemployment reduction in state universities in Sri Lanka. According to the results of regression analysis, the university's role in promoting EE has a positive impact on management graduands' unemployment reduction with the strength of b value of 0. 950.

## **Discussion on the Impact of Business Plan Exploration on Management Graduands Unemployment Reduction in State Universities in Sri Lanka.**

After analyzing the collected data, it was identified that there is a significant impact of business plan exploration on management graduands' unemployment reduction in state universities in Sri Lanka. According to the results of regression analysis, business plan exploration has a positive impact on management graduands unemployment reduction with the strength of b value of 0. 736.

## **FINDINGS OF THE STUDY**

The problem of the research was that high unemployment rate among management graduates in state universities in Sri Lanka. There were several factors affecting the high unemployment rate among management graduates in state universities in Sri Lanka and among that entrepreneurship education holds a priority. Based on the literature, a conceptual framework is developed so as to test the relationship between entrepreneurship education and management graduands' unemployment reduction. According to the findings, it can be specified that there is a significant impact of **entrepreneurship education on management graduands' unemployment reduction in state universities in Sri Lanka**. This is the main objective of the study.

In addition to that, research findings proved that there are significant impacts on four dimensions of entrepreneurship education (entrepreneurship curriculum, teaching methods of entrepreneurship, university role in promoting EE and business plan exploration) on a management graduands unemployment reduction in state universities in Sri Lanka. Entrepreneurship curriculum contributes to reduce management graduands unemployment in state universities in Sri Lanka. University's role in promoting EE also contributes significantly to reduce the management graduands unemployment in state universities in Sri Lanka and teaching methods of entrepreneurship have the lowest contribution to reduce the management graduands unemployment in state universities in Sri Lanka. Business plan exploration can be also used as a technique to reduce management graduands unemployment in state universities in Sri Lanka.

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# Do Crises Affect Social Entrepreneurship? A Qualitative Exploration

I.V.M.N. Premadasa<sup>1\*</sup>, P.I.N. Fernando<sup>2</sup>, K. Jayawardhana<sup>3</sup>, J. Siyambalapitiya<sup>4</sup>, T.G.A.H.C Amarawansa<sup>5</sup>, P.G.M.S.K. Gamage<sup>6</sup>

<sup>1\*</sup>Faculty of Management, Uva Wellassa University of Sri Lanka, rafom@uwu.ac.lk

<sup>2</sup>Faculty of Management, Uva Wellassa University of Sri Lanka, imalif@uwu.ac.lk

<sup>3</sup>Faculty of Management, Uva Wellassa University of Sri Lanka,  
kumudu@uwu.ac.lk

<sup>4</sup>Faculty of Management, Uva Wellassa University of Sri Lanka, janaka@uwu.ac.lk

<sup>5</sup>Faculty of Management, Uva Wellassa University of Sri Lanka,  
sewwandika@uwu.ac.lk

<sup>6</sup>Faculty of Management, Uva Wellassa University of Sri Lanka,  
hirusha@uwu.ac.lk

## ABSTRACT

*A global economic crisis has been brought upon by COVID-19, and currently, the whole world is going through a gradual recovery. Nevertheless, hopes for economic recovery after 30 years of civil war, Easter Sunday attacks, and COVID-19 are dashed by the growing political and economic crises in Sri Lanka. All these crises have shaken the overall economy, particularly for entrepreneurs and small and medium-sized businesses, which have experienced significant losses. Paradoxically, research on social entrepreneurship in times of crisis is abundant in developed countries, despite the fact that it is still in its infancy in developing countries such as Sri Lanka. Thereby, the void should be addressed. Because findings generated in the context of developed countries cannot be generalized to developing countries. Thus, the overarching aim of this study is to explore the consequences of crises in social entrepreneurship and develop resilience strategies to contribute to post-crisis social entrepreneurship. The study adopted a qualitative research paradigm, and semi-structured interviews were conducted with 25 social enterprises in Sri Lanka by adopting the maximum variation sampling technique. The data was analyzed thematically in order to ascertain the realities of the crisis. Accordingly, the analysis revealed that: a) managing social and economic goals, b) finding reliable and stable customers, and c) stakeholder satisfaction were the major challenges that social enterprises face during crises. The time of crisis is also a time of opportunity, particularly for social entrepreneurs devoted to positive social impact and improving health at the community level. Resilience actions such as a) identifying novel ways of working, b) focusing on successfully surviving the crisis, and c) having a contingency plan have evolved as an entrepreneurial skill that enables businesses to adapt and become stronger in the face of adversity. Accordingly, this paper has significant implications for theory, practice, and policymaking.*

**Keywords: Crisis, COVID-19, Social Entrepreneurship, Sri Lanka, developing country**

## **INTRODUCTION**

The COVID-19 pandemic has revealed the fragile reality of the global system and caused huge loss of life around the world and recently posed unprecedented challenges to the world of work. Globally, billions of human beings were ordered to stay at home because of lockdowns, and this has caused a supply-demand crisis like never before and led to a disruption in economic activities (Nicola et al., 2020). Due to the tragedy caused by the virus to humans and health, this pandemic has caused the most serious economic crisis in a century, and its impact is complex among countries, communities, and economies. A key consequence was that as BBC News (2020) reported, over 40 million Americans had lost their jobs as of 26th May 2020, which is almost more than the number of Americans who were unemployed within two years of the Great Recession. Moreover, from the beginning to the end of the Great Depression, the number of active entrepreneurs/business owners fell by 730,000, which is only a 5% decrease (Fairlie, 2020). Accordingly, business ownership is relatively stable throughout the business cycle (Fairlie & Chatterji, 2013; Parker, 2018). Thus, this highlights the tremendous negative impact of COVID-19 on the business sector, and the COVID-19 epidemic had a major impact on entrepreneurial businesses around the world as well (Liquori & Winkler, 2020). Correspondingly, the impact of the epidemic on social enterprises is obvious, as it is categorized as one of the entrepreneurial businesses.

Sri Lanka has emerged recently from a nearly three-decade-long civil war crisis that ended in 2009 (Siriwardhana & Wickramage, 2014). It is still struggling to find peace after a decade. Yet again, in April 2019, Easter Sunday attacks in churches and hotels across Sri Lanka killed 253 people and injured many more (Gunasingham, 2019). The attacks caused massive trauma and exacerbated pre-existing inter-faith tensions. The Sri Lankan economy was already stressed out by these crises and the COVID-19 pandemic has hit another severe blow to the economy. Thus, the COVID-19 pandemic had a tremendous impact on community lifestyles and the overall economy as a whole. Meanwhile, the COVID-19 pandemic is creating new social problems and exacerbating social problems that have been deeply reflected in the economy for decades. For various internal and external reasons, including the 2019 Easter Sunday assaults followed by COVID-19 in 2020, some of Sri Lanka's primary income streams have recently been impacted. However, currently, Sri Lanka is experiencing its greatest

economic crisis since its independence. The Sri Lankan economy has reached rock bottom, with the country defaulting on international loans and facing severe fuel and food shortages, prompting the government to declare a state of emergency (Salikuddin, 2022).

A new global study revealed that in the face of the COVID-19 crisis, social enterprises have proven to be resilient and innovative, but the crisis may exacerbate the inequality between social entrepreneurs and the communities they support (British Council, 2020). Further, studies conducted have already revealed that special attention is given to social policy, which aims to find entrepreneurial ways to deal with the COVID-19 crisis, which involves a certain degree of value co-creation (Ratten, 2020; British Council, 2020). It is also identified that social entrepreneurship becomes essential and necessary, and the scholars have highlighted that innovation, social orientation, and collaboration created positive outcomes among the people studied during the crises, and businesses can proactively apply these lessons (Castro & Zermeno, 2020; Wijesinghe, 2012). Thereby, social enterprises are highly participative in alleviating social issues and challenges caused by crises and enabling innovative ways of thinking to help society.

Paradoxically, the research on social entrepreneurship in times of crisis is a plethora in developed countries, notwithstanding developing countries like Sri Lanka, which is in its infancy. Thereby, this void should be addressed on two fronts. First; the models of social entrepreneurship intervention should vary depending on the problem at hand and the context (Weaver & Blakey, 2022). Thus, the findings generated in a developed country context cannot be generalizable in a developing country context. Second, there have been very few studies on the use of social entrepreneurship as a post-natural crisis or public health crisis, or as a model for sustainability during an economic crisis. Thus, the overarching aim of this study is to explore the consequences of crises in social entrepreneurship and develop resilience strategies to contribute to post-crisis social entrepreneurship in a developing country perspective. Accordingly, the study first explores the challenges and opportunities for social enterprises. Then it provides resilience actions that can be taken by social enterprises during times of crisis.

## LITERATURE REVIEW

Almost all businesses emphasize economic goals rather than social goals. Social entrepreneurship contributes towards the realization of sustainable development goals while solving social issues (Tauber, 2019), and social entrepreneurship differs from other entrepreneurship because of its unique objective. Hence, business activities that create social value that is aligned with sustainable development are called social entrepreneurship. Along with the market orientation, the profits earned from the enterprise can be used to achieve the sustainability of the social enterprise (Defourny & Kim, 2011). Thus, social enterprise is a venture that combines social and economic values intending to provide solutions to social problems.

A crisis is an emergency with catastrophic consequences that usually rarely occur. A crisis can be defined as either a single event or a continuous occurrence, which means that a lengthy crisis can produce tension and anxiety in society (Wijesinghe, 2012). Hence, crises arise without warning, and the route is unpredictable, which is difficult to manage (Parker & Ameen, 2018). Crises can be identified as man-made, natural, economic, or public health crises (Weaver & Blakey, 2022). Overcoming a crisis requires a continuous flow of information that brings new facts (Doern et al., 2019). Thus, direct communication of instructions enables one to mitigate a crisis, and an effective response to a crisis requires a coordinated response from individuals, governments, and enterprises (Shrivastava, 1993). Recently, COVID-19 is one of the largest crises that has occurred in the world and it cannot be imprisoned. However, COVID-19 has influenced the business operations of social enterprises and it has changed their business operations in different ways (British Council, 2020). However, the COVID-19 epidemic caused a global economic crisis, and the world is currently experiencing a sluggish recovery. Unfortunately, aspirations for an economic revival in Sri Lanka after 30 years of civil war, Easter Sunday attacks, and COVID-19 are crushed by the country's growing political and economic crises. Thus, it is required to identify an entrepreneurial strategy that embraces creative solutions because of the uncertainty surrounding the crisis.

Despite the terrifying experience of the crisis, hopefully, the lessons learned from the COVID-19 pandemic can be used to benefit society. The immense uncertainty involved with the COVID-19 crisis required an entrepreneurial approach with a creative solution. For post-conflict nations in which the economic, social, and political structures have all but disintegrated, social entrepreneurship is a significant approach to catalyzing social change and/or

addressing social needs (Mair & Marti, 2006). Thus, it revealed that, particularly in an economic recovery, entrepreneurship would support stability and growth by fostering employment creation (Lemmon, 2012). In this transition phase, an entrepreneurial approach in general, and a social entrepreneurial approach in particular, is strongly recommended by scholars as only such an approach is equipped with the case sensitivity, resulting flexibility, and effectiveness required to overcome the challenges of a post-crisis situation (Wijesinghe, 2012). The need for empowering and mobilizing indigenous resources in developing sustainable conflict resolution models has attempted to create good social change by educating communities with the required competencies to prevent a relapse into conflict (Wijesinghe, 2012). Thus, to respond to the fluid character of any crisis, decision-makers must break out of current patterns by focusing on social entrepreneurship.

Many of the existing social enterprises have used many new approaches to overcome a crisis, especially during the COVID-19 pandemic, such as engaging in business online, introducing innovative products and services, and reducing the number of products offered. Mirza et al. (2020) and Rizvi et al. (2020) highlighted, social entrepreneurship funds have become the only sustainable asset that generates positive and abnormal total returns during a crisis, which undoubtedly shows that sustainable entrepreneurship and social problem solving are opportunities. Furthermore, the survey conducted by the British Council (2020) has concluded that the majority of social enterprises provide products and services online while highlighting the importance of innovation in times of crisis. Based on the given sample 55% (over half) of the respondents are engaged in business online. Other than that, 39% of respondents have introduced new or additional assistance to help those in need cope with the pandemic (British Council, 2020). Another 38% had moved towards introducing new products or services during the crisis (British Council, 2020). Some are provided as new products or services. Another category provides reduced products/ services. Only 1% of social enterprises reported they had closed down, and 7% of social enterprises reported they had temporarily closed their service or product lines (British Council, 2020). This seems to be a positive sign of the resilience of social enterprises.

On the other hand, the COVID-19 epidemic has become a crisis for many parts of the world, and its influence and negative hindrance to human health will exacerbate unemployment, poverty, and inequality. Social enterprises are functioning on a spectrum where social goals are on one hand and economic goals are on the other hand (Battilana, 2018; Battilana et al., 2017). Scholars have identified that opportunities related to seed-stage financing and

equity investment have grammatically decreased with the pandemic (Brown & Rocha, 2020). Further, studies revealed that, despite fixed costs, the founder's sales have fallen sharply along with the COVID-19 situation. Entrepreneurs and innovators have largely ignored the opportunities for sustainable development in response to COVID-19 (Ebersberger & Kuckertz, 2021). Meanwhile, Ruiz-Rosa et al. (2020) have compared the data from before the pandemic and during the pandemic and reported that the willingness to engage in social entrepreneurship among a sample of students has dropped significantly. Thus, the social entrepreneurial intention of students suddenly dropped during the corona outbreak. However, Fishbein et al. (1980) proved that university students' attitudes toward entrepreneurship were positively correlated with their social entrepreneurial intentions. The perceived behavioral control of college students' ability to undertake social projects is positively correlated with their social entrepreneurial intention as well. This concludes that when the perception of social entrepreneurs gets positive, it strengthens the intention of social entrepreneurs. However, social entrepreneurial intention has decreased with the COVID-19 pandemic (Ruiz-Rosa et al., 2020). With knowledge, students are particularly able to identify opportunities, develop innovations, and calculate risks in the pursuit of social entrepreneurship (Peredo & McLean, 2006; Shaw & Carter, 2007). Only a very few social entrepreneurs are moved towards the option of shutting down their businesses. But unfortunately, some entrepreneurs and innovators ignored the opportunities arising from COVID-19 and the sudden financial crisis in Sri Lanka. Even though it hinders the emergence of new social entrepreneurs during the crisis, students will be more attracted to social entrepreneurship in the future (Nuringsih et al., 2020).

The current political and economic crisis is the country's biggest economic crisis since independence. This has battered Sri Lankans from all walks of life, but the consequences are overwhelmingly hurting the poor. Thus, the government of Sri Lanka declared the country's most serious economic crisis in seventy-three years (Goerge et al., 2022). The current economic crisis poses numerous challenges, especially severe threats to nutrition, healthcare, and education. Inadequate fuel supply limited one's capacity to earn a daily wage. Further, power cuts are impacting small-enterprise owners' capacity to do business, with many entirely shutting down operations (Kulathunga, 2022). Business operations in general were declining during COVID-19 and Sri Lanka has not had enough time to recover. The ongoing financial, social, and political instability has hindered the slow recovery of small business operations. Running a business during a recession can be a daringly difficult

task for any entrepreneur (Kulathunga, 2022).

Even though adequate discussions are going on about the current economic crisis, there has been a lack of previous studies on social entrepreneurship and crises (Weaver & Blakey, 2022; Hossein, 2020; Fowler et al., 2019; Apostolopoulos et al., 2019). Furthermore, the majority of studies are based on the viewpoint of developed countries. Thus, the purpose of the study is to explore the consequences of crises in social entrepreneurship and develop resilience strategies to contribute to post-crisis social entrepreneurship in developing countries.

## **RESEARCH METHODOLOGY**

The study adopted a qualitative research approach. The qualitative research paradigm used in this study gives the researcher a lot of leeways when it comes to obtaining data and information to reinforce the targeted study phenomena (Priya, 2021). The study obtained primary data through semi-structured interviews with 25 local social entrepreneurs from various industries from around the country, including service and manufacturing. The key survey participants in the study were the owners or senior managers of social enterprises in Sri Lanka. Furthermore, to generate the sample, the study employed the maximum variation sampling technique, which aids in establishing the maximum variation in the social enterprise sector. The reason for selecting this sampling strategy can be supported because social enterprises in Sri Lanka vary greatly due to their corporate demographics. Hence, the study sample includes a variety of social enterprises based on their size, target consumers, products or services offered, and annual income. The gathered data was evaluated thematically. It has the potential to produce accurate and insightful outcomes (Lester et al., 2020). The study combined pure inductive and deductive thematic analysis methods to make the best use of existing literature while proposing unique themes depending on the data gathered.

## **RESULTS AND DISCUSSION**

### **Challenges/ Issues Faced by Social Enterprises During COVID-19**

The crises, especially in Sri Lanka, a developing country, have created new social problems and are exacerbating existing social issues. In the meantime, all types of organizations are affected by the lockdown, power, and fuel

insufficiencies. However, social entrepreneurship enables the use of entrepreneurial passion to alleviate the social uncertainty caused by the crisis and can emphasize the value of cooperation. Since crises usually occur without any warning, the path social enterprises will take is unpredictable (Parker & Ameen, 2018) and the high level of complexity involved in a crisis (Perrow, 2011) is difficult to manage. Thus, COVID-19 and the growing economic crisis are challengeable and transboundary as they exacerbate existing social problems in Sri Lanka as a developing country. Although the emergence of social entrepreneurship is often related to solving social problems/challenges that a particular government cannot solve, this time, COVID-19 and the economic crisis have challenged social entrepreneurship.

Often, social entrepreneurs have the mission of overcoming social problems to achieve comprehensive social and economic goals. However, *managing social and economic goals* has become another major challenge for social enterprises during the crisis. Another social entrepreneur specified that *"this pandemic time, it is very difficult to continue an eco-friendly hotel. There are about 154 hotels, but only about 10 hotels are functioning out of 154 hotels. Even though I tried to give a lot of jobs, around 50 people I have terminated. Because I can't manage both social and economic goals during this crisis. We have to give them the full salary. Of them, I can't manage. Then reduced the staff"*. Thus, social enterprises are searching for new strategies to reduce operational expenditures such as employee layoffs and salary cuts (Smutchak et al., 2021) while maintaining the business's working capital. Employees become demotivated (Dewi et al., 2021) as a result, posing a new challenge for the social enterprise in managing social and economic goals. Some other social entrepreneurs stated that *"our primary objective is to provide employment opportunities for people with disabilities. Profit is our second objective. We will make a profit to sustain this business. That's how it goes. So, we function as a normal organization. Every month we pay salaries, ETF, EPF, and everything. In addition to that, because we are dealing with blind people...and the condition in Sri Lanka is such...the transportation to and from is a huge problem..."*. Hence, this growing economic crisis has created many challenges for social entrepreneurs. Loss of previous raw material suppliers, loss of sales channels, staff reduction and payment of salary, extra costs related to the need to comply with provisional recommendations to restructure anti-epidemic measures, and lack of working capital directly impact the profits of the social enterprises (Weaver, 2020). On the other hand, enterprises should contribute towards social welfare. Therefore, it is very important that social entrepreneurs successfully adopt

new methods to ensure their survival in times of crisis.

