20TH INTERNATIONAL CONFERENCE ON BUSINESS MANAGEMENT

"Resilience and Reinvention for Sustainable Development in the VUCA world."

CONFERENCE PROCEEDINGS

February 29th & March 01st 2024

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

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Preface

The International Conference on Business Management (ICBM) has been an annual intellectual platform for the global academic, industry, and practitioner communities. As we embark on the proceedings of the 20th edition of this esteemed conference, we reflect on the success and scholarly vigor of the previous years 'conferences. For the 20th consecutive time, ICBM is hosted by the Faculty of Management Studies and Commerce (FMSC), University of Sri Jayewardenepura, as the *"Centre of Excellence"* in Management education in Sri Lanka on 29th of February and 1st of March 2024.

The year 2024 is a testament to resilience and adaptability, echoing the need for continuous evolution in the face of challenges. Building on the momentum of the previous year, the theme for ICBM 2024 resonates with the contemporary dynamics of our world - "Resilience and Reinvention for Sustainable Development in the VUCA World." The volatile, uncertain, complex, and ambiguous nature of our current environment demands a collective exploration of strategies that foster not only recovery but also sustainable growth.

In response to the global call for scholarly collaboration, ICBM 2024 invites contributions from researchers and practitioners worldwide to share their insights, experiences, and research findings on resilience and reinvention in business management. The VUCA (Volatile, Uncertain, Complex, Ambiguous) world necessitates innovative solutions, and the conference aims to serve as a platform for intellectual exchange that goes beyond geographical boundaries.

The hybrid mode of the previous year, successfully implemented amid challenging economic conditions, highlighted the adaptability of the academic community. This year, we anticipate an even more diverse and inclusive participation, with the continuation of a hybrid format to accommodate global audiences and more interactive and engaging physical participation throughout the conference segments. Authors presented their papers concurrent sessions under 14 tracks. We owe big thanks to the paper reviewers and discussants for their priceless services rendered to keep up the professional conduct.

We extend our sincere gratitude to Professor Johannes Dumay from the Department of Accounting and Corporate Governance at Macquarie University, Australia, for his exceptional keynote addresses at both the International Conference on Business Management and the PhD colloquium.

In addition to the main conference with Keynote Speaker, the conference will feature, an Undergraduate Research Symposium, a PhD Colloquium, and a Business Forum, fostering engagement across various dimensions of business management among academic scholars and industry practitioners. The PhD Colloquium, designed as a nurturing ground for the next generation of academic researchers, will provide an opportunity for doctoral candidates to present their research-in-progress to an international audience, fostering collaboration and networking across diverse research fields.

The Business Forum, a crucial component of ICBM 2024, will bring together industry practitioners and academia to engage in a timely dialogue on resilience strategies in the face of economic challenges. Against the backdrop of a post-pandemic world and ongoing economic uncertainties, this forum aims to explore and reveal the strategies adopted by local corporates for equitable recovery, offering valuable insights for academic discourse and learning.

Further, 05 case studies were developed with the collaboration of local organizations through a lens of practical application where each case study explores innovative strategies employed by these organizations to navigate the uncertainties of the volatile, uncertain, complex, and ambiguous (VUCA) global landscape.

The Committee expresses its gratitude to Senior Professor Sampath Amaratunge, Chairman of the University Grants Commission, for the substantial support and guidance provided in organizing this event. Additionally, heartfelt thanks are extended to Senior Professor Pathmalal M. Manage, Vice Chancellor of the University of Sri Jayewardenepura, for consistent encouragement and support throughout. The leadership, inspiration, and guidance of Dr. Dushan Jayawickrama, Dean of the Faculty of Management Studies and Commerce, are acknowledged with great appreciation. The Committee sincerely thanks the panel of reviewers for their invaluable contribution to upholding the academic standards of ICBM. Special recognition is extended to Information Technology Resource Centre for their tireless efforts from the inception to the conclusion of the Conference.

The Organizing Committee remains steadfast in its dedication to upholding the academic excellence synonymous with ICBM 2024. We eagerly anticipate another year of enriching collaboration, exploration, and the dissemination of knowledge.

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Message from the Vice- Chancellor

I am delighted to extend this message for the 20th International Conference on Business Management (ICBM 2024), hosted by the Faculty of Management Studies and Commerce at the University of Sri Jayewardenepura, under the theme of "Resilience and Reinvention for Sustainable Development in the VUCA World."

The University of Sri Jayewardenepura (USJ), renowned for its commitment to knowledge creation and dissemination, proudly embraces this pivotal conference. The chosen theme captures the essence of our contemporary global challenges, emphasizing the critical need for resilience and innovation in fostering sustainable development amidst the complexities of the VUCA world.

ICBM 2024 serves as a beacon of intellectual discourse, providing a platform for scholars and practitioners to engage in meaningful dialogue, share insights, and explore innovative strategies for addressing the multifaceted challenges of our era. It offers a unique opportunity to harness collective wisdom towards a more resilient and sustainable future.