A key challenge faced by social businesses during a crisis is the difficulty of *finding loyal and stable customers*. During the pandemic, users demand more supportive services than previously demanded (Ibanez et al., 2021). An informant said that *"When paying salaries, it is difficult to think of the way of paying them. It is very difficult to pay salaries as most of the finished products are unable to sell due to COVID-19. We have a lot of finished products which we are not able to sell. Many customers have dropped due to this pandemic. If you can sell those products at least for their cost, that would be a great help. From that, we would be able to cover our costs"*. The crisis has also been a major challenge in selling products and services. Businesses are unable to expect customer stability in an unstable world. Insufficient fuel supplies, rising transport costs, power supply interruptions, and supply shortages have led to an increase in the overall cost of living due to this growing economic crisis. Some of the interviewees specified that *"most of the foreign companies have closed their agreements due to this increased dollar rate. Earlier, we exported a tea ball for \$4. The agreement was signed when the dollar rate was Rs.258. Now it is more than Rs.300 right? So, they said that it created losses for them then and several contracts were closed. So, we are unable to find stable customers due to this economic crisis"*. The business's existence is entirely dependent on a consistent client base. It is revealed that finding reliable and stable customers during a crisis is a huge challenge (Boersma & Larruina, 2021). Consumers want the product, yet they tend to buy cheaper, low-quality products due to the downfall of increased living costs. These crises also brought delays in the transportation of raw materials and the shipping of products via the courier company. Therefore, social enterprises are facing a huge challenge in finding a consistent and loyal client base.

*Stakeholder satisfaction* has long been important for any social enterprise, and it has become a challenge during crises. Many businesses maintain collaborations for fundraising, convening, service delivery and implementation, monitoring and evaluation, and non-financial resource acquisition, among other things. Collaborations to promote digital entrepreneurship improved stakeholder satisfaction (Ibanez et al., 2021). Stakeholders are critical to the success of a business. A customer is one of the key stakeholders of any business. According to the informant, *"the fuel unavailability and transportation issues cause delays for the courier company to deliver the orders to the consumers, which is a great disadvantage for perishable goods like henna cones. This factor causes a major decrease in*

*the quality of the henna cone and customer satisfaction with our service and products". Thus, it impacts negatively achieving customer satisfaction and hinder the achievement of social and economic goals. Another social entrepreneur highlighted "During that competition, I got an opportunity to meet "Fouzul Hameed", the founder of "Hameedia". Actually, he was my mentor during that program. Mr. Fouzul was introduced as the MD of the "Shangri-La" hotel. Then, we discussed it with them and sent several emails to them. They decided to visit our factory. But they were unable to visit us due to the COVID-19 pandemic". This hinders the maintenance of institutional collaborations and ultimately impacts stakeholder satisfaction negatively. Institutional collaborations are important for social enterprises as they create social and economic benefits (Mair & Marti, 2009). A social entrepreneur understands the necessity of keeping stakeholders engaged and satisfied, whether they are internal or external. But maintaining stakeholder satisfaction is challenging during a crisis (Ibanez et al., 2021; Bacq & Lumpkin, 2020).*

### **Opportunities for Social Enterprises During a Crises**

When the COVID-19 epidemic began, several social entrepreneurship academics viewed it as an opportunity to highlight societal concerns. Here, we have identified there is *opportunities for social innovations and social entrepreneurship*. A respondent happily said, *"During that period from March to April, my entire staff is involved in nurseries making nursery plants and organic fertilizers. For example, believe that around 2000 king coconuts during that period, and little palms of around 4000 numbers we prepared. Then I wrote a story for all and I made the arrangements for the staff to involve in this work. My problem is that I was unable to sell these plants and nurseries due to the lockdown period. They gave me first place. (Happily) and received 1.5 million. This is worth doing during COVID-19 and this worked for me. "* Another informant also revealed that *"I did not have any idea of starting this business during my undergraduate period. However, I had to spend more time at home due to the COVID-19 pandemic situation. Thus, I decided to start this business as I have a lot of time to focus on during this pandemic period"*. Thus, a time of crisis is also a time of opportunity, particularly for social entrepreneurs devoted to positive social impact. Accordingly, Ruiz-Rosa et al. (2020) recognized the pandemic as an opportunity to identify new social entrepreneurial opportunities. Therefore, crises could create chances for social entrepreneurs to care more about society while creating social innovations and entrepreneurship (Weaver, 2020; Ruiz-Rosa et al., 2020). This eventually led to the formation of

organizations whose exclusive purpose was to achieve social and economic objectives.

Not only that, crises create an opportunity to *accelerate the popularization of social entrepreneurship*. One of the informants highlights that, *"normally there are many alternatives for a person to buy a gift. For example, chocolate gift boxes, gifts from Ali Express, etc. were available at a lower price. But, along with the increasing taxes for some products and the increasing dollar rate due to this economic crisis, the prices of those gifts are very high. So, it creates an increase in demand for my eco-friendly gift items than earlier. Not only that, now people are more aware of this type of social enterprise than earlier"*. The increase in dollar rates and the increase in taxes on many products has increased the demand for local products, and in many cases, it has created an awareness of social enterprises and their products along with the economic crisis. Not only that, some social entrepreneurs have highlighted that the COVID-19 crisis increased the awareness of some social entrepreneurial products across the country. *"There should be a good understanding of these grains. But there is a group of people who are using these local grains. But now there is a new trend of using local grains for small children. There is more awareness than earlier. Maybe it is due to the spread of COVID-19 and that these grains are high in immunization. There are a lot of varieties of "Heenati rice" like "Sudu Heenati, Beheth Heenati, etc"*. Thus, crises create an opportunity to make people aware of the local social enterprise. Smutchak et al. (2021) have revealed that the COVID-19 pandemic creates a niche market, accelerates the popularization process of social entrepreneurship, and social entrepreneurs receive recognition for their work results. Accordingly, social entrepreneurs are better positioned to use the benefits of the crisis to find creative solutions to new and existing societal challenges. It would enable the local social entrepreneurs to strengthen their power in the local market while limiting imports.

Crises provide an opportunity for social enterprises *to reach international markets* through cumulative exports. Due to the growing economic crisis, the government is encouraging exports. Hence, key informants of our study highlighted that it creates an opportunity for them to reach the international market quickly. *"Normally, Sri Lankans do not spend Rs. 10,000 or Rs. 15,000 on a cup of tea. But the situation is different for foreigners, and they are the people who buy those products. My products do not have heavy astringency, and they are white and semi-fermented tea. So, those can be exported to countries like China, Japan, Canada, and Germany. Those people are using these kinds of products. Hence, I am focusing more on*

*exports as the government is also encouraging local businesses to export. Thus, it would lead to export earnings during the crisis as well".* Another entrepreneur stated that *"....Based on the current COVID-19 situation of the country, even one dollar will be valuable for the country. Therefore, I am always trying to aim at the export market. The main aim is to bring the "Ape Kama" to the international market. I want to market the concept of origin in Sri Lanka to the world. I am always trying to obtain foreign exchange for the country".* Thus, crises are real opportunities for social entrepreneurs to go global while contributing to the economic growth of the country. It is revealed that crisis time supports social enterprises to identify new entrepreneurial opportunities in different markets (Ratten, 2020).

Accordingly, the study revealed that opportunities for social innovations and social entrepreneurship, to accelerate the popularization of social entrepreneurship, and reach international markets are opportunities for social entrepreneurship during crises.

### **Resilience Strategies/ Actions taken by Social Enterprises During Crises**

During a crisis, it is a must to think in entrepreneurial ways to find novel solutions and propose novel ways to deal with the crisis. The findings of Mirza et al. (2020) emphasized the value of the underutilized investment options that can provide investors with refuge during a severe economic and financial crisis. Social entrepreneurship funds have become a feasible rival when considering investment portfolios, especially in a crisis (Mirza et al., 2020). Resilient people frequently find new opportunities during difficulties. Entrepreneurs often encounter difficulties when running a business, and resilience can help them cope with these problems and the uncertainty and pressure that come with them.

Further, *identifying novel ways of working* to create a flexible working environment is another worthwhile resilience strategy that can be used during a crisis. Employee support is crucial for any business as their effort is often necessary to deliver products and services (Weaver, 2020). Hence, with the growing fuel insufficiencies and power cuts, different social enterprises have used different strategies in working with employees. Here, one social entrepreneur highlighted, *"we are asking our employees to work based on a schedule. Because of the crisis, the orders are comparatively lower. So, asking them to work for the whole week is useless. So, now he/she should come to work for only three days. When we have many orders, we are asking them to work based on a schedule. One team for Monday and Tuesday.*

*Another team will work on Wednesday and Thursday, like that. Then, every employee should not come to work every day. Therefore, they can manage with the existing fuel and other issues in parallel with this crisis".* With the emergence of the coronavirus pandemic, working from home has provided many businesses with the flexibility they require to maintain business operations while prioritizing employee and customer health and well-being as part of their public health responsibilities. The informant manifested that *"During Corona, we are not stopped. It was not an issue for us. Because they are working from home. We will give all including yarns and designs. They come on Thursday. Today they will come. Today we are collecting the finished things. So, we continue as usual".* Hence, social businesses use the work-from-home concept to ensure that their workers work safely while also allowing them to create more flexible schedules (Weaver, 2020). Here, it identified new ways of working while existing during the crisis without terminating its employees. A study revealed that creating an emotionally open atmosphere for employees to share their concerns about the epidemic makes them more comfortable (Giones, et al., 2020). Therefore, identifying novel ways of working that will create a more flexible working environment is a strategy to overcome the existing crisis challenges as it inspires employees to contribute their full potential to the business.

*Focus on successfully surviving the crisis* is a key resilience strategy during a crisis. Many social issues have arisen as most of the daily paid community lost their jobs due to the epidemic. However, the social entrepreneur should realize that employees' livelihood will depend on the enterprise and they have undertaken business operations that aim at enhancing community development. One informant stated that *"I trained all my employees to do multi works. Now, my 70 staff, are working on all activities. Then they are doing multi works. Housekeeping people working in the F&B works. Front office people, they come and do the F&B works".* During the COVID-19 period from March to April, all staff involved in nurseries make nursery plants and organic fertilizers. That is how we generate income during the COVID-19 period without terminating your staff". Here, the enterprise focused on the survival of the business while retaining all employees without lowering wages. A manifestation highlighted that *"sometimes we face several labor issues due to this growing economic crisis. Employees are facing transportation issues because of this fuel unavailability. Then we are looking for shifting to use of machinery temporarily without shutting down the operations".* Thus, the social entrepreneur has identified the given issue and focused on surviving the business. Therefore, shifting to a new product range

temporarily and retaining existing employees have been identified as the few ways to survive the crisis (British Council, 2020).

One of the most highlighted resilience strategies is *having a contingency plan*. The process of preparing for future crises is known as contingency planning. Imagining all of the possible emergencies is an important part of that preparation. An informant revealed that *"before the pandemic, we have undertaken souvenirs for tourists. We have identified that there is a risk associated with it. If there is a bomb blast the business will collapse. Tourists will not arrive. So, we are unable to take that risk. At that time, we had a backup plan. Now, we are carrying out most of the housing items, including furniture, while targeting both local and foreign customers"*. At that time, they had a contingency plan, and they were able to carry out their functions smoothly. *"mainly majority of them are female employees, which is around 99%. Only 2/3 of male employees are there. So, they have been wrapped up with a lot of family problems during the COVID pandemic. It's useless to manufacture the products. But I couldn't stop them from coming to work. because it exacerbates the situation in their lives, as they don't even have the money to eat. So, we store the products for the future. Here, we thought that having a contingency plan is important during a crisis"*. It identified that social enterprises should set more flexible goals and plan as a resilience strategy during a crises time (Weaver, 2020). Therefore, it has been revealed that having a contingency plan is a key resilience strategy during a crisis.

Existing crises in Sri Lanka caused the business to rigorously test its strategic resilience. For many people and businesses, COVID-19 and the growing economic pandemic are rude awakenings. The ability to recover from adversity is resilience, and the study identified a) identifying novel ways of working, b) focusing on successfully surviving the crisis, and c) having a contingency plan as the resilience strategies that can be adopted by social entrepreneurs during crises. Thus, entrepreneurs need to get involved with business planning, but due to the dynamic environment, these plans must be flexible.

## IMPLICATIONS

The study provides significant implications for theory, practice, and policymaking. First, we contribute mainly to the social entrepreneurship literature through the interpretation of consequences of crises in social entrepreneurship in times of crisis from a developing country perspective. Thus, it adds to the ongoing discussion in the domain of building context-specific theories for social entrepreneurship. Second, the study provides

implications for practitioners. Herein, it is essential to explore the consequences of crises in social entrepreneurship and the proposed resilience strategies that can be adopted for post-crisis social entrepreneurship in a developing country context. In practice, those who participate in these activities inspire many others to support the causes, creating a desire to continue in the future and meet unmet needs generated by societal problems. Third, the study contributes to policymakers by providing noteworthy insights on what they should look into when there is a crisis and how to overcome the challenges faced by social entrepreneurship. Overall, this study contributes to the academic realm of social entrepreneurship by emphasizing the significance of exploring the consequences of crises in social entrepreneurship and building resilience strategies to contribute to post-crisis social entrepreneurship from a developing country standpoint.

## **CONCLUSION**

Research on social entrepreneurship in times of crisis is a plethora in developed countries, notwithstanding developing countries like Sri Lanka, which is in its infancy. To address this void, the present study aims to explore the effects of crises on social entrepreneurship and create resilience measures to support post-crisis social entrepreneurship from the developing country perspective. The study, therefore, begins by looking at the challenges and opportunities facing social companies. Then it offers remedies that can be taken. The study found that: a) managing social and economic goals, b) finding reliable and stable customers, and c) stakeholder satisfaction were the major challenges that social enterprises face during crises. The time of crisis is also a time of opportunity, particularly for social entrepreneurs devoted to positive social impact and improving health at the community level. Accordingly, a study discovered that a) opportunities for social innovations and social entrepreneurship, b) to accelerate the popularization of social entrepreneurship, and c) to reach international markets are opportunities for social entrepreneurship during crises. Resilience actions such as a) identifying novel ways of working, b) focusing on successfully surviving the crisis, and c) having a contingency plan have evolved as an entrepreneurial skill that enables businesses to adapt and become stronger in the face of adversity. Accordingly, this paper has significant implications for theory, practice, and policymaking.

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# Factors Affecting Mobile Banking Adoption among Small and Medium Enterprises in the Colombo District

S.D. Menikdiwela<sup>1</sup>, N.D. Kalpage<sup>2</sup>, M.M.L.K. Madurasinghe<sup>3</sup>,  
B.D.G.K. Chandraguptha<sup>4</sup>, V.R. Dunuwila<sup>5</sup>, C.N. Wickramarachchi<sup>6</sup>

<sup>\*</sup>*SLIIT Business School, Sri Lanka Institute of Information Technology, Malabe, Sri Lanka, bm19543260@my.sliit.lk*

<sup>2</sup>*SLIIT Business School, Sri Lanka Institute of Information Technology, Malabe, Sri Lanka, bm19540054@my.sliit.lk*

<sup>3</sup>*SLIIT Business School, Sri Lanka Institute of Information Technology, Malabe, Sri Lanka, bm19529196@my.sliit.lk*

<sup>4</sup>*SLIIT Business School, Sri Lanka Institute of Information Technology, Malabe, Sri Lanka, bm19521244@my.sliit.lk*

<sup>5</sup>*SLIIT Business School, Sri Lanka Institute of Information Technology, Malabe, Sri Lanka, vandhana.d@sliit.lk*

<sup>6</sup>*SLIIT Business School, Sri Lanka Institute of Information Technology, Malabe, Sri Lanka, colinie.w@sliit.lk*

## ABSTRACT

*With the advancement of Information and Communication Technology, mobile banking services have started to become more popular around the world. Therefore, mobile banking services had a profound impact on the environment of a business according to past research. This study aims to explore factors affecting mobile banking adoption among small and medium enterprises in the Colombo District. Affecting factors were identified as perceived ease of use, perceived usefulness, perceived risk, and perceived cost. The sample size for primary data collection was 56 small and medium enterprises in the Colombo District based on the small and medium enterprises registry published by the Ceylon Chamber of Commerce. The primary data was collected with the help of online questionnaires. The sample data was tested using Statistical Package for the Social Sciences 25 software. Further, a quantitative type of data analysis was performed using Statistical Package for the Social Sciences software. Reliability and validity tests were conducted with the help of Cronbach's Alpha and Kaiser-Meyer-Olkin Test which indicates that the data is valid enough to go ahead with the analysis. Researchers analyzed the collected data of small and medium enterprises to explore the level of usage of mobile banking in the Colombo District concerning the usage of mobile banking, sector segmentation of mobile banking, legal structure segmentation of the usage of mobile banking, banking service providers segmentation of the usage of mobile banking and the industry segmentation of usage of mobile banking. According to correlation analysis researchers identified there was a positive relationship between dependent and independent variables. Multiple Linear Regression test was done and the model fit*

*with an adjusted  $R^2$  value of 81.5%. It shows that the overall model is significant. Researchers decided to test the Ordinary Least Square assumption using EViews software and confirmed the selected model's suitability. In addition to that, users identified that the key rationale via the questionnaire mostly coincides with the above independent variable. Therefore, the statistical findings proved the researchers' main objective had been achieved.*

**Keywords: Mobile banking Adoption, Perceived Ease of Use, Perceived Usefulness, Perceived Risk, and Perceived Cost.**

## INTRODUCTION

In the later 1980s, bank networking concepts and automated card systems were introduced to the banking sector in many places all over Sri Lanka. The rapid development of the telecom industry and mobile banking system help customers to access banking facilities through high-speed internet with the help of a website or mobile apps. Mobile banking is defined as “a channel whereby the customer interacts with a bank via mobile devices, like mobile phone and private digital assistant (PDA)” (Ravichandran and Madana, 2016).

The Ministry of Industry and Commerce (2015, p.1) stated in the national policy framework for small and medium enterprises (SMEs) in Sri Lanka, “*The Small Medium Enterprises (SME) sector has been identified as an important strategic sector in the overall policy objectives of the government of Sri Lanka (GOSL) and it is seen as a driver of change for inclusive economic growth, regional development, employment generation, and poverty reduction.*”

SMEs were defined in many ways by different countries, including the number of employees, total amount of capital investment, total amount of turnover or the type of the enterprise, and so on. As stated in table 1, the Ministry of Industry and Commerce had developed useful definitions for SMEs according to two criteria: annual turnover and personnel count. As per their definitions, the employment and annual turnover ceilings for manufacturing SMEs are 300 employees and Rs 750 million, respectively, while the employment ceiling for service SMEs is 200 employees (Nishantha, 2018).

In developing countries like Sri Lanka, SMEs were engaged in almost 90% of industrial establishments, almost 70% of employment in the industry sector (more than 30% of total employment in the country), and contributed

around 26% of the Gross Domestic Product (GDP) to boost the economic activity, the sector had played a key role in economic growth, increasing the productivity of the country, creating new jobs for unemployment youth, and helping for poverty reduction (Nishantha,2018).

**Table 1: SME Classification in Sri Lanka**

Company Category	Manufacturing Sector		Service Sector	
	Number of employees	Annual Turnover (Million)	Number of employees	Annual Turnover (Million)
Micro	1-10	≤ LKR 15	1-10	≤LKR 15
Small	11-50	≤LKR 16 - 250	11-50	≤LKR 16 - 250
Medium-sized	51-300	≤LKR 251 - 750	51-200	≤LKR 251 - 750

*Source:* Authors' Demonstration based on Ministry of Industries and Commerce, 2017

Mobile banking is one of the famous ways that SMEs can use technology in their businesses and past research studies in various developing nations have demonstrated that mobile banking is an effective banking system for SMEs (Bångens & Söderberg, 2011). The adoption of mobile banking has seen an increase in momentum over the past couple of decades and SMEs were a part of it. Mobile banking service providers have not seemed to pay much attention to SME-level businesses as the technology usage among SMEs is quite low in Sri Lanka (Jegathiswaran, 2020). Thus, the Sri Lankan banks should further develop their mobile banking knowledge towards SMEs and spread mobile banking among them considering them as a target market (Bångens & Söderberg, 2011).

Despite the number of studies on mobile banking that are mostly carried out from the individual perspective, very few of these empirical studies offer some insight into the adoption of mobile banking among SMEs. Therefore, it is crucial to understand their level of acceptance of mobile banking and to determine the factors affecting Sri Lankan SMEs' intentions to use mobile banking. This knowledge could aid in the development of mobile banking systems that SMEs desire and assist in identifying the barriers that prevent SMEs from utilizing the current mobile banking systems.

The purpose of this study is to close a gap in the literature on the subject because there has not been any research on the adoption of mobile banking

by SMEs in Sri Lanka. This study's need arises from the need to understand the role of mobile banking among SMEs in Sri Lanka and to determine the conditions that must be met for the SMEs to intend to use this technology.

This study aims to investigate the factors affecting the mobile banking adoption of SMEs in the Colombo district. To achieve the main objective, the researchers further seek to explore the usage of mobile banking services in SMEs in the Colombo district, identify the key rationales behind the use of mobile banking for SMEs in the Colombo district, determine the relationship between perceived ease of use, perceived usefulness, perceived risk and perceived cost of mobile banking adoption of SMEs in the Colombo district, and to evaluate the impact of perceived ease of use, perceived usefulness, perceived risk and perceived cost on mobile banking adoption of SMEs in the Colombo district.

The limitation of the study highlighted that only a limited number of SMEs (registered SMEs according to the Ceylon Chamber of Commerce) were located in the Colombo district. Therefore, it was difficult for us to get a true picture of our target population. The Covid-19 situation also created a restricted environment for the researchers where they must use distanced online methods to approach the SMEs.

This study is significant for mobile banking service providers such as banks in Sri Lanka to think about their strategies for implementing mobile banking services towards to SMEs in the country. It makes a major contribution to the awareness of the bank on how to provide mobile banking services to SME owners to identify the rationales behind the usage of mobile banking.

## **LITERATURE REVIEW**

### **Mobile banking**

Shaikh and Karjaluoto (2015) defined Mobile banking as an essential application and service for electronic commerce (e-commerce). Mobile banking is the cashless transaction methods such as shopping, donating, fund transferring, and peer-to-peer payment as well as non-financial operations like balance checking, and personal identification number (PIN) changing. Banking service was enhanced in the world in terms of payments, mobile top-ups, credit applications, receipt alerts, bank account transactions, money transfers, and other banking transactions through mobile devices (Naruetharadhol et al., 2021).

## **Mobile banking Adoption**

Mobile banking Adoption happened in different countries in different ways. According to the people's attitudes, Lebanon developed multi-channel banking, low-cost ATMs, internet banking, and electronic banking channels. Not only Lebanon but also countries like the USA, Finland, Turkey, and China expanded internet banking technologies in banks. The spread of Wireless Application Protocol (WAP) enabled phones and Saudi Arabia's quick adoption of smart mobile phones have made the conversion of banking software to mobile devices a logical advancement in electronic banking. Saudi Arabian researchers have defined mobile banking adoption as satisfaction, and they have identified it as the most widely used single measure of adoption (Al-Jabri & Sohail, 2012). According to Nigerian researchers, mobile banking adoption is the increase in mobile phone usage and the adoption of ICT applications (Bankole et al., 2011).

## **Technology Acceptance Model (TAM)**

Technology Acceptance Model, called "TAM", has explained an individual's acceptance or rejection of information Technology. It was designed and developed by Davis in 1986. TAM model was used commonly in many organizations to evaluate information technology acceptance of users. TAM primarily focuses on getting ideas about specific services or technology acceptance by users according to their intention to use. It is considered a basic model to evaluate user acceptance of any technology improvement (Legris et al., 2003).

TAM also examined the role of perception of external variables such as Perceived Usefulness (PU) to explain how the particular system improves the job performance of individuals, and the Perceived Ease-of-Use (PEoU) to explain how the particular system is used without much difficulty (Davis, 1989).

## **Empirical Literature Review**

Muchiri (2018) study concerned the "*usage pattern of mobile SMEs in Kenya*". They discovered that 861 out of 865 SMEs utilize mobile money to pay bills, supplies, salaries, and other expenses, and they do so in significant amounts.

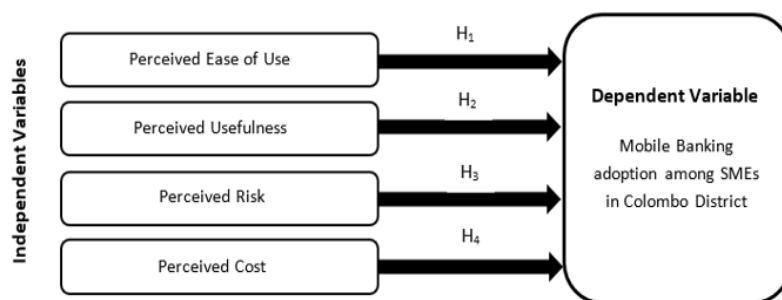
According to Ahad et al., (2012) Government of Bangladesh had a master plan to increase of usage of mobile banking services among customers. They had decided to enhance the mobile banking services with the rapidly developing information and communication technology, having the services

to cater to customers using cash-in, cash-out, fund transfer between different accounts, employee's salary payments, and payments of utility bills. The government of Bangladesh has found that rural communities have difficulty coping with new technology due to a lack of knowledge, lack of awareness, and lack of IT literacy. The government of Bangladesh has identified the Technology Acceptance Model (TAM) and Unified Theory of Acceptance and Use of Technology (UTAUT) were key design models for the mobile banking system in Bangladesh. Factors affected by mobile banking adoption can be classified as perceived usefulness, perceived ease of use, perceived credibility, and perceived security (Ahad et al., 2012).

According to Ayoobkhan, TAM provides a theoretical aspect for technology acceptance in perceived usefulness and perceived ease of use, as well as the adoption of mobile banking in the banking sector. At the same time, it helps to identify interaction and risk in mobile banking as per Self-Service Technologies (SST) adoption. It indicated that perceived usefulness, perceived ease to use, perceived risk, perceived cost, and compatibility were key factors in mobile banking adoption among the banking sector as well as customers (Ayoobkhan, 2018).

## Conceptual Framework

**Figure 1: Conceptual Framework**



A conceptual framework is a composed or visual portrayal of an expected relationship between variables. Variables are the attributes or properties that you need to consider. According to the objectives and research questions, the conceptual framework has mostly evolved based on the literature review of mobile banking adoption and the factors affecting it. The main objective of the study is to investigate factors affecting Mobile banking Adoption among SMEs in the Colombo district. In that context, the dependent variable is mobile banking Adoption among SMEs, while the independent variables are Perceived Ease of Use, Perceived Usefulness, Perceived Cost, and Perceived Risk. The '10-point Likert scale' is used to measure the agreement of

respondents with relevant questions in the online questionnaire.

### **Mobile banking Adoption (MBA) among SMEs**

The dependent variable is the mobile banking Adoption among SMEs. This study assumes that independent variables, which are listed as Perceived Ease of Use, Perceived Usefulness, Perceived Risk, and Perceived Cost, may change the mobile banking Adoption among SMEs over time.

#### **Perceived Ease of Use (PEOU)**

To get the maximum benefit out of technology, it must be easy to use. It is very easy to take complete control of your finances through Mobile banking. With the help of mobile banking, you can monitor your account balances and transfer cash between accounts to avoid overdraft charges. With mobile banking applications, you can easily make the required transactions from anywhere without much hassle.

H1<sub>0</sub>: There is no significant impact of Perceived Ease of Use on mobile banking Adoption.

H1<sub>A</sub>: There is a significant impact of Perceived Ease of Use on mobile banking Adoption.

#### **Perceived Usefulness (PU)**

Perceived Usefulness is the potential of mobile banking applications to boost the performance of the users by utilizing a specific system. Consumers generally appear to be interested in embracing new technologies when they feel that those technologies are more advantageous and adequate for their daily lives (Rehman and Shaikh, 2020). Past empirical studies have utilized Perceived Usefulness to predict the intention of customers to adopt mobile banking and some of them have concluded that Perceived Usefulness has a significant impact on mobile banking adoption (Agrawal & Jain, 2019).

H2<sub>0</sub>: There is no significant impact of Perceived Usefulness on mobile banking Adoption.

H2<sub>A</sub>: There is a significant impact of Perceived Usefulness on mobile banking Adoption.

#### **Perceived Risk (PR)**

Perceived Risk is defined as the uncertainty of financial transactions, the privacy of customer details, and the performance of the secure transaction in the view of customers' perspective with mobile banking adaptation. It has

negatively affected customers who have no prior usage of mobile banking facilities (Ahad et al.,2012). According to (Lee, 2009), mobile banking as a part of an electronic banking facility and similar types of risk factors affected mobile bank adoption can be described as risks related to performance risk, security or privacy risk, time risk, social risk, and as well as financial risk. Therefore, the technology acceptance model considered a perceived risk contributed considerably to mobile banking adoption from customers' perspectives (Ayoobkhan, 2018).

H3<sub>0</sub>: There is no significant impact of Perceived Risk on mobile banking Adoption.

H3<sub>A</sub>: There is a significant impact of Perceived Risk on mobile banking Adoption.

### **Perceived Cost (PC)**

The degree to which a consumer believes using mobile banking will be expensive is known as Perceived Cost (Agrawal & Jain, 2019). There are various costs involved with mobile banking, including processing fees, monthly fees, and data charges. Pricing influences the fact that whether customers choose to accept or reject a service, but the impression provided by the price is equally significant for those who have not yet used the service and who can be potential customers.

H4<sub>0</sub>: There is no significant impact of Perceived Cost on mobile banking Adoption.

H4<sub>A</sub>: There is a significant impact of Perceived Cost on mobile banking Adoption.

## **DATA AND METHODOLOGY**

### **Research Design**

With the help of primary data sources, the authors have used a quantitative approach to achieve the research objective. With the aid of a quantitative research design, the researchers were able to utilize the numerical data and perform statistical analysis to draw meaningful conclusions. Primary data also referred to as raw data, is used to collect the most up-to-date data about the adoption of mobile banking as well as the factors that impact the intention of the SME owners to go for that.

## **Target Population**

The researchers have identified 64 SMEs in the Colombo District by referring to the Registry of SMEs published by The Ceylon Chamber of Commerce.

## **Sample and Sampling Technique**

Since many previous investigations had utilized the Morgan table as a methodological technique for calculating the sample size, the sample size for this study was calculated to be 56. Out of the target group of 64 SMEs, the researchers approached 56 of them using simple random sampling because it is thought to help reduce sampling errors.

## **Data Collection**

All the data were gathered using an online survey (questionnaire) which consists of several sections to cover each objective of the study. All questions related to variables were measured using a ten-point Likert scale and the total number of questions was 35. All variables had more than three questions, all 5 variables had a total number of 25 questions and the mean values of responses were calculated for each variable and used for analysis.

## **Data Analysis**

The validity of the questionnaires was examined using The Kaiser–Meyer–Olkin (KMO) analysis, and the reliability of the questionnaires was determined using Cronbach's alpha test. Descriptive statistics, correlation analysis, multiple linear regression analysis, and analysis of variance (ANOVA) test were performed to achieve each objective using SPSS software.

To explore the usage of mobile banking services in SMEs researchers have used descriptive statistics and visualizations (bar and pie charts) to estimate the usage of mobile banking among SMEs in the Colombo district. The users of mobile banking have also been divided into groups based on the following criteria, the type of business they are in, the sector in which they operate, the bank that provides their services, and the length of time they have been utilizing mobile banking to identify the key rationales behind the use of mobile banking for SMEs in the Colombo district. A separate question was included in the questionnaire to gather respondents' opinions on the key rationales for the adoption of mobile banking. It applied the rational choice theory to pinpoint the reasons behind people's subscriptions to mobile banking services and investigate why those individuals have certain preferences towards using mobile banking services. To find out the

relationship between perceived ease of use, perceived usefulness, perceived risk, perceived cost, and the Mobile banking adoption of the SMEs in the Colombo district using correlation analysis. Researchers have performed multiple linear regression analyses to determine the impact that the independent variables (perceived ease of use, perceived usefulness, perceived risk, perceived cost) can make on the dependent variable (adoption of mobile banking). Using independent variables whose values are known, the main objective of multiple linear regression analysis is to determine the value of the dependent variable. In addition,  $R^2$ , ANOVA & t-test was analyzed to verify the statistical significance of the model. The estimated model is expressed below in the form of an equation.

$$Y(MBA) = \beta_0 + \beta_1 PEOU + \beta_2 PU + \beta_3 PR + \beta_4 PC \dots\dots\dots(1)$$

MBA - Mobile Banking Adoption                      PEOU – Perceived Ease of Use

$\beta_0$  = Estimated intercept                                      PU - Perceived Usefulness

$\beta_i$  = Coefficients of slope                                      PR - Perceived Risk

PC - Perceived Cost

## RESULTS

### Reliability and Validity of the Analysis

Each independent and dependent variable has more than one question in the questionnaire used for data collection. Therefore, the authors have decided to take individual Alpha coefficients for each variable using SPSS.

**Table 2: Cronbach's Alpha Level of Reliability**

Variable	Cronbach's Alpha value
Mobile Banking Adoption	0.891
Perceived Ease of Use	0.707
Perceived Usefulness	0.862
Perceived Risk	0.768
Perceived Cost	0.638

The Cronbach's Alpha values obtained from SPSS for mobile banking Adoption, Perceived Ease of Use, Perceived Usefulness, Perceived Risk, and Perceived Cost are 0.891, 0.707, 0.862, 0.768, and 0.638 respectively. That indicated Perceived Usefulness and Mobile Banking Adoption had good

internal consistency implying that variables were well correlated and reliable. Perceived Ease of Use and Perceived Risk had acceptable internal consistency implying that variables were acceptably correlated and reliable. According to Lee Cronbach (1951), Cronbach's Alpha  $< 0.7$  is unacceptable. Perceived Cost had Cronbach's Alpha  $< 0.7$  implying that the variable was unacceptable.

### Validity Checking with KMO:

Validity was described to what extent the model or method was accurately measured in a quantitative study. Research validity was divided into two groups such as internal validity and external validity. Internal validity is denoted by what extent research findings match reality. External validity is denoted by what extent research findings are replicated in other environments.

**Table 3: KMO Level of Reliability**

Variable	KMO Value
Mobile Banking Adoption	0.789
Perceived Ease of Use	0.643
Perceived Usefulness	0.804
Perceived Risk	0.772
Perceived Cost	0.533

According to the survey, KMO values of Mobile Banking Adoption, Perceived Ease of Use, Perceived Usefulness, Perceived Risk, and Perceived Cost are 0.789, 0.643, 0.804, 0.772 and 0.533 respectively.

According to Shrestha N. (2021, p.6) "*KMO value varies from 0 to 1. The KMO values between 0.8 to 1.0 indicate the sampling is adequate. KMO values between 0.7 to 0.79 are middling and values between 0.6 to 0.69 are mediocre. **KMO values less than 0.6 indicate the sampling is not adequate and that remedial action should be taken.** If the value is less than 0.5, the results of the factor analysis undoubtedly won't be very suitable for the analysis of the data. If the sample size is  $< 300$  the average communality of the retained items has to be tested. **An average value  $> 0.6$  is acceptable for sample size  $< 100$ , and an average value between 0.5 and 0.6 is acceptable for sample sizes between 100 and 200.***"

The KMO value of the Perceived Cost independent variable was less than

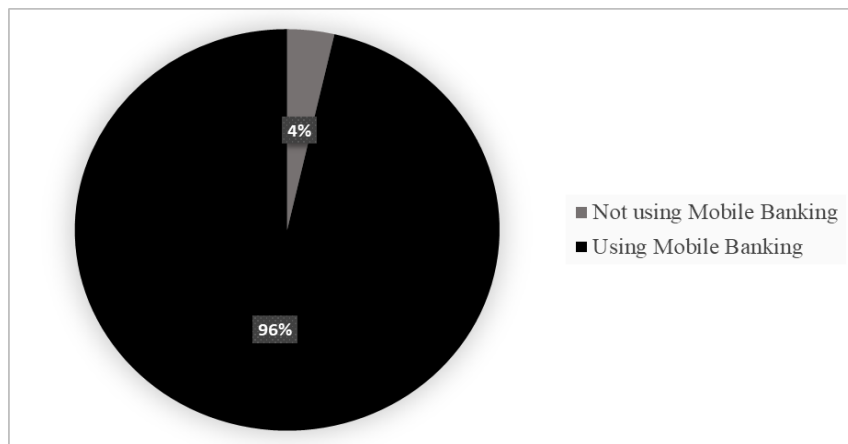
0.6. The Cronbach's alpha values of all dependent and independent variables were more than 0.7 except for the Perceived Cost independent variable. The Cronbach's alpha value of the Perceived Cost independent variable was less than 0.7. Both values of Cronbach's alpha and KMO are below the adequate level. Hence, researchers decided that the Perceived Cost independent variable would be dropped from the analysis.