I extend my heartfelt gratitude to the conference co-chairs, organizing committee and the Dean of the Faculty for their dedication and tireless efforts in organizing this significant event. I also commend the invaluable contributions of the business community and scholars, both local and international, in enriching the conference.

To all participants, I offer my best wishes for a fruitful and inspiring conference experience. May your discussions and deliberations lead to actionable insights and transformative initiatives that pave the way for a more resilient and sustainable future for all.

Senior Professor Pathmalal M. Manage
Vice-Chancellor
University of Sri Jayewardenepura
Colombo, Sri Lanka

Message from the Dean

It brings me great pleasure to extend my heartfelt gratitude to all the main contributors of the 20th International Conference on Business Management (ICBM 2024), which we proudly consider the most significant research event in our academic calendar.

As we celebrate the milestone of the 20th iteration of the ICBM, I extend my warmest congratulations to the paper presenters whose scholarly contributions enrich the intellectual discourse of our community.

I extend my sincerest congratulations to the Organizing Committee for their exceptional efforts in orchestrating this significant event. This year, I am particularly delighted to witness the conference taking on a new shape and format, aligning with a timely theme, "Resilience and Reinvention for Sustainable Development in the VUCA world."

The ICBM serves as a beacon of academic excellence, fostering collaboration and innovation across diverse management disciplines. I am confident that this year's conference will continue to uphold this tradition, sparking meaningful dialogue and generating impactful research outcomes.

To all participants, organizers, and attendees, I extend my sincerest congratulations and best wishes for a successful and fruitful conference.
Thank you.

Dr. Dushan Jayawickrama
Dean, Faculty of Management Studies and Commerce
University of Sri Jayewardenepura

Message from the Co-Chairs

Dr. Sandamali Galdolage
Co-Chair, ICBM 2024

Dr. Shashikala Subhashini
Co-Chair, ICBM 2024

With sincere enthusiasm, we extend our warmest greetings to you all as we inaugurate the 20th International Conference on Business Management (ICBM 2024), proudly hosted by the distinguished Faculty of Management Studies and Commerce at the University of Sri Jayewardenepura. Under the thought-provoking theme of "Resilience and Reinvention for Sustainable Development in the VUCA World" we embark on a collective journey of exploration and innovation, poised to address the intricate challenges of our dynamic global landscape.

As Co-Chairs of ICBM 2024, we are honored to spearhead this intellectual endeavor, fostering collaboration and dialogue among esteemed scholars, practitioners, and forward-thinkers worldwide. Together, we endeavor to leverage our collective insights and expertise to forge pathways towards a more resilient and sustainable future. Our heartfelt appreciation goes to the dedicated organizing committee whose unwavering commitment has brought this conference to fruition. We also extend our gratitude to the Dean of the Faculty and the Vice-Chancellor of the university for their dedicated support and leadership.

We extend our best wishes for an inspiring and fruitful conference experience. May our collective efforts yield actionable solutions and transformative ideas that propel us towards a brighter tomorrow.

Co-Chairs, ICBM 2024

Conference Tracks

Navigating Resilient Economies for a Sustainable Future

Sustainable Business Management in an Age of Crisis

Sustainable Finance and Accounting

A Convergence of Technologies for Sustainable Growth

Public Policy, Law, and Integrated Assessment for a Sustainable Future

The Learning Blend in Education Management

Marketing in the Age of Digital Transformation

Tourism and Hospitality Management in a Sustainable Economy

Business Process Re-engineering, Operations & Technology Management

Building a Sustainable Workplace through HRM and Labour Relations

Entrepreneurial Leadership in Sustainable SMEs

Building Urban Futures and Managing Real Estate

Multidisciplinary

List of Research Titles and Authors

Sustainable Business Management in an Age of Crisis

Sustainable Finance and Accounting

Public Policy, Law, and Integrated Assessment for a Sustainable Future

The Learning Blend in Education Management

Marketing in the Age of Digital Transformation

Tourism & Hospitality Management in a Sustainable Economy

Business Process Re-engineering, Operations & Technology Management

Building a Sustainable Workplace through HRM and Labour Relations

Entrepreneurial Leadership in Sustainable SMEs

Abstracts

Carbon Emission Reduction and Entrepreneurial Energy Efficiency Orientation: The Mediating Role of Barriers to Green Practices