## DATA ANALYSIS

### Exploring the Level of Usage of Mobile Banking in Colombo District

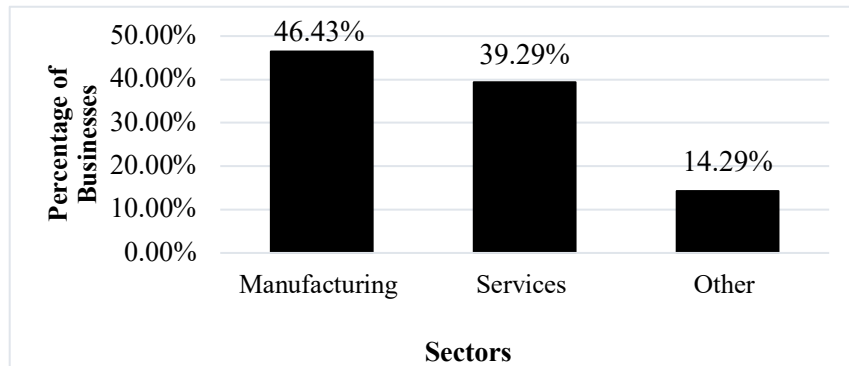
Based on the findings of an online questionnaire, the authors described and analyzed data to gain meaningful insights from collected data to achieve the objectives of the research. To explore the usage of mobile banking in the Colombo district, this section has focused on mobile banking usage by industry, legal structure, and sector.

**Figure 2: Usage of Mobile Banking among SMEs in Colombo District**



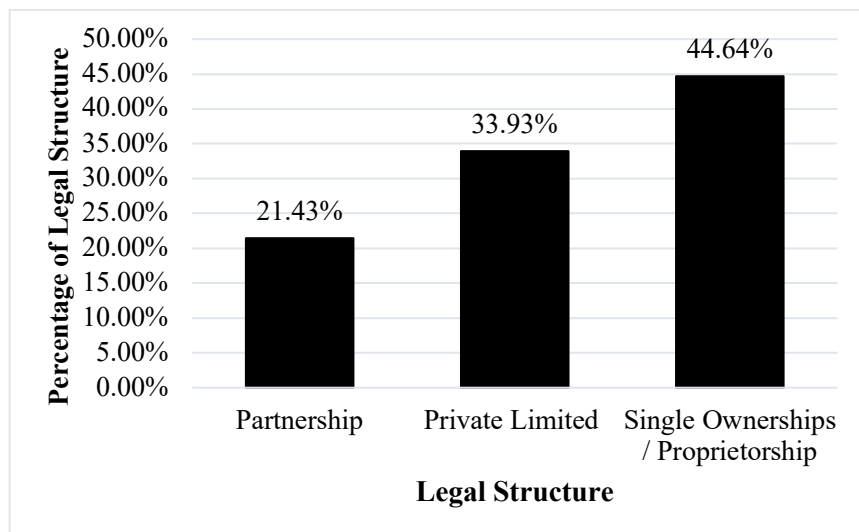
According to the pie chart, 96% of SME owners use mobile banking services for their Banking activities.

**Figure 3: Sector Segmentation of Mobile Banking Usage among SMEs in Colombo District**



More mobile banking was used by SMEs in manufacturing compared to other sectors and it accounted for about 46.43% of the total. Respectively, the service sector and other sectors accounted for 39.29% and 14.29% of the total. This indicated that the number of SMEs using mobile banking in manufacturing is larger than the total number of SMEs in other sectors that use mobile banking. However, it has emerged that the manufacturing sector is increasingly turning to mobile banking services. Therefore, it can be assumed that the manufacturing sector has been able to carry out most of its transactions through mobile banking services due to various reasons.

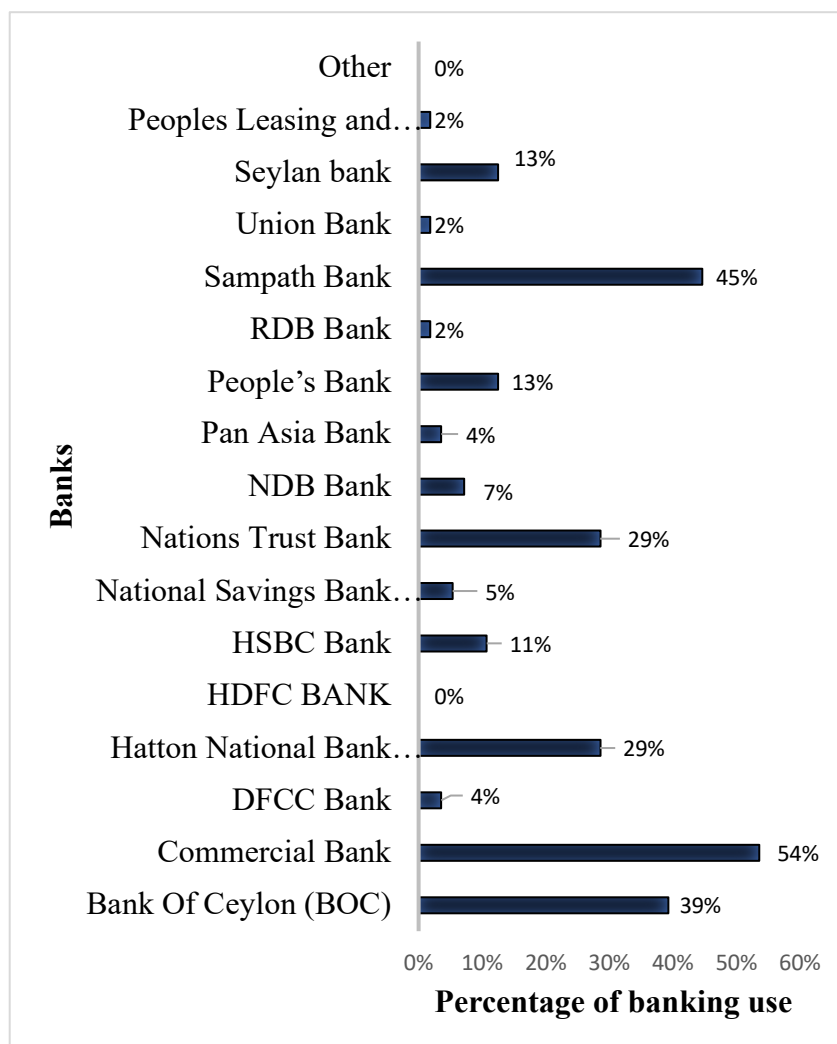
**Figure 4: Legal Structure Segmentation of Usage of Mobile Banking among SMEs in Colombo District**



The majority of the SMEs that use mobile banking services are Single

Ownership and the percentage is 44.64% of the total. The percentage of Private Limited and Partnerships using mobile banking services were 33.93% and 21.43%, respectively. Further, the difference between the percentage of Single ownerships and Private Limited that use mobile banking services is 10.71%.

**Figure 5: Banking Service Providers' Segmentation of Usage of Mobile Banking Among SMEs in Colombo**



The majority of SME owners, 54%, have chosen Commercial Bank as their bank. In addition, 45% of SMEs have chosen Sampath Bank and 39% have selected Bank of Ceylon. Nations Trust Bank and HNB Bank show an equal percentage of 29%. In the same way, 13% of each SME owners have selected Seylan Bank and Peoples' Bank equally for their Banking activities. Figure

5 illustrated that SMEs used more mobile banking facilities offered by private banks compared to state banks.

### **Identification of Key Rationales of Mobile Banking**

Researchers collected SME owners' opinions about the various rationales for mobile banking usage through a survey. There was a separate question assigned to collect respondents' perceptions on key rationales behind mobile banking adoption. According to respondents' opinions, ease of use, time-saving, flexibility, quick access, convenience, security and increases efficiency, etc. are some of the rationales that they have highlighted.

As further explanation, according to respondents' perception, using mobile banking saves them time because they can do other bank-related work within a few minutes without spending time on traveling. Furthermore, they have shown that mobile banking enables business (SME) owners to do transactions quickly and easily without keeping cash on hand. Also, they mentioned flexibility as a key rationale because if the person enters incomplete bank details, the money will not be deposited into the relevant account. Mobile banking applications have a username and a password to secure all the data and the process, and the application interface will automatically close if there is no activity for a short period. According to SME owners, that is why they have seen security as a key rationale. According to them, they believe quick access, convenience, and ease of use as key rationales, because they can use the application any time anywhere. Further, it is easy to learn and easy to control applications.

Respondents provided their opinion on how beneficial using mobile banking is compared to traditional banking. As they said, after categorizing all the rationales according to their opinions, perceived ease of use, perceived usefulness, flexibility, security, and time-saving are the key rationales in the Sri Lankan context. Most of the opinions come under perceived ease of use, and perceived usefulness. Few respondents have highlighted flexibility, security, and timesaving as key rationales.

### **Correlation Analysis**

Correlation analysis can be defined as a basic tool to determine the degree of relationship between dependent and independent variables of the research. The correlation coefficient (R) value ranges from -1 and +1. The degree of correlative measure can be classified as Positive, Zero, or Negative, depending on the direction. The significant relationship between dependent and independent variables determines using the square value of the

correlation coefficients can be denoted as the coefficient of determination ( $R^2$ ).

**Table 4: Correlation Matrix**

		MBA
Pearson Correlation	PEOU	.847*
	PU	.814*
	PR	.366*

\* - Correlation is significant at the 0.01 level (2-tailed)

All values are positive and within the 0.35 to 0.85 range. Independent variables such as Perceived Ease of Use and Perceived Usefulness are strong positive correlations with mobile banking Adoption, with R-values of 0.847 and 0.814 respectively. The independent variable, perceived Risk has a weak positive correlation with mobile banking Adoption, R-value of 0.366.

### Regression Analysis

After performing a correlation analysis to determine the relationship between the independent variables (Perceived Ease of Use, Perceived Usefulness, and Perceived Risk) and the dependent variable (Mobile banking Adoption among SMEs), a multiple regression analysis was done to determine how the independent variables affected the dependent variable. It is possible to have a basic knowledge of how those two or more variables will differ from one another by comparing these two data sets, which are referred to as predicted values (dependent) and definite values (independent).

**Table 5: Regression Analysis Model Summary**

Model	R	R square	Adjusted R square	St. error of the estimate	Durbin-Watson	F	Sig.
1	.908 <sup>a</sup>	.825	.815	.56013	1.668	81.520	.000 <sup>a</sup>

a. Predictors: (Constant), PEOU, PU, PR

b. Dependent Variable: MBA

Adjusted  $R^2$  is a corrected goodness-of-fit (model accuracy) metric. Adjusted  $R^2$  0.815, which determines 81.5% of the mobile banking Adoption (MBA) among SMEs variance, is explained by predictor variables indicated as Perceived Ease of Use (PEOU), Perceived Usefulness (PU), and Perceived Risk (PR). The gap between  $R^2$  and Adjusted  $R^2$  is small, which signifies a

good model fit. The observation's independence has been fulfilled since the Durbin-Watson statistic was 1.668. A higher adjusted  $R^2$  value indicates that the independent variables (Perceived Ease of Use, Perceived Usefulness, and Perceived Risk) account for 81.5% of the variance in mobile banking Adoption among SMEs. The significant F value of this model is less than 1% which indicates that the model is good enough to explain variations in the mobile banking adoption of SMEs in Sri Lanka.

**Table 6: Regression Coefficients**

Model		Unstandardized B	Standardized Errors	t	Sig.
1	(Constant)	.711	.478	1.487	.143
	PEOU	.514	.086	5.950	.000
	PU	.320	.080	3.993	.000
	PR	.153	.044	3.499	.001

The significance of the t-tests for the model coefficients is evaluated to test the research hypothesis. According to the results, the p-value for 'Perceived Ease of Use and Perceived Usefulness' were obtained as 0.000 which indicated a high significance level ( $0.000 < 0.05$ ). Therefore, the null hypotheses  $H1_0$  (There is no significant impact of Perceived Ease of Use on Mobile Banking Adoption), and  $H2_0$  (There is no significant impact of Perceived Usefulness on Mobile Banking Adoption) can be rejected. This states that 'Perceived Ease of Use and Perceived Usefulness' have a significant impact on Mobile Banking Adoption among SMEs. The p-value of 'Perceived Risk' was found to be 0.001 which is also significant ( $0.001 < 0.05$ ). Hence, the null hypothesis  $H3_0$  (There is no significant impact of Perceived Risk on Mobile Banking Adoption) can also be rejected. That means 'Perceived Risk' also had a significant impact on Mobile Banking Adoption among SMEs. The dependent variable (Mobile Banking Adoption among SMEs) was significantly influenced by independent variables (Perceived Ease of Use, Perceived Usefulness, and Perceived Risk).

Researchers may determine if there is a positive or negative connection between each independent variable and the dependent variable by looking at the sign of a regression coefficient. A positive coefficient means that the dependent variable's mean tends to rise when the independent variable's value rises. A negative coefficient indicates that the dependent variable tends to drop as the independent variable rises. Perceived Ease of Use has a positive

coefficient of 0.514, which means Mobile Banking Adoption among SMEs increase on average by 0.514 units for each one-unit increase in Perceived Ease of Use, holding all other variables (Perceived Usefulness, and Perceived Risk) constant. Further, it demonstrates that the Perceived Ease of Use has the highest impact on Mobile Banking Adoption among SMEs. Perceived Usefulness also has a positive coefficient of 0.320, which means Mobile Banking Adoption among SMEs increase on average by 0.320 units for each one-unit increase in Perceived Usefulness, holding all other variables (Perceived Ease of Use, and Perceived Risk) constant. The coefficient of Perceived Risk is found to be 0.153 which is also a positive value, this means Mobile Banking Adoption among SMEs increase on average by 0.153 units for each one-unit increase in Perceived Risk, holding all other variables (Perceived Ease of Use, and Perceived Usefulness) constant. Further, the above values proved that Perceived Ease of Use, Perceived Usefulness, and Perceived Risk had a significant impact on Mobile Banking Adoption among SMEs.

**Table 7: Hypothesis test results**

Identifier	Hypothesis	Test Result
<b>H1<sub>A</sub></b>	There is a significant impact of perceived ease of use on mobile banking adoption.	Fail to Reject
<b>H2<sub>A</sub></b>	There is a significant impact of perceived usefulness on mobile banking adoption.	Fail to Reject
<b>H3<sub>A</sub></b>	There is a significant impact of perceived risk on mobile banking adoption.	Fail to Reject

### **H1<sub>A</sub>- There is a significant impact of Perceived Ease of Use on Mobile Banking Adoption.**

With a positive coefficient of 0.514 and a significance value of 0.000, which is less than 0.05, this hypothesis was found to fail to reject. It shows that the adoption of mobile banking among SMEs was significantly impacted by Perceived Ease of Use. The hypothesis test also shows that Perceived Ease of Use has the highest impact on the Adoption of Mobile Banking than other variables.

### **H2<sub>A</sub> - There is a significant impact of Perceived Usefulness on Mobile Banking Adoption.**

With a positive coefficient of 0.320 and a significance level of 0.000, which

is less than 0.05, this hypothesis was found to fail to reject. It shows that Perceived Usefulness had a significant impact on SMEs' adoption of mobile banking. Additionally, it shows that among SMEs, Perceived Usefulness has the second-highest impact on the Adoption of mobile banking.

### **H3<sub>A</sub> - There is a significant impact of perceived risk on mobile banking adoption.**

Similarly, this hypothesis also failed to reject with a significance value of 0.153, which is less than 0.05, and a positive coefficient of 0.153. It demonstrated that the adoption of mobile banking among SMEs was significantly impacted by Perceived Risk.

Estimated Model Equation with coefficient values,

$$Y(MBA) = \beta_0 + \beta_1 PEOU + \beta_2 PU + \beta_3 PR \dots\dots\dots(2)$$

$$Y(MBA) = 0.711 + 0.514PEOU + 0.320PU + 0.153PR\dots\dots(3)$$

### **Checking for OLS Assumptions**

After finalizing the suitable model to explain the variation in the dependent variable, researchers decided to find out if the model meets the OLS assumptions. In this case, researchers decided to use EViews software to check for OLS assumptions.

### **Checking for Multicollinearity**

Multi-collinearity can be identified as two or more independent variables being closely correlated. A multi-collinearity test has performed to find out whether independent variables were not highly correlated. If VIF (variance inflation factor) is less than 10, there is no multi-collinearity in independent variables.

**Table 8: Variance Inflation Factor**

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
C	0.228413	40.76975	NA
PEOU	0.007448	77.54286	2.407686
PU	0.006432	66.61494	2.441426
PR	0.001907	14.64424	1.041484

The Centered VIF values of all the independent variables were well below 10 (the highest VIF value was 2.4) which indicated that there is no problem with multicollinearity in this model.

## Checking for Homoscedasticity

To perform the homoscedasticity test, researchers decided to use the Breusch-Pagan-Godfrey test. The null hypothesis of the Breusch-Pagan-Godfrey test indicates that the residuals are homoscedastic.

$H_0$ : The residuals are homoscedastic.

$H_1$ : The residuals are not homoscedastic

**Table 9: Heteroscedasticity Test: Breusch-Pagan-Godfrey**

Heteroscedasticity Test: Breusch-Pagan-Godfrey

Null hypothesis: Homoscedasticity

F-statistic	0.154157	Prob. F (3,52)	0.9266
Obs*R-squared	0.493655	Prob. Chi-Square (3)	0.9203
Scaled explained SS	0.669553	Prob. Chi-Square (3)	0.8803

The Prob. The F value (p-value) of the test was found to be 0.9266. Since the p-value is more than 0.05 (p-value > 0.05), the researcher failed to reject the null hypothesis. Therefore, it can be concluded that the residuals in this model are homoscedastic.

## Checking for Autocorrelation

Autocorrelations define as the degree of correlation between the values of the same variables across different observations in the data. A common method of testing for autocorrelation is the Durbin-Watson test in regression analysis in EViews. The Durbin-Watson tests produce a test statistic that ranges from 0 to 4. The values close to 2 (the middle of the range) suggest less

autocorrelation, and the values closer to 0 or 4 indicate greater positive or negative autocorrelation respectively.

**Table 10: Regression Analysis**

Dependent Variable: MBA				
Method: Least Squares				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.710	0.4779	1.486	0.1431
PEOU	545	26	726	0.0000
PU	0.513	0.0863	5.950	0.0002
PR	534	02	445	0.0010
	0.320	0.0802	3.993	
	275	03	313	
	0.152	0.0436	3.498	
	797	71	850	
R-squared	0.824	Mean		7.931548
Adjusted	656	dependent var		1.300651
R-squared	0.814	S.D. dependent		1.747439
S.E. of	540	var		1.892107
Regression	0.560	Akaike info		1.803527
Sum	126	criterion		1.668401
squared	16.31	Schwarz		
resid.	454	criterion		
Log	-	Hannan-Quinn		
likelihood	44.92	criter.		
F-statistic	830	Durbin-Watson		
Prob(F-	81.52	stat		
statistic)	008			
	0.000			
	000			

According to the Durbin-Watson value of the table, 10 was 1.668 and it was closer to 2.00. Therefore, it indicated that no autocorrelation in the estimated model.

### Checking for Normality of Residuals

The assumption of normality of errors checks for the normal distribution of the residuals, as a non-normal distribution would result in unreliable estimates or the confidence intervals being too wide or narrow. To test the normality of errors, researchers decided to use the Jarque-Bera test of normality.

$H_0$ : The residuals are normally distributed.

$H_1$ : The residuals are not normally distributed

**Table 11: Jarque-Bera test of normality**

Series: Residuals	
Sample 1 56	
Observations 56	
Mean	5.91e-16
Median	-0.015717
Maximum	1.115193
Minimum	-1.619308
Std. Dev.	0.544636
Skewness	-0.427861
Kurtosis	4.146015
Jarque-Bera	4.773094
Probability	0.091947

The f value (p-value) of the test was found to be 0.091947. Since the p-value is greater than 0.05 (p-value > 0.05), researchers fail to reject the null hypothesis. Therefore, it can be concluded that the residuals in this model are normally distributed.

### DISCUSSION

The primary focus of this paper was to identify the key factors that influence the adoption of mobile banking among SME owners in Sri Lanka.

Although the researchers mainly intended to further validate other empirical findings from developing countries, the findings of this study were completely different from the other empirical studies done in the same

research area in terms of the factors affecting the adoption. According to Ahad et al. (2012), the satisfaction of banking facility, cost per transaction, credibility of the transaction, education level of customers, gender difference, and the type of business of the SME were considered as other factors while Perceived Ease of Use (PEOU), and Perceived Usefulness (PU) were proven as significant impact and Perceived Risk (PR) was no significant impact on the Adoption of Mobile Banking in Bangladesh.

The findings of this study do not, however, imply that they are the only factors of mobile banking adoption in Sri Lankan SMEs. The findings may not accurately reflect the country as a whole because the data was only obtained from the Colombo district-based SMEs. A long-term study or research with a different demographic may offer greater insights into user behavior since the study was only done on SMEs at a specific period.

## **RECOMMENDATION**

The government should initiate an IT policy to enhance IT literacy among SMEs all over the country as well as take suitable action to improve network coverage in all areas of the country. Relevant banks should conduct awareness programs with attractive features and facilities in all three languages via all digital and printed media to enhance the usage of mobile banking.

## **CONCLUSION**

Sample size played a significant role in the analytical part of quantitative research. In general, higher sample sizes ensure that the population is more accurately represented. Since researchers considered only the Colombo district, a limited number of SMEs from the SME registry of the Ceylon Chamber of Commerce were included in the study. In addition to that, the primary data were collected through an online questionnaire and some of the respondents also had the opportunity to provide biased opinions and information.

The researcher aims to investigate the factors affecting mobile banking adoption among SMEs in the Colombo district that were fully satisfied and found relevant such as Perceived Ease of Use, Perceived Usefulness, and Perceived Risk with a good significant level with SPSS 25 analysis using a selected data sample. At the same time, satisfying OLS assumptions were

tested with the help of EViews statistical software and confirmed the selected model's suitability. In addition to that, users identified key rationale via the questionnaire that mostly coincides with the above independent variable. More researches in this field are very useful for the proper handling of financial activities with the help of mobile banking adoption by SME owners. Therefore, the statistical findings proved the main objective had been achieved. Finally, this study contributes to enhance the efficiency and productivity of SMEs in Sri Lanka and leads to enhancing the country's economy as well as GDP.

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# **Interactive Advertising: Factors Affecting on Augmented Reality Advertising Value and Customer Attitude towards Augmented Reality Advertising**

U.L.J.V. Ariyaratne<sup>1\*</sup>, M. Nismi<sup>2</sup>

<sup>1</sup>*Department of Marketing, University of Ruhuna, Sri Lanka  
janawandana96@gmail.com*

<sup>2</sup>*Department of Marketing, University of Ruhuna, Sri Lanka  
mnmnismi@yahoo.com*

## **ABSTRACT**

*Augmented Reality is a widespread phenomenon used in modern advertising. At present, it has a significant impact on reshaping consumer behaviour, while projecting effortless buzzwords for advertising. This study aims to determine the factors affecting towards the perceived value of augmented reality advertisement, and the impact of augmented reality advertising value on consumer attitude in a collectivistic cultural setting. The data were collected using a convenience sample of 271 respondents in Sri Lanka. As per findings, Informativeness, Entertainment, and Interactivity impacted positively on augmented reality advertising value whereas Irritation showed a negative influence on the same. Deceptiveness, Novelty, and Self-efficacy have been rejected due to the discrepancy of statistical confidence pertaining to supposed hypotheses. These findings suggest there is a greater consumer perception on the aforesaid advertising in developing cultures through delivering significant advertising value. This illustrates the possibility of executing augmented reality advertising campaigns in business contexts creating significant empirical literature for longitudinal studies. Complemented to developing countries, this paper originated that; the greater the implementation of interactive techniques through online platforms inter alia with such developing contexts, the more consumer attraction can be generated by through such advertising phenomenon towards brands.*

**Keywords:** Augmented Reality (AR), Augmented Reality Advertising, Advertising Value, Customer Attitude

## **INTRODUCTION**

Desktop-based computer usage in the world now gradually shifting to mobile interactions because of the rapid changes in technology transmissions, not

only for mobile but also for wearable devices and other supportive devices (Satyanarayanan, 2001; Ware & Balakrishnan, 1994). Hence, the devices people use such as mobiles and tablets are now transforming with innovative features like external eyes and ears to grab sensitive data throughout the environment and create informative digital content for people. The features of both the digital and real world can be taken to one of the single surfaces, which always helps to create whole new applications (Olsson et al., 2011). The whole process which embedding the real and virtual worlds together can be identified as the origin of the Augmented Reality.

Contrasting with Virtual Reality (VR), Augmented Reality has advanced features by improving user interaction in a real world setting, with the digital generated environment while VR only uses fictional reality (Furth, 2014). Basically, Augmented Reality developed in a way to hear and absorb the normal environmental attributes including additional features and sights, contemporizing to the same determined location relative to the user's 3D orientation (Pavli & Bridges, 2013). Therefore, Augmented Reality is identified as a mixed reality concept. It paws the way to carry a supplement about the real physical world, rather than showing its users an artificial environment.

Currently, the technology duly executes in business-driven possibilities. Major business functions, representing Branding, and Advertising in Marketing are shaped by digital behaviours. Nevertheless, advertising arrangements are getting wider as the state of the art, involving emerging technologies. Also, maturing of the technology allows both marketers and advertisers to adhere to the global marketplace whereas leveraging benefits through opportunities while maximizing the reach and engagement of consumers (Yaoyuneyong et al., 2016). According to Baratali et al. (2016) one of such technologies that considered being a major pace in the development of advertising media is Augmented Reality technology. The advertisements which contain technology involvement consumed by pathfinders are more likely to devour immerging technologies by themselves. Therefore, Statista has forewarned a substantial increment in the market size of Augmented Reality in 195 billion US dollars by 2025 (Shanhong, 2021).

In the frame of the aforementioned literature, longitudinal research studies have been examined throughout the era such as Ad creativity via Augmented Reality technology in online video ads: differential role of novelty, message usefulness, and ad consumer association (Feng & Xie, 2019). As well as, customer experience towards AR apps using by electronic retailers (Avcılar et al., 2019). Measuring the content characteristics of videos featuring

Augmented Reality advertising campaigns (Feng & Xie, 2018). Augmented Reality technology used in the advertising field and the measurements of AR ads liking and effectiveness level of customers (Sayımer & Küçüksaraç, 2017). Also, cross-cultural studies have been implemented by scholars in different settings such as cultural comparison (Germany and Italy): the young customer's intention towards Augment Reality applications for online purchasing decisions (Pantano et al., 2017). As well as, consumer attitudes towards hypermedia print ads: Traditional print ads, QR hypermedia ads, and AR hypermedia ads by investigating eight factors (Yaoyuneyong et al., 2016).

Nonetheless, substantially fewer studies carried out within the Sri Lankan context with regard to reconstructing Sri Lankan cultural heritage and Augmented Reality (Galmangoda et al., 2016). Also, the smart supermarket system is based on Augmented Reality and indoor navigation with beacon technology (Jayananda et al., 2018).

### **Problem Identification/Purpose of the Present Study**

However, the main considerations of the study benefaction two heterogeneous arrays. In accordance with Meydanoğlu et al. (2020) That study claimed:

Despite the fact that AR is a promising technology and a novel experience to the world and consumers, customer attitudes and perceptions towards AR ads are still being developed and still can be changed for engaging and reaching customers. Longitudinal research studies can be conducted in the future to watch the growth and the development of the regarding factor. (p.29).

Despite the knowledge gap addressed by the study, a contextual gap also has been identified by the developed hypothetical framework. Demonstrating spatial presence, there's a coherent requirement of evaluating such factors in collective cultures. Specifically, no previous studies have been conducted related to AR Marketing and Advertising fields in Sri Lanka. Thus, this can be a significant research in the Sri Lankan context. Eventually, advertisers and managers who research-based evidence to improve their brand image and promotions through interactive mediums might have ascertained this particular arena in the near future.

The current study attempts to fill the knowledge gap and contextual gap relating to the advertising industry with special reference to Augmented Reality marker-based advertisements. Thus, the study focused on proposing a speculative research model that can be exploited to determine the factors

affecting the perceived value of AR ads, as well as the attitudes of the Sri Lankan youth population towards AR marker-based advertisements. Furthermore, the findings of the study enable furnishing pragmatic suggestions to experiment within the Sri Lankan context for successful AR advertising campaigns while improving AR advertising strategies for businesses. Moreover, this study focuses on how AR technology is distinguished and evaluated in marketing campaigns throughout a developing country respectively including the features of AR advertising (Informativeness, Entertainment, Novelty and Interactivity) along with the possible disadvantages (Irritation and Deceptiveness). Another aim would be to determine how Self-efficacy affects AR ad value and how AR ad value affects consumer attitude towards Augmented Reality ads with a special reference to Augmented Reality marker-based advertisements.

## **LITERATURE REVIEW**

### **Augmented Reality Advertising**

AR advertising urged to be beneficial for organizations, creating brand awareness on particular brands also allowing users to enjoy and interact with entertainment content while delivering emotional connections (Dennis, 2017). AR ads contain two types of applications. They are Marker-based Augmented Reality and Markerless Augmented Reality applications. The current study investigates the arena of advertising value and attitude towards Augmented Reality marker-based advertisements. Marker-based Augmented Reality advertisements collaborate with mobiles, cameras, and various visual markers, or 2D/QR, to create digital content. Marker-based AR proceeds with digital devices such as cameras. That camera initially separates the marker from the particular physical world aspects (Margaret, 2016).

Using AR in advertising confers more complements compared to traditional advertising streams. Evolving Augmented Reality in advertising creates a path for firms to be amazed at their customers, including the capability of storytelling about the brand. Also, that develops a buzzword in dispersion through customers towards the brand because, such unique advertising methods deliver essential competitive advantages for the business that the competitors are not capable of. Quality and attraction, the engagement of advertising content have been steadily imposed by Augmented Reality Advertising compared to traditional marketing techniques. Not only does AR advertising demand obtaining a high consumer retention rate, but also consumers are eager to engage and interact with the advertisement repeatedly because of the excitement generated by AR. Hence,

Augmented Reality advertising can be considered a cutting-edge emerging aspect in the modern world.

### **Advertising Value**

The term advertising value is defined as a “Subjective evaluation of the relative worth or utility of advertising to consumers” (Ducoffe, 1995). In other words, ‘advertising value is a subjective concept of advertisement worthiness to a specific individual. The greater increase in technology and communication forces make customers pay more attention towards advertising (Mayer & Martin, 1991). The Degree of accuracy and relativeness of the advertisements go beyond the ordinary. Especially with regard to the requirements of customers, the greater the way they feel the value of advertisements, they are used to it. That particular advertising value can be exchanged among consumers and advertisers via advertising effectiveness. Thus, advertising value is emphasized as an overall evaluation and rededication of the worth of advertising on any selected medium.

### **Advertising Value and Advertising Attitude**

Prior literature carried out two different perspectives to explain the relationship between ‘advertising value’ and ‘advertising attitude’. Some discussions claimed there is a null significant relationship between these two factors (Alwitt & Prabhaker, 1994; Chen & Wells, 2000; Bezjian et al., 1998). Nevertheless, some scholarly articles have proven that advertising value and advertising attitude are two separate constraints. They indicate that advertising attitude is an affective dimension which generates favourable and unfavourable traits towards advertising. Moreover, that determines the likability of the ads (Ducoffe, 1995; Ducoffe, 1996; Brackett & Carr, 2001). Thus, the study considers Advertising value and Advertising attitude as separate dimensions. Based on previous studies, the advertising value approach consists of the following dimensions. “Informativeness”, “Entertainment”, “Irritation” and “Deceptiveness” are roots of the advertising value (Ducoffe, 1995; Ducoffe, 1996).

## **Factors Affecting Augmented Reality Advertising Value**

### **Informativeness and Advertising Value**

According to Christians et al. (1989), informativeness is the most significant aspect of advertising; customers are likely to receive accurate product information through advertising. Delivering consumers valuable information to exhilarate their decision making referred to as Informativeness. Various indications have been proven that advertisements carrying rich information have more proficiency to get accepted by consumers (Ducoffe, 1996; Haghirian & Madlberger, 2005; Rotzoll et al., 1989). AR ads like 'Absolut's', has been delivered more informativeness traits to consumers (Sung & Cho, 2012). In reference to aforesaid arguments, the study considers there is a positive influence of advertising value on informativeness. Thus, the present study claims the following hypothesis:

H1: Perceived Informativeness of AR advertisements has a positive impact on the perceived value of AR advertising.

### **Entertainment and Advertising Value**

Entertainment belongs to the capability of accomplishing customer requirements for fantasy, redirection, or emotional release (Ducoffe, 1995; Ducoffe, 1996; McQuail, 1983). Concerning the real-world scenarios, advertisements which comprise entertainment traits affected positively on consumers in terms of the value of that advertisement, such as Coca-Cola and Pepsi AR ads (Javadi et al., 2012; Liu et al., 2012; Pollay & Mittal, 1993). Hence, the study is considering that there is a positive impact on the advertising value of entertainment. Therefore, the research concludes the hypothesis to be:

H2: Perceived Entertainment of AR advertisements has a positive impact on the perceived value of AR advertising.

### **Irritation and Advertising Value**

Irritation is referred to as one of the influencing factors determining the value of advertising. If the advertisement is intended to be annoying or exasperating, the effectiveness of the advertisement is more likely to be decreased (Aaker & Bruzzone, 1985; Ducoffe, 1995; Liu et al., 2012). Some prior studies criticize the generalized literature. With that advertising reroutes concentration from social groups who daily consume advertisements and humidify the experience of users, utilizing user anxiety to create scenarios with tenderly human desires (Schudson, 1984; Boorstin et al., 1974). Messy,

annoying, and insulting advertisements are more likely to irritate consumers, causing a negative impact on the advertising value (Ducoffe, 1996). This study considers Augmented Reality advertisements with irritating content have reduced the value of advertising. The current study considers that there is a negative effect on the advertising value from irritation. Thus, current research concludes the hypothesis to be:

H3: Perceived Irritation of AR advertisements has a negative impact on the perceived value of AR advertising.

### **Deceptiveness and Advertising Value**

According to Ducoffe (1995) the degree to which extent informativeness intensifies the value of advertising, deceptiveness is more likely to diminish the value of advertising. Additionally, the well-being of customers has been undermined by deceptiveness (Bloom et al., 1982). In consumer behavior associations, customers are amenable to perceive credible advertisements and likely to derive a recall for particular advertisements in their intelligence. Therefore, Augmented Reality ads with descriptive features can reduce advertising value in consumer's mindset (Ducoffe, 1995). Based on the above arguments, the current study considers there is a negative impact on the advertising value from descriptiveness. The study claims the following hypothesis:

H4: Perceived Deceptiveness of AR advertisements has a negative impact on the perceived value of AR advertising.

### **Novelty and Advertising Value**

Except for the aforementioned dimensions of Ducoffe (1995), the study has considered novelty as a variable that is determining advertising value (Sheinin et al., 2011). The newness of advertisements is emphasized as a novelty. Also, the degree of advertisement separately implanted from customer expectations, beyond the ordinary or astonishing design of ads. Creativity, different, and unique ads are considered as a novelty of advertising (Sheinin et al., 2011). Analyzing the way consumers reacts to novel advertisement simply belongs to attention-grabbing in relation to emotional feeling (Lawrence et al., 2013). Novelty in advertisements has a positive impact on advertising value (Brown, 2002; Edwards & Gangadharbatla, 2001). Thus, the current study states the hypothesis as:

H5: Perceived Novelty of AR advertisements has a positive impact on the perceived value of AR advertising.

### **Interactivity and Advertising Value.**

The ability of transmitting convenience media streams by entities/individuals is referred to as interactivity. Such interactivity represents two preliminary attributes, interactivity permits to create conversations, capable of addressing users. It recollects those reactions from particular users (Deighton, 1996). Some prior studies have been taken interactivity as to determine advertising value (Cho & Leckenby, 1999; Wang, 2005; Wu, 1999). Although, interactivity has delivered improvement in user experience (Sung & Cho, 2012), and contributed positive influence on perceived advertising value. Thus, the present study claims the following hypothesis:

H6: Perceived Interactivity of AR advertisements has a positive impact on the perceived value of AR advertising.

### **Technological Self-efficacy and Advertising Value**

Specific personal abilities to attain required output and targets can be defined as self-efficacy (Bandura, 1986; Bandura, 2001). Term self-efficacy is directly linked to goal achievement in the internal manner of a particular person or organization (Bandura, 1997). That represents “one’s belief of their ability to perform technologically sophisticated new tasks”. Consumers should be skillful when dealing and interacting with technological tasks associated with augmented reality, such as scanning AR markers and use of augmented reality advertising tools, and apps (McDonald & Siegall, 1992). Hence, the current study claims the following hypothesis:

H7: Perceived Technological self-efficacy of AR advertisements has a positive impact on the perceived value of AR advertising.

### **Impact of Advertising Value on Customer Attitude towards AR ads**

Indeed, the most substantial aspect of grabbing customer attraction in advertising is the relativeness and value of that advertising. Thus, ads with values influence positively consumers’ attitudes (Javadi et al., 2012), whereas ads without values affect negatively customers’ attitudes (Ducoffe, 1996). In this regard, the study is likely to assume that Augmented Reality advertisements with high values impact positively on customers’ attitudes towards AR ads, and low-value AR ads negatively impact customers’ attitudes towards AR ads. Based on the arguments, it is essential to build a discussion as there is a positive impact on customer attitude towards AR advertising from advertising value. Thus, the present study claims the following hypothesis:

H8: The advertising value of AR advertisements has a positive influence on customer attitude towards AR advertising.

## **METHODS**

The current research followed a quantitative approach to collect primary data for data interpretation and statistical analysis while representing descriptive analysis. Thus, the study designates the survey as the research strategy, collected data from distributing questionnaires among the selected population in terms of gathering the most relevant data for the developed criteria. The secondary data have been mostly collected through scholarly articles and books which were published on Google Scholar and Sci-Hub services.

### **Research Context**

The current study was conducted in Sri Lanka, the participants have taken part from each province under the convenience sampling technique and the study is going to be the first research article conducted in Sri Lanka and even within collectivistic cultures.

### **Data Collection**

The study used a self-administrated questionnaire to collect data, basically consisting two sections. Section one is to solicit the demographic-related information of the respondent and section two included 27 statements representing all the variables.

### **Analytical Techniques**

The reliability of data measured with Cronbach's Alpha calculation. In the case of convergent validity current research has considered the factor loadings, AVE and CR while the square too of AVE was used to consider the discriminant validity. Carl Pearson method was used to ascertain the correlation between variables to test whether there was a multicollinerrity effect. Coefficient of multiple regression was used to test the research hypothesis. Baron and Kenny method was used to identify the mediation effect of the Perceived Advertising on each independent variable. The data were analyzed using Microsoft Office Excel and the IBM SPSS (Version 25).

### **Population, Sample Size and Sampling Technique**

The population of research was consisted of the young generation aged generally in 18-32 years. Overall, 300 questionnaires were distributed and 271 responses were collected by establishing a response rate of 90.33%. After

excluding unusable responses, 263 effective responses were considered for data analysis. The convenience sampling approach was followed as the sampling technique. Among the respondents, the majority of respondents were female (86.3%), and remaining (13.7%) were males. Among the 263 respondents, the majority (54.2%) belonged to the age category of 23-27 years. As per responses taken from sample 97% were exposed to Augmented Reality Advertisements in Sri Lanka, while the rest (3%) were not exposed to Augmented Reality Advertisements in Sri Lanka. Therefore, this research has considered that 97% who were exposed to Augmented Reality Advertisements in Sri Lanka for further analysis.

## **RESULTS**

### **Validity and Reliability**

The value greater than 0.7 as Cronbach's Alpha has indicated an acceptable level of internal consistency (Field, 2009). As per Field (2009)'s criterion for Cronbach's Alpha value, all variables have internal consistency at an acceptable level.

The factor loading values which are greater than 0.6 indicate the significant importance of those factors to constructing study variables (Cadena et al., 2020). As per factor loadings of each factor, the analysis process has removed the 6 factors as PINF\_02, PIRR\_02, PDEC\_03, PNOV\_02, PNOV\_03, and PADV\_02 which have less than 0.6 values of factor loadings. Table 2 shows the factor loadings of moderated factor analysis after removing the above six factors. Accordingly, these 21 factors were used for further analysis because each factor loading values are greater than 0.6 which shows the significant importance of those factors to construct study variables.

Average Variance Extraction (AVE) values above 0.7 are considered very good, whereas, the level of 0.5 is acceptable (Rowe et al., 2013). In the case of most variables in the very good or acceptable level when few are not satisfied with the acceptable criterion, research can consider the variables which are near to the acceptable criterion too (Malhotra, 1987). The figure presented in Table 2 illustrates all the variables except the PDEC are at a very good or acceptable level. But using the justification of Malhotra (1987) this study has concerned the independent variable PDEC also at the acceptable level for further analysis.

Composite Reliability (CR) is a less biased estimate of reliability than Cronbach's Alpha, the acceptable value of CR is 0.7 and above (Rowe et al., 2013). Research that deals with human beings can accept the 0.5 of CR

values, only if the factor loadings of that component are above the level 0.6 (Raykov, 1998). Thus, all the variables are at the acceptable level.

If the inter-constructed correlation coefficients are less than the square root of Average Variance Extraction, it could establish the discriminant validity of the selected variables (Campbell & Fiske, 1959). Table 3 indicates discriminant validity was established because the square roots of AVE of each Component have a greater value than the correlations with other variables.

An absolute correlation coefficient greater than 0.7 among two or more predictors indicates the presence of multicollinearity (Haitovsky, 1969). In accordance with Table 4, each coefficient of correlation is less than 0.7 which indicates no multicollinearity effect. Further, a VIF between 5 and 10 indicates a high correlation that may be problematic. So the VIF which is less than 5 is an acceptable level (Haitovsky, 1969). As per the results, all the VIF values are less than 5, as there is no effect from the multicollinearity.

## **Hypothesis Testing**

Multiple regression coefficient (R) value 0.996 represents the multiple correlations between all the entered independent variables (i.e. Perceived Informativeness, Perceived Entertainment, Perceived Irritation, Perceived Deceptiveness, Perceived Novelty, Perceived Interactivity, and Perceived Self-Efficacy), and the mediator variable Perceived Advertising Value as the dependent variable.

Independent variables all together explained the 99.2% of the total variance of the dependent variable Perceived Advertising Value, are presented in Table 5. The results shown in Table 6 demonstrate ANOVAs:  $F(7.255) = 4432.97$ ; significance value (P-Value = 0.000) less than 0.05. Therefore, the fitted regression line is predicted by the independent variables significantly.

As per Table 7, Perceived Informativeness was the most influential variable for the Perceived Advertising Value with a Standardized Beta Coefficient 0.993 with significance (P Value = 0.000). Perceived Entertainment was the second largest influence on Perceived Advertising Value with a Standardized Beta Coefficient 0.902 with significance (P-Value = 0.007). Perceived Novelty was the least influential variable, which does not show a significant relationship with Perceived Advertising Value.

Although Perceived Novelty, Perceived Deceptiveness, and Perceived Self-Efficacy showed negative influence on Perceived Advertising Value they were not significant influences since their P values are greater than 0.05.

Perceived Informativeness, Perceived Entertainment, Perceived Irritation, and Perceived Interactivity showed significant influence on Perceived Advertising Value. Further, Perceived Informativeness, Perceived Entertainment, and Perceived Interactivity have shown a positive influence on Perceived Advertising Value and the other hand Perceived Irritation was shown a negative influence on Perceived Advertising Value.

Simple Regression Coefficient (r) value 0.869 represents the correlation between the independent variable Perceived Advertising Value and the dependent variable Customer Attitude towards Augmented Reality Advertising. The independent variable Perceived Advertising Value explained 75.8% of the total variance of the dependent variable Customer Attitude towards Augmented Reality Advertising is visualized in Table 8. As mentioned, ANOVAs:  $F(1,261) = 20.293$ ; significance value (P-Value = 0.000) less than 0.05. Therefore, the fitted regression line predicted by the independent variable significantly.

According to Table 10, Perceived Advertising shows a positive and significant influence on Customer Attitude towards Augmented Reality Advertising with the Standardized Beta Coefficient 0.269 with significance (P Value = 0.000).

Based on the findings Perceived Informativeness, Perceived Entertainment, and Perceived Interactivity of AR advertisements have a significant positive influence on Perceived Advertising value while Perceived Irritation plays a significant negative impact on Perceived Advertising value. Therefore, H1, H2, H6, H3 hypotheses were accepted according to the development of the spatial presence. Due to the insignificant negative impact on perceived advertising value, the H4 hypothesis was rejected as relevant Perceived Deceptiveness. Perceived Novelty and Perceived Technological self-efficacy have an insignificant negative influence on perceived advertising value based on statistical analysis. Therefore H5 and H7 were rejected throughout the proposed hypothetical model.

### **Measuring the Mediating Effect**

Mediation hypothesis reflects the impact of an independent variable on a dependent variable is mediated by the process of a mediating variable and the independent variable may still affect the dependent variable (MacKinnon et al., 2007). Establish the effect which may be mediated, treating the mediator variable as an outcome variable, the initial variable controlled while establishing the correlation between two other variables, and finally establish the complete mediation across the variables. If all four steps of Baron &

Kenny's procedures are met, there is a full mediation effect and if only the first three steps of Baron & Kenny's procedures are satisfied, there is partial mediation is observed in the data (MacKinnon et al., 2007).

The results shown in Table 11 illustrate, all the independent variables showed a significant effect on the dependent variable, customer attitude. Other than Perceived Interactivity, all other independent variables showed significant influence on mediating variables. Mediating variable also shows a significant influence on the dependent variable. In the final stage, research has a concern about the standardized Beta coefficient of each independent variable while they are controlled by the mediating variable. With that, the independent variables Perceived Informativeness and Perceived Novelty have shown insignificant influence.

According to Baron & Kenny's procedure, mediating variable Perceived Advertising Value shows a full mediation effect on the Perceived Informativeness and Perceived Novelty on Customer Attitude towards Augmented Reality Advertising. Mediating variable Perceived Advertising Value has shown a partial mediation effect with independent variables Perceived Entertainment, Perceived Irritation, Perceived Deceptiveness and Perceived Self-Efficacy on Customer Attitude towards Augmented Reality Advertising. On the other hand, mediating variable Perceived Advertising Value has not shown any mediation effect for the Perceived Interactivity on Customer Attitude towards Augmented Reality Advertising.

## **DISCUSSION**

This study complements to demonstrate the concept of customer attitude towards Augmented Reality advertising in the Sri Lankan context with a special reference to Augmented Reality marker-based advertisements. Hence the deployed research model has been implied to evaluate validated constructs such as informativeness, entertainment, irritation, deceptiveness, novelty, interactivity, and technological self-efficacy on ad value whereas, the influence of perceived advertising value on customer attitude towards AR advertisements pertaining to the young generation.

The results suggested that perceived novelty and perceived self-efficacy have shown a negative and insignificant influence on perceived advertising value. Thus, two hypotheses pertaining to aforesaid constraints (novelty and self-efficacy) have been rejected due to contradictory outcomes since both dimensions do not have not substantial statistical confidence to construct the

authentication proposed by the methodology. Contradictory, findings compared to mentioned results as the perceived novelty of AR advertisements has a positive and significant effect on perceived advertising value (Meydanoğlu et al., 2020; Sheinin et al., 2011; Brown, 2002). Further, the perceived technological self-efficacy of AR advertisements has a positive and significant effect on the perceived advertising value in the German context (Meydanoğlu et al., 2020). These two constructs might have been supported if the selected sample in the Sri Lankan setting had such a possible opportunity to consume advance technology and devices for a long time. Also, the ability of associating with technical tasks and interacting with Augmented Reality advertising for long might be influenced to generate that positive impact. Further, novelty and self-efficacy might significant if the scale developed to measure the hypothesis were changed or the scale increased with new validated items, the increment of sample size.

Although evaluation of validity revealed deceptiveness has not acceptable validity and reliability level based on the sample executed. Therefore, the study proposed a methodological justification according to Malhotra (1987) perceived deceptiveness has concerned as in an acceptable level for further analysis. In the final conclusion, the paper has examined that perceived deceptiveness has an insignificant impact on perceived advertising value. Hence the study validated deceptiveness delivers an insignificant but negative impact on advertising value.

#### Which Factors Generate Highest Positive Impact and Negative Influence on Advertising Value?

According to findings, respondents have shown disparate variance levels considering significance and Influence. Perceived informativeness is the most influential construct on the perceived advertising value with a positive and significant impact. Complied findings to the particular fact have been identified compared to previous literature. Perceived informativeness, is the most significant dimension in Augmented Reality hypermedia ads and traditional ads (Sung & Cho, 2012) because customers are likely to receive accurate product information (Christians et al., 1989; Ducoffe, 1995; Ducoffe, 1996). Perceived entertainment was the second largest impact factor on Perceived Advertising Value which has the second largest significance and positive influence. Ducoffe (1996) also stated the same complied results with prior studies. Perceived novelty is the least influential variable, that has not shown a significance and positive impact on the perceived advertising value on AR advertisements.

## New Findings under Mediation Effects?

Perceived advertising value showed a full mediation effect for the informativeness on customer attitude towards Augmented Reality advertising. Compared to previous literature, Malik and Dubey (2013) revealed ad value shows a partial mediation effect for the informativeness on customer attitude towards online advertising. Moreover, value has executed a partial mediation effect with perceived entertainment and perceived irritation whereas these findings have complied with previous mediation investigations done by prior literature (Malik & Dubey, 2013).

## The Contribution of the Study

### Managerial Implications

Considering the fact that technological advancement due to globalized knowledge increment across the world derived essential opportunity acquisition for emerging business contexts. With the development of industry 4.0, there are such interactive technologies like Big Data, Augmented Reality, Virtual Reality, Blockchain, AI, etc. have arrived at beyond traditional communication systems. Yet, Sri Lanka is in the early stage of consumption and adoption towards these transformations, but there is significant utilization of technology applications regarding various fields.

The current study has proven that the positive customer attitude towards Augmented Reality advertisements (marker- based ads) in Sri Lankan context among the young generation. The particular finding in Sri Lanka has not been evaluated before in longitudinal studies. This finding delivers valuable insights to Sri Lankan advertisers, managers, and decision-makers who associate with competitive advantages in the business arena. They can utilize traits like informativeness and entertainment, and boost them by effectuating with advertising tactics to get greater consumer attention while generalizing novelty and interactive traits throughout consumers offering unique interactive digital content. Also, negative constraints like irritating advertising content through AR advertising can be avoided by advertisers when creating brand engagement.

Considering the circumstances, it might have been costly to implement initial investment to execute Augmented Reality applications for the advertising field because of the facility infrastructure and newness of the technology still convey at the preliminary level. But once the organizations going to accelerate Augmented Reality to generate customer engagement and impressions through advertising it obviously pave the way to earn long term

benefits compared to traditional media advertising and communication methods. Also, the results have shown, AR advertising has the capability of generating significant consumer interactivity through one single campaign is the most amazing and profitable advantage for the business profit-earning process. Hence, marketing managers and especially advertisers, campaign designers can implement the particular technology with their strategies, but with a significant risk level, nevertheless surely it will be able to overcome the initial cost and act as an indication to develop long-term customer relationships with the business. This leads to creating more sales. Moreover, the concept of Augmented Reality advertising can be improved by different types of advertising formats which in applicable level to the Sri Lankan context by advertisers because the current study evaluated only the marker-based advertising formats. Brands that are already utilizing AR in their marketing and advertising arena needed to improve the range of advertising and investment in particular advertising areas.

### **Policy Makers**

These study implications will support to execute policies and facilitate infrastructure for responsible parties regarding particular advertising and marketing arena in Sri Lanka. Marketers and advertisers, business owners' lack neither competencies nor resources to accomplish Augmented Reality advertising with related technological forces in their ventures. It is essential to provide technological aspiration through knowledge-sharing platforms and incentives for both business and customer parties to increase the dealing rate of technological forces and engagement rate through awareness. In terms of acquiring such success in the proposed area, marketers and advertisers needed to weaponize with computing power such as technical knowledge to develop AR apps, CAD plans for further app development relating to AR, computer-aided manufacturing, and wearable devices technology. Those areas needed to be developed in Sri Lanka by responsible parties. Sooner AR content has undertaken advertising and marketing brands using AR smart glasses to attract consumers through delivering memorable customer brand experience in the consumer market (Rauschnabel et al., 2019). Sri Lanka as a developing country, including cultural variance ready to embrace the emerging business forces and technological advances to compete with the global market with a quality communication strategy in an interactive manner.

### **Further Research and Recommendations**

Since researches on AR advertising and marketing are limited, future studies

need to be developed more by scholars (Bulearca & Tamarjan, 2010; Javornik, 2016). Future longitudinal studies should have executed more qualitative and quantitative data towards this arena with the Augmented Reality phenomenon, yet the field is emerging and the advertising context growing rapidly. As in Sri Lanka, the same research can be implemented within developing countries, also in cross-cultural studies for beyond comparison results to check the differentiation of consumer behaviors towards technological aspects in advertising.

Secondly, future scholars can implement studies to find out reasons why three constraints (novelty, self-efficacy, and deceptiveness) weren't fit for Sri Lankan young customers. Improving or reducing dimensions by the developed research model, studies can reboot the model to investigate customer attitudes towards Augmented Reality Advertising in Sri Lanka whereas different cultural contexts. Further, customer attitudes towards AR ads and actual customer behavior should be examined substantially by future studies. This actually helps to derive a generalized idea about real customer perceptions towards advertising. The study has limited advertising value and customer attitude towards Augmented Reality advertising. Notably, there is a significant relationship between customer purchase intention and brand engagement with Augmented Reality advertisements in the emerging environment. This can be investigated by future empirical studies adding mediating or moderating effects to validate the greater importance of addressing potential trends.

### **Limitations of the Study**

This study is not without its limitations. Firstly, due to the sample size and sampling techniques of the current research study, the results may be biased toward a particular sample and selected population. In future studies can increase sample size and questionnaires can be applied not only for limited areas based on the distribution rates but also for the whole country with simple random sampling techniques. Secondly, questionnaires for data collection can be possibly considered for different customer groups or users with age variances in Sri Lanka instead of a young customer base within Sri Lanka. Population groups beyond young age would add more value to this study. Moreover, the questionnaire does not include open-ended questions. Adding open-ended questions and conducting focused group interviews might have derived some deeper level insights into the study by respondents and that might be valuable for evaluating more on the rejected phenomenon respectively.

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Table 1 : Variable Operationalization

Variable	Dimension	Item	Source(s)
	Informativeness	Augmented Reality advertisements are beneficial.	Meydanoğlu et al. (2020)
		Augmented Reality advertisements are helpful.	
		Augmented Reality advertisements are informative.	
	Entertainment	Augmented Reality advertisements are pleasing.	Meydanoğlu et al. (2020)
		Augmented Reality advertisements are enjoyable.	
		Augmented Reality advertisements are entertaining.	
	Irritation	Augmented Reality advertisements are annoying.	Meydanoğlu et al. (2020)
		Augmented Reality advertisements are irritating.	
		Augmented Reality advertisements are disturbing.	
	Deceptiveness	Augmented Reality advertisements are not credible.	Meydanoğlu et al. (2020)
		Augmented Reality advertisements are misleading.	
		Augmented Reality advertisements are deceptive.	
	Novelty	Augmented Reality advertisements are novel.	Meydanoğlu et al. (2020)
		Augmented Reality advertisements are creative.	
		Augmented Reality advertisements are original.	
		Augmented Reality advertisements are inventive.	
	Interactivity	Augmented Reality advertisements provide high degree of cognitive involvement.	Meydanoğlu et al. (2020)
		Augmented Reality advertisements can offer a vivid communication experience.	
	Technological self-efficacy	Feel confident to interact with an Augmented Reality	Meydanoğlu et al. (2020)

	advertisement.	
	Feel confident to download an app and use it to interact with an Augmented Reality advertisement.	
Advertising Value	Augmented Reality advertisements are useful.	Meydanoğlu et al. (2020)
	Augmented Reality advertisements are important.	
	Augmented Reality advertisements are valuable.	
Customer Attitude towards Augmented Reality Advertising	Augmented Reality advertisements are attractive.	Meydanoğlu et al. (2020)
	Augmented Reality advertisements are interesting.	
	Augmented Reality advertisements are appealing to me.	
	Augmented Reality advertisements are favorable to me.	

**Table 2 : Convergent Validity and Reliability of the Data**

Component	Factor	Factor Loading	Cronbach's Alpha	AVE	CR
PINF	PINF_01	0.837	0.826	0.8053	0.8918
	PINF_02	0.954			
PENT	PENT_01	0.710	0.811	0.6770	0.8614
	PENT_02	0.927			
	PENT_03	0.817			
PIRR	PIRR_01	-0.933	0.976	0.8584	0.9238
	PIRR_03	-0.920			
PDEC	PDEC_01	0.635	0.761	0.4688	0.6372
	PDEC_02	0.731			
PNOV	PNOV_01	0.925	0.765	0.8734	0.9324
	PNOV_04	0.944			
PINT	PINT_01	0.691	0.849	0.6862	0.8102
	PINT_02	0.946			
PSEF	PSEF_01	0.962	0.756	0.8632	0.9265
	PSEF_02	0.895			
PADV	PADV_01	0.826	0.816	0.7962	0.8860
	PADV_02	0.954			
CATT	CATT_01	0.942	0.878	0.8598	0.9608
	CATT_02	0.917			
	CATT_03	0.952			
	CATT_04	0.897			

**Table 3 : Discriminant Validity**

	1	2	3	4	5	6	7	8
1 PINF	0.897							
2 PEN	0.244	0.822						
3 T	-	-	0.926					
4 PIRR	0.215	0.503	5					
5 PDE	-	-	-	0.674				
6 C	0.278	0.273	0.227	8				
7 PNO	0.135	0.284	0.271	0.306	0.934			
8 V	0.062	0.062	0.046	0.121	0.060	0.828		
1 PINT	0.642	0.338	0.274	0.300	0.510	0.082	0.929	
2 PSEF	0.896	0.815	0.823	0.673	0.914	0.058	0.914	0.892
3 PAD								3

	CAT				-				
9	T	0.827	0.816	0.629	0.640	0.869	0.804	0.899	0.869

**Table 4 : Coefficients of Bi-variate Correlation**

		1	2	3	4	5	6	7
1	PINF	1.000						
2	PENT	0.244	1.000					
3	PIRR	-0.215	-0.503	1.000				
4	PDEC	-0.278	-0.273	0.227	1.000			
5	PNOV	0.135	0.284	-0.271	-0.306	1.000		
6	PINT	0.062	0.062	-0.046	-0.121	0.060	1.000	
7	PSEF	0.642	0.338	-0.274	-0.300	0.510	0.082	1.000

**Table 5 : Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.996a	.992	.992	.04372

a Predictors: (Constant), PSEF, PINT, PIRR, PNOV, PENT, PINF.

**Table 6 : Anova**

Model		Sum of Squares	df	Mean Square	F	Sig.
	Regression	59.317	7	8.474	4432.969	.000b
1	Residual	.487	255	.002		
	Total	59.804	262			

a Dependent Variable: PADV.

b Predictors: (Constant), PSEF, PINT, PIRR, PNOV, PENT, PINF.

**Table 7 : Coefficients of Multiple Regression Analysis**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	.070	.059		1.190	.235		
	PINF	.991	.008	.993	127.174	.000	.531	1.884
	PENT	.903	.009	.902	98.384	.000	.698	1.432
	PIRR	-.541	.006	-.570	-91.309	.020	.722	1.386
	PDEC	-.007	.006	-.007	-1.047	.296	.819	1.222
	PNOV	-.001	.009	-.001	-.098	.922	.650	1.538
	PINT	.504	.006	.524	-82.722	.049	.991	1.009
	PSEF	-.572	.011	-.578	-52.104	.081	.399	2.506

a Dependent Variable: PADV.

**Table 8 : Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.869a	.758	.798	.01616

a Predictors: (Constant), PADV.

**Table 9 : Anova**

Model		Sum of Squares	DF	Mean Square	F	Sig.
1	Regression	2.028	1	2.028	20.293	.000b
	Residual	26.088	261	.100		
	Total	28.116	262			

a Dependent Variable: CATT.

b Predictors: (Constant), PADV.

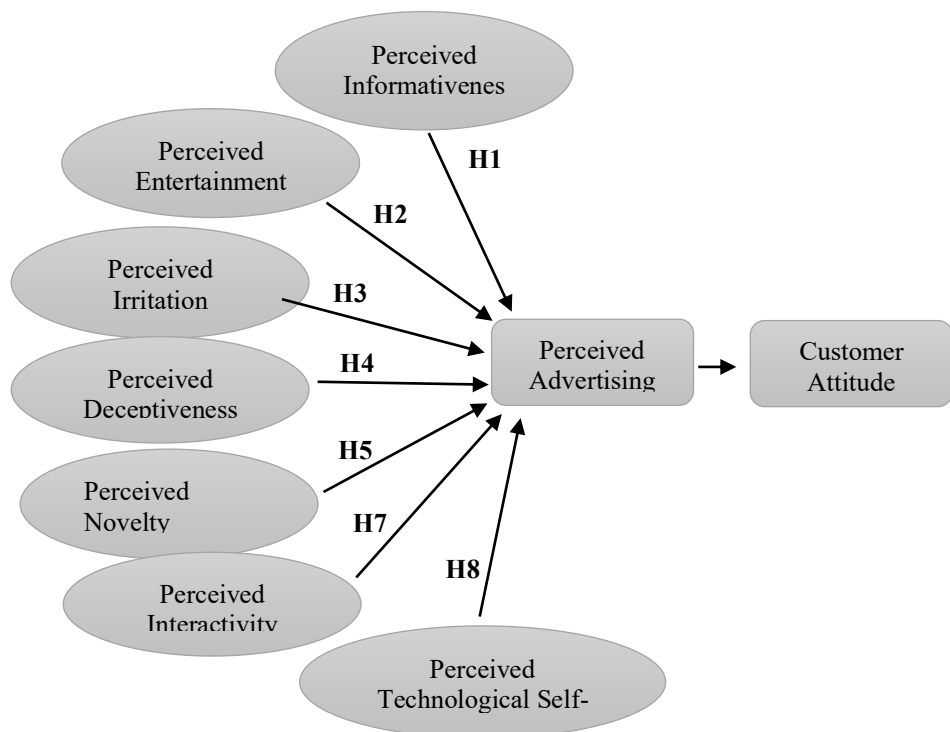
**Table 10 : Coefficients of Simple Regression Analysis**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.663	.188		19.484	.000
	PADV	.184	.041	.269	4.505	.000

a Dependent Variable: CATT.

**Table 11 : Mediating Effect (Baron and Kenny method)**

Independent Variable	Coefficient between Independent and CATT	Coefficient between Independent and PADV	Coefficient between PADV and CATT	Multiple Regression Coefficient between Independent, Mediating and CAAT	Mediation Effect
PINF	0.267 (0.000)	0.996 (0.000)	0.269 (0.000)	0.000 (1.000)	Full
PENT	0.456 (0.000)	0.248 (0.000)	0.269 (0.000)	0.415 (0.000)	Partial
PIRR	-0.294 (0.000)	-0.223 (0.000)	0.269 (0.000)	3.600 (0.000)	Partial
PDEC	-0.402 (0.000)	-0.283 (0.000)	0.269 (0.000)	-0.354 (0.000)	Partial
PNOV	0.685 (0.000)	0.136 (0.027)	0.269 (0.000)	0.314 (0.081)	Full
PINT	0.336 (0.000)	0.058 (0.351)	0.269 (0.000)	0.321 (0.000)	None
PSEF	0.499 (0.000)	0.640 (0.000)	0.269 (0.000)	0.554 (0.000)	Partial

**Figure 1 : Conceptual Framework**

## **ABSTRACTS**

# Achieving Work-Life Balance in times of Uncertainty: The way forward to being Happy

I. K. Peiris<sup>1\*</sup>, R. Ulluwishewa<sup>2 R</sup>, R. Joshi<sup>3</sup>, C. Ramasundara<sup>4</sup>

*1\* Open Polytechnic, New Zealand  
indu.peiris@openpolytechnic.ac.nz*

*2 University of Sri Jayawardenepura, Sri Lanka  
ulluwishewa@sjp.ac.lk*

*3 Open Polytechnic, New Zealand  
renu.joshi@openpolytechnic.ac.nz*

*4 chamindaramasundara@yahoo.com*

## ABSTRACT

*Today, our jobs have become less secure as lifelong careers and more reliant on technology, where knowledge is shared in real-time irrespective of the location or time. Although we now have more flexibility over how we work, we must constantly manage the challenges of balancing three key areas: our mental and physical well-being, family members' well-being, and work performance and relationships. This paper focuses on how a spiritual approach can sustain subjective well-being (SWB) over time. It provides insights into the true nature of our perceived situational awareness and suggests that changing our conditioning related to temporal, emotional, and behavioral demands is possible. The paper conceptualizes that this cognitive reframing leads to a natural state of being happy. Thus, maintaining an overall sense of harmony in life without overdependence on material and social aspects.*

**Keywords:** Work-life balance, spirituality, subjective well-being, mindfulness, equanimity, hedonic adaptation.

# Surviving The Pandemic: Case of Homestay Units in The Kandy Tourism Area

N.P.S. Alwis<sup>1</sup>, D.N.D. Wickrama<sup>2\*</sup>, T.L.K. Thambawita<sup>3</sup>, K.M.I.A. Wickramasinghe<sup>4</sup>, R.S. Weeraratna<sup>5</sup>, A.A. Lokeshwara<sup>6</sup>

<sup>1</sup>*SLIIT Business School, Sri Lanka Institute of Information Technology, New Kandy Road, Malabe, Sri Lanka, pethumsandaruwan97@gmail.com*

<sup>2\*</sup>*SLIIT Business School, Sri Lanka Institute of Information Technology, New Kandy Road, Malabe, Sri Lanka, dulakshiwickrama99@gmail.com*

<sup>3</sup>*SLIIT Business School, Sri Lanka Institute of Information Technology, New Kandy Road, Malabe, Sri Lanka, lahirukushan12@gmail.com*

<sup>4</sup>*SLIIT Business School, Sri Lanka Institute of Information Technology, New Kandy Road, Malabe, Sri Lanka, alokaisuru7@gmail.com*

<sup>5</sup>*Senior Lecturer, SLIIT Business School, Sri Lanka Institute of Information Technology, New Kandy Road, Malabe, Sri Lanka, ranitha.w@slit.lk*

<sup>6</sup>*Lecturer, SLIIT Business School, Sri Lanka Institute of Information Technology, New Kandy Road, Malabe, Sri Lanka, anuja.l@slit.lk*

## ABSTRACT

*The homestay sector is gaining popularity among travelers as a different tourism offering that provides more genuine experience of the host country's culture. Homestay based tourism is strongly tied to the local society's culture, beliefs, and habits as well as to the natural environment. In addition to providing food and lodging, homestays offer cultural activities for travelers in the areas of learning, entertainment, and experience. Mainly in developing countries, tourism is being promoted in an effort to raise foreign income while simultaneously improving living standards in rural areas. However, COVID-19 pandemic has significantly impacted the entire tourism sector globally and have also influenced Sri Lanka's homestay sector, negatively. Hence, this study mainly aims to discuss the influence of the COVID-19 pandemic on the business performance of homestays in Sri Lanka, as well as to learn about the strategies used to survive during the pandemic. This study is carried out using a qualitative approach using primary data and semi-structured interviews in the Kandy region. Thematic analysis is chosen to conduct the analysis, and the convenience sampling approach is used as the sampling technique. Managers of six homestays are interviewed and seven themes are identified after a rigorous analysis, including the themes of: (1) reservations during the pandemic, (2) expenses to maintain the homestay during the pandemic, (3) effects of the pandemic on operations of the homestay, (4) changes implemented in homestays to prevent being infected from COVID-19, (5) response of the guests to the changes, (6) maintaining the business during the pandemic, and (7) strategies implemented to regain business performance. The extent to which the COVID – 19 pandemic affected the homestay business in the Kandy tourism area is*

*evident from the analysis. Moreover, the strategies used by managers to overcome these challenges are also discussed and this would assist as a supporting guide for the managers in the tourism sector to overcome such challenges and face them more confidently in future.*

**Keywords: Business Performance, Business Strategies, COVID-19 Pandemic, Homestay, Kandy Tourism Area**

# **Sri Lanka's Foreign Exchange Crisis: A Causality Diagnostic Analysis**

T.L. Gunaruwan<sup>1</sup>, P.T.D. Liyanage<sup>2\*</sup>

<sup>1</sup> *Department of Economics, University of Colombo, Sri Lanka.*  
*tlgun@econ.cmb.ac.lk*

<sup>2\*</sup> *Department of Entrepreneurship, University of Sri Jayewardenepura, Sri Lanka.*

*pubudinil@sjp.ac.lk*

## **ABSTRACT**

*Economic crisis has been among the trending research areas globally during the past few decades. Its importance is omnipresent due to the timely requirement of knowing the causes and remedies for such economic crises. Given the current conjuncture of Sri Lanka facing an apparently unprecedented economic crisis, a diagnostic analysis was conducted on its status and evolution over the years, with the intention of identifying the drivers of the crisis, and this paper is an attempt to present its outcomes. An extensive literature survey was thus conducted, followed by a descriptive analysis. Trend analysis deploying graphical method was used as the analytical technique, and the results were interpreted using political economic reasoning.*

*Literature survey revealed a number of “models” interpreting causality of past crises; three main models being (a) the first generation, specifying crises as caused due to the fiscal deficits leading the governments to cover those through seignorage, (b) the second generation, depicting the conflict between a fixed exchange regime and the desire to implement an expansionary monetary policy as the main cause, and (c) the third generation, finding causality in banking system related issues necessitating Governmental bail out packages. Indian crisis, on the other hand, has been cited as being unable to be categorised under any of these three models, but caused due to excessive imports, accelerated after trade liberalisation. The trend patterns pertaining to the Sri Lankan current account balances and the foreign debt profile since 1977 revealed close resemblance to that of the Indian crisis more than to those explained by the other models.*

*With the light shed from literature, it could thus be inferred that the persistent*

*trade and current account deficits owing to uncontrolled imports ever since liberalisation, and the resultant accumulated foreign debt, have been the root causes behind the foreign exchange crisis in Sri Lanka, while weak and undisciplined public finance policies, failure to move into high value-added and strategic industrialisation and wide income inequality would have been its possible support factors. Therefore, the research outcomes yielded caution signals if policy makers consider availing further liberalisation of the economy as the remedial strategy to surmount the present crisis.*

**Keywords:** Economic Crisis, Literature Survey, Foreign exchange crisis

**JEL Codes:** F32, F34, F43, H12, H63, N15, O24, P33

# The Heat Cycle and Stock Returns: Evidence from Sri Lanka

A. L. Gunasekara<sup>1\*</sup> and P.D. Nimal<sup>2</sup>

<sup>1</sup>Department of Finance, University of Kelaniya, Sri Lanka  
gunasekaral@kln.ac.lk

<sup>2</sup>Department of Finance, University of Sri Jayewardenepura, Sri Lanka  
pdnimal@sjp.ac.lk

## ABSTRACT

*We investigate whether the High Heat and stock returns are associated by considering the National Weather Service Heat Index as a measure of hot weather. Further, this investigation on heat and asset price association is motivated in a context where the support for the temperature has weakened with the documented evidence. We hypothesize that stock returns turn negative during high heat onset and they recover during high heat recovery. In order to achieve our purpose, we use daily and weekly stock index returns of ASPI of Colombo Stock Exchange and weather data from 2010 to 2021. The results of comparison test, ARMA and GRACH models confirm that the stock returns decline during high heat onset. However, we find weak support for positive high heat recovery impact. Finally, the findings of this study is important to practitioners to time their investments. The findings imply that negative returns occur in high heat onset make stock prices cheaper.*

**Keywords:** Stock Returns, High Heat, Weather Anomaly

**JEL Codes** G12, G14, G41

# **Determinants of Financial Inclusion: Evidence from Kurunegala District of Sri Lanka**

**\*S.N.R.F. Dias<sup>1</sup>, K.L.W Perera<sup>2</sup>**

*<sup>1</sup>Department of Banking and Finance, Faculty of Business Studies and Finance,  
Wayamba University of Sri Lanka,*

*fiona@wyb.ac.lk*

*<sup>2</sup>Department of Finance, Faculty of Management Studies and Commerce,  
University of Sri Jayewardenepura, Sri Lanka,*

*wasantha.perera@sjp.ac.lk*

## **ABSTRACT**

*Financial Inclusion has now being identified as a global phenomenon. Empirical studies have proven that Financial Inclusion is a key advocate in reducing poverty, income inequalities, promoting economic development and living standard of the people. The primary purpose of this study was to investigate the decisive factors which determine the Financial Inclusion of poor and low-income earners who have been involuntarily excluded from the formal financial system. Primary data was collected through a structured questionnaire from 420 Samurdhi beneficiaries in Kurunegala District as it recorded the highest income disparity in Sri Lanka. A Structural Equation Modelling which comprised with a Confirmatory Factor Analysis and a Path Analysis were performed using SPSS AMOS 23 to identify the major determinants of Financial Inclusion of poor and low income earners in Kurunegala District of Sri Lanka. Based on empirical and theoretical literature, the study has identified four major factors to develop its conceptualized model namely, financial literacy, awareness, cost and availability of financial facilities. The individual specific factors namely, financial literacy and awareness were classified as demand side factors and institutional specific factors namely, cost and availability were classified as supply side factors. The study findings revealed that financial literacy, awareness on financial facilities and Cost of using financial facilities were having a direct significant impact on Financial Inclusion where availability of financial facilities was not having a significant direct impact. But yet through several model modifications, availability factor was identified as a mediator to achieve Financial Inclusion. Thus, the study concluded that both demand and supply side factors effect on Financial Inclusion where financial literacy has identified as the most significant determinant. The stakeholders*

*in the field of study should be more heedful on identified determinants and mainly on enhancing the financial literacy of the excluded population in order to achieve higher level of Financial Inclusion within the poor and low-income earners in the country. This study is unique in presenting a structural model with the combination of both supply side and demand side factors to identify the Financial Inclusion determinants in poor and low-income earners and it has modified the hypothesized model to identify best fit model to the sample data.*

**Keywords:** Financial Inclusion, Financial Literacy, Awareness, Availability, Cost

# Behavioural Factors Affecting Household Over-Indebtedness a Systematic Review

B. P. U. K. Biyanwila<sup>1\*</sup>, P. A. N. S. Anuradha<sup>2</sup>

<sup>1</sup>*Faculty of Graduate Studies, University of Sri Jayewardenepura, Sri Lanka*  
*priyanthabiyanwila@gmail.com*

<sup>2</sup>*Department of Finance, University of Sri Jayewardenepura, Sri Lanka*  
*anuradha@sjp.ac.lk*

## ABSTRACT

*Household over-indebtedness is a significant issue in many parts of the world and has extremely detrimental socioeconomic effects. Separate studies have found that macroeconomic, demographic, and behavioural factors account for the majority of the variance in household over-indebtedness; behavioural components, however, have gotten less attention. The goal of this study is to review the behavioural factors that affect household over-indebtedness. In identifying relevant empirical studies on behavioural factors of household over-indebtedness, databases such as Scopus, Web of Science, Emerging Sources Citation Index, Social Sciences Citation Index, etc. were reviewed. During this search, 267 articles were initially screened, but, the preferred reporting items for systematic reviews and meta-analyses (PRISMA) framework was applied to select the most appropriate, well-cited and recent 52 articles. The most significant behavioural variables of household over-indebtedness are, thus, financial literacy, risk perception, materialism, and emotions. These factors are well-established in many developed economies and their findings are consistent with projection bias theory, behavioural life cycle theory, and prospect theory. Moreover, separate studies have identified that macroeconomic and demographic factors influence household over-indebtedness. More investigation is necessary, nevertheless, to understand how macroeconomic, demographic, and behavioural factors interact to influence household over-indebtedness. As Keynes' general theory of employment, interest and money states that macroeconomic factors could influence individual financial behaviour. Moreover, Albert Ando and Franco Modigliani's life cycle hypothesis of savings states that demographic factors play a significant role in determining individual financial behaviour. Therefore, in our suggested conceptual model, macroeconomic and demographic factors are included as mediators and moderators, respectively, between behavioural variables and household over-indebtedness. Once this model has been tested, the findings may greatly aid the government, central bank, financial institutions, bank managers, credit officers, and other policymakers in their quest to discover answers to the problem of household over-indebtedness.*

**Keywords:** Household over-indebtedness, financial literacy, risk perception, materialism, emotions, macroeconomic and demographic factors.

# **Mothers' Perception of Entrepreneurship and the Factors Hindering the Children's Choice of Entrepreneurship: An Examination of Sri Lankan Mothers**

E.S. Wickramasekera<sup>1</sup>, G. K. Paranamana<sup>2\*</sup>, D. N. Wickramasekera<sup>3</sup>,  
Ulluwishewa<sup>4</sup>

<sup>1</sup>*Sri Jayewardenepura University, Sri Lanka, eshwik@gmail.com*

<sup>2\*</sup>*International College of Business and Technology Southern Campus, Sri Lanka, gayasha123@yahoo.com*

<sup>3</sup>*Sri Jayewardenepura University, Sri Lanka, dushwik@gmail.com*

<sup>4</sup>*Center for Spirituality in Sustainable Business Management, Sri Jayawardenepura University, Sri Lanka, ulluwishewa@sjp.ac.lk*

## **ABSTRACT**

*The purpose of the study is to explore how Sri Lankan mothers influence their children to become entrepreneurs which are determined by how they perceive the concept of entrepreneurship and the factors that make the mothers reluctant to make their children choose entrepreneurship as their future career and from encouraging their children to become entrepreneurs. Therefore, the primary objective of this current study is to provide insight into the factors that would make a mother fear letting their children become an entrepreneur in Sri Lanka. This research follows an inductive approach with a basic qualitative study. A sample of 26 was used and individuals were considered as the unit of analysis in the study. The sample consisted of mothers (10), entrepreneurs (12), professionals (02), and full-time and undergraduate students (02) who were graduates and undergraduates and those who have started up their own businesses and have given up due to the negative influence of their parents. The understanding and interpretation of the concept of entrepreneurship lead to the exposure of the relationship between the mother's role in creating an entrepreneur. The results show that mothers were aware of the concept of entrepreneurship. The existing economic and social-political background in addition to the instability of the country as well as the educational system with its poor contribution towards improving the entrepreneurial skills of a child along with the mothers' negative perception of entrepreneurship are identified as the three main factors that prevent mothers from inculcating entrepreneurial intentions in their children and avoid encouraging their children to become entrepreneurs.*

**Keywords:** Entrepreneurship, Perception about Entrepreneurship, Mothers' Perception about Entrepreneurship, Sri Lanka

# **A Study of Career Satisfaction of Sri Lankan Self-Initiated Expatriate Professionals in Qatar and Oman**

D.M. Mudalige

*University of Moratuwa, Sri Lanka*

*darshanadm@uom.lk*

## **ABSTRACT**

*With the impact of globalization, number of expatriates around the world is rising at a rapid rate and most of them are Self-Initiated Expatriate (SIE) workers. Substantial number of Sri Lankan migrant professionals are currently working or hoping to work in Middle East. Past research indicates several social issues arising out of these migrant workers as well as their career satisfaction is low. There is little research on antecedents of career satisfaction of SIE professionals working in Middle East from South Asia. The objective of this research is to identify the antecedents of career satisfaction of Sri Lankan SIE professionals in Oman and Qatar. A quantitative research study is designed, and three hypotheses are tested. The data used in this study are obtained from 105 respondents. Results indicate that career capital significantly positively affect the career adjustment and career satisfaction of the migrant professionals. Further, career capital and career adjustment explained 33% of the variance of career satisfaction. This research highlights the importance of proactive personality, motivation for expatriation, cultural intelligence on cultural adjustment and career satisfaction. This research provides valuable input to policy making in selection and encouragement of most suitable professional migrant workers who expect to migrate to Middle East from Sri Lanka.*

**Keywords:** Self-Initiated Expatriate, Career Capital, Career Adjustment

# A Machine Learning Approach to Predict GDP: A Case in Sri Lanka

T.M. Eratne<sup>1</sup> A. Mascrenghé<sup>2</sup>

<sup>1</sup> Robert Gordon University, UK

thari.eratne@gmail.com

<sup>2</sup> Informatics Institute of Technology, Colombo

alroy.m@iit.ac.lk

## ABSTRACT

*Machine learning approaches are widely getting adopted around the world. However, it is still a novel concept for economic policy makers and forecasters in Sri Lanka. The research is aiming to predict GDP of Sri Lanka using machine learning algorithms. The objectives of the project are to understand whether GDP of Sri Lanka could be predicted using the variables private consumption, government expenditure, domestic investment, FDI, net exports and carbon emission. The inclusion of Carbon emission is important as it will show the toll that the countries development is making on its environment. The data is extracted from World Bank database. 10 machine learning algorithms are used for the analysis - Multiple Linear Regression, Ridge Regression, LASSO Regression, Elastic Net Regression, Decision Tree Regression, Random Forest Regression, Support Vector Regression, XG Boost, K-Nearest Neighbor and Polynomial Regression. Two paths are followed when conducting the analysis. In Path 1 all variables are used for prediction and in Path 2 carbon emission is removed as it is not a macroeconomic variables and GDP is predicted using the 10 algorithms. Out of the algorithms implemented top three performing algorithms are Random Forest Regression, K-Nearest Neighbor and Extreme Gradient Booster under both paths. Performance of Random Forest Regression, K-Nearest Neighbor, Polynomial Regression and Support Vector Regression improved when carbon emission is removed from the dataset.*

**Key Words – Machine Learning, Gross Domestic Production, Sri Lanka, Predicting GDP**

# **The Impact of Social Media Marketing Dimensions on the Creation of Brand Awareness in the Sri Lankan Fashion Retail Sector**

\*H. Rajendran<sup>1</sup>, A.W.C.K. Sarathchandra<sup>2</sup>

<sup>1</sup> Faculty of Business, Informatics Institute of Technology, Sri Lanka  
harunyarajen@gmail.com

<sup>2</sup> Faculty of Business, Informatics Institute of Technology, Sri Lanka  
kumudini.s@iit.ac.lk

## **ABSTRACT**

*Social media has become the most popular and defining technology that has been popularly used in recent times. This usage ultimately explains why businesses reportedly use social media marketing (SMM) through Facebook and Instagram as a mainstream marketing communication tool for brand outreach. Although Sri Lankan fashion retailers have started to move to online business and utilize social media, they still use it as a communication tool rather than a strategic tool, without understanding its true purpose in the creation of brand awareness. This paper investigates the impact of social media marketing dimensions on the creation of brand awareness in the Sri Lankan fashion retail industry. This study is examined through a deductive approach and quantitative research via primary data sources (online survey distribution) and secondary data sources (journals and online publications) respectively. The study is conducted using a validated questionnaire distributed to a convenience sample of 250 participants. The data is collected, analyzed, and the findings on the relationship between the SMM dimensions and brand awareness are displayed with graphical representations. The hypothesis demonstrated that all five SMM dimensions (entertainment, customization, interaction, electronic word-of-mouth, and trendiness) have an impact on the creation of brand awareness. Social media is a marketing medium for generating brand awareness. However, it remains to be seen how appropriate these dimensions are in enhancing consumer brand awareness. This study contributes to the development of a brand awareness model based on the SMM dimensions, which will help researchers and fashion retail businesses comprehend the influence of these dimensions on the creation of brand awareness. The study concludes with recommendations for future studies aimed at broadening research objectives and significant practical implications for the execution and management of social media marketing using the five SMM dimensions for fashion retailers*

*to build brand outreach in the highly competitive online fashion market.*

**Keywords: Social Media Marketing Dimensions, Brand Awareness, Sri Lankan Fashion Retail Sector, Consumer-Brand Engagement, Brand Knowledge**

# **The Mothers' Role in Prospering a Mindful Consumer in Sri Lanka**

E.S. Wickramasekera<sup>1\*</sup>, G. K. Paranamana<sup>2</sup>, Ulluwishewa<sup>3</sup>

*<sup>1\*</sup> University of Sri Jayewardenepura, Sri Lanka  
eshwik@gmail.com*

*<sup>2</sup>International College of Business and Technology Southern Campus, Sri Lanka  
gayasha123@yahoo.com*

*<sup>3</sup>Center for Spirituality in Sustainable Business Management  
University of Sri Jayewardenepura, Sri Lanka  
ulluwishewa@sjp.ac.lk*

## **ABSTRACT**

*This study provides novel insights on the socio-structural elements that support (or undermine) domestic daily mindful consumption behaviors of kids and young adults of Sri Lanka. Both mothers and children in Sri Lanka were investigated as mothers' influence the adoption of mindful consumption of their children in their homes. Therefore, the findings presented are derived from in-depth interviews with mothers and children. In the context of Sri Lanka, the process of mindful consumption and its adoption at home has been explored with an aim to understand how mothers have influenced their children in becoming mindful consumers and few adults of different professions to understand how their mothers have influenced them in becoming mindful consumers in their childhood days. The findings enlighten our understanding of not only how mothers have influenced their children in becoming mindful consumers but also about the Mindful consumption behaviors of kids and young adults in Sri Lanka in the household. Thus, this research indicates that mothers act as drivers of mindful consumption behaviour in the home. Accordingly, it was evident that the Sri Lankan mothers are encouraging the child's mindset and behavior in terms of Limited Acquisitive consumption, Poor Aspirational consumption, Limited Repetitive consumption, caring for community, caring for nature, and caring for self were found as the aspects of mindful consumption that were influenced by the mothers. Reducing, Reusing, Rejecting, Recycling and Redefining were the common mindful practices that were inspired by mothers which were highlighted by the respondents as shaped by mothers in terms of the child's mindful mindset and mindful behavior. The domestic mindful consumption practices adopted and are taught to the kids and young adults have practical implications for businesses that want to maximize stakeholder satisfaction through their corporate social responsibility activities and expand their opportunities for goodwill and company growth. Finally, this study implies the practical implications in managerial and social aspects to improve the mindfulness and thereby to accomplish the goal, sustainability.*

**Keywords – Mindfulness, Mindful Consumption, Children, Mothers, Sri Lanka**

# **Online Learning as an alternative Delivery Mode for the New Normal: Examining the Factors Influencing the Online Learning Readiness of Management Undergraduates**

M.M.N. Chathuranga<sup>1\*</sup> P.S. Dissanayake<sup>2</sup>

<sup>1</sup>*Lecturer (Probationary), Department of Business Administration, University of Sri Jayewardenepura.*

*nirmal@sjp.ac.lk*

<sup>2</sup>*Temporary Assistant Lecturer, Department of Business Economics, University of Sri Jayewardenepura.*

*pasindudissanayake@sjp.ac.lk*

## **ABSTRACT**

*Despite challenges from both teachers and students in engaging in online teaching and learning, schools and universities intervened with E-learning as an alternative mode of teaching and learning for the new normal. Therefore, this quantitative study aimed to investigate the factors that influence the online learning readiness of management undergraduates at a selected state university in Sri Lanka. The respondents of the study are 477 management undergraduates from the chosen university. Initially, it was discovered that undergraduates are well-prepared for online learning. The correlation test revealed that the student's degree year, the device used in online learning, device quality, internet strength, and weekly hours spent on online learning are all related to the student's readiness for online learning. According to the findings', online learning readiness is heavily influenced by factors such as the student's overall technology skills, access to technology infrastructure, online communication, online learning motivation, self-directed learning, and learner control. This study provides implications for the education industry in planning and executing their online learning, distance learning, and hybrid learning programs.*

**Keywords: Education; Online learning; Readiness; Undergraduates; University**

# **Factors Influencing Operational Performance: A Study on The Outpatient Department of The National Hospital In Colombo Using Lean Six Sigma Methodologies**

S. Perera<sup>1\*</sup>, M. Sulakshana<sup>2\*</sup>, R. Himendra<sup>3</sup>, S. Thelijagoda<sup>4</sup>

<sup>1\*24</sup> SLIIT Business School, Sri Lanka Institute of Information Technology, Malabe, Sri Lanka

<sup>3</sup> Asia e University, Subang Jaya, Malaysia

shazescorpion4@gmail.com

## **ABSTRACT**

*As a result of high costs, many hospitals are working to enhance their operations and services by putting effective initiatives like Lean Six Sigma into practice (Inal et al., 2018). Based on previous research articles and observations of the hospital's current state, we concluded that operational performance is the most crucial concern for the outpatient department (OPD) of the National Hospital of Sri Lanka (NHSL), which provides a variety of medical services (Ranasinghe et al., 2021). Sri Lankans are not paying enough attention to this topic, even though many governments in other nations have used Lean approaches to handle their difficulties (Ilankoon et al., 2021). The primary objective of this research study was to determine the relationship between operational performance influencing factors and the operational performance in the OPD of the National Hospital in Colombo. The focus on Lean, problem-solving techniques, effective communication, and employee awareness was chosen as the independent factors, while operational performance success was selected as the dependent variable. SPSS statistical software was used to analyze the quantitative data. Using Morgan's sample calculation, 242 people were selected as the sample from the 650-employee population. The theories chosen for this study turned out to be the most correct, and all the aspects of the independent variables that were wanted to build the conceptual framework had an impact on how well the NHSL's OPD performed in terms of operations. The researchers also sent the NHSL a set of recommendations based on their findings. The findings are applicable to other hospitals in Sri Lanka, even though the research was limited to the NHSL.*

**Keywords:** Lean Six Sigma, Operational Performance, National hospital in Sri Lanka, Outpatient Department, Problem Solving



**Faculty of Management Studies and Commerce**  
**University of Sri Jayewardenepura**  
**Nugegoda, Sri Lanka.**

e: [icbm@sjp.ac.lk](mailto:icbm@sjp.ac.lk)  
w: [www.icbm.sjp.ac.lk](http://www.icbm.sjp.ac.lk)



[www.icbm.sjp.ac.lk](http://www.icbm.sjp.ac.lk)