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ABSTRACT

Motivated by the growing attention on climate change and the crucial role that businesses could play in reducing greenhouse gas emissions, this study investigates entrepreneurial energy efficiency orientation in the context of carbon emission reduction initiatives of small-and medium-sized enterprises (SMEs). We enhance the understanding of climate change action of SMEs by taking into account the mediating mechanism (i.e., identifying barriers to green practices) through which firm entrepreneurial energy efficiency orientation leads to superior carbon emission reduction initiatives. A survey of 224 SMEs in the Greater Accra region, Ghana, West Africa supported the direct impact of entrepreneurial energy efficiency orientation on overcoming barriers to green practices, as well as the mediating role of identifying barriers to green practices in this focal relationship. Structural Equation modelling (SEM) technique has been used to analyse the data gathered. These findings reveal the importance of entrepreneurial energy efficiency orientation and identification of green barriers in helping SMEs overcome barriers to green practices and improving carbon emission reduction initiatives. This study makes several new contributions to the extant SMEs carbon emission literature and practical implications for SMEs and authorities those encourage green economy and sustainable development. This study for first time examines the effects of Entrepreneurial Energy efficiency Orientation on Green Planning, Green Barriers, Green Networking and Green Innovation in a combined framework. Even though there are many research papers have investigated the barriers to green practices in SMEs, these studies have not examined the intermediary role of green practices in between entrepreneurial energy efficiency orientation and Carbon emission reduction in SMEs. Apart from that, the direct and indirect effects of entrepreneurial energy orientation on carbon emission reduction have been less researched to date. These potential research gaps will be for first time addressed in this paper and final contribution will cater a novel knowledge for the literature.

Keywords: Carbon emission reduction, entrepreneurial energy efficiency orientation, green barriers, green planning, selection of green innovation

Exploring Sri Lanka's Tourist Image Perceptions through Travel Blog Narratives: A Netnographic Study

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ABSTRACT

The primary objective of this study was to investigate the post-visit destination image perceptions of international tourists concerning Sri Lanka, as articulated in travel blog narratives. The data were sourced from 85 comprehensive blog entries, all related to visits to Sri Lanka before the Easter attack and the onset of the Covid outbreak in 2019. The three-dimensional framework suggested by Etchner and Ritchie in 1991 provided the theoretical lens for the study. The study successfully identified robust images associated with both the functional and psychological attributes of the country. The overarching holistic images of Sri Lanka predominantly revolved around aspects such as its captivating scenic beauty, lush and green landscapes, compact yet diverse offerings, tranquil and peaceful atmosphere, and its tropical character. Interestingly, the findings revealed that unique images of Sri Lanka hold a relatively less prominent position in the minds of travellers when compared to other image dimensions. Additionally, there appeared to be inconsistencies between the post-visit images discovered in this study and the images projected by the official Sri Lanka Tourism website and other promotional materials.

Keywords: Destination, Destination Image, Sri Lanka, Travel blogs, Netnography

Economic Development's Alphabet Soup in the VUCA world: IS, NIS, NIE, EE, and EEE[1]

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ABSTRACT

This article focuses on the core of the growth of every economy: innovation and entrepreneurship; imagination, creativity, initiation, and diffusion. The challenge in today's evolving and globalized economics is to find the best approach to stimulating innovation and entrepreneurship. The conceptualization of an ecosystem has emerged as an attempt to explain the critical drivers of economic development: innovation and entrepreneurship. Five ecosystem models have been developed: Innovation Systems, National Innovation Systems, National Innovation Ecosystems, Entrepreneurial Ecosystems, and Entrepreneurial Education Ecosystems. These five ecosystem models are the principal focus of this study. These models are intended to explain the complex networks of individuals, institutions, and resources that facilitate the formation and growth of both innovative new ventures as well as innovative adaptations by established firms, governments, and communities. Innovatively contributing to the discourse on economic growth, this study not only scrutinizes the established ecosystem models of innovation and entrepreneurship but also pioneers a fresh perspective by proposing a modified approach aimed at fostering a nuanced comprehension of the fundamental drivers shaping innovative ventures in today's evolving and globalized economies. This paper discusses the present approach based on these models, identifies the models' shortcomings, and recommends a modified approach to developing a casual understanding, subject to empirical examination, of the critical drivers of innovation and entrepreneurship.

Keywords: Entrepreneurship, Innovation, National Innovation System, National Innovation Ecosystem, Entrepreneurial Ecosystem, Entrepreneurial Education Ecosystem

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Factors Influencing the Decision of IMF Assistance in The Sub-Saharan African Region

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ABSTRACT

This study investigates the likelihood of seeking International Monetary Fund (IMF) assistance in 39 Sub-Saharan African (SSA) countries across three time-based segments 2000-2022, 2017-2022 employing the panel probit model based on the data obtained from the World Bank and IMF. The paper presents six hypotheses regarding macro-economic variables that affect a country's decision to seek IMF assistance. The likelihood of a country seeking IMF assistance will increase by 14.9% and 0.28%, respectively, when General Government Gross Debt (GGGD) and inflation increase. Conversely, the likelihood of a country seeking IMF assistance will decrease by 41.97%, 3.81%, and 1.5%, respectively, when corruption, Gross Domestic Product (GDPG) and General Government net lending and borrowings (GGNLB) increase. However, our findings depict that there is no significant relationship between Current Account Balance (CAB) and inflation in a country seeking IMF assistance. Further, the repercussions of this study suggest that Sudan, Burundi, and Guinea-Bissau emerge as the first three primary nations seeking IMF assistance in all three timeframes. Since the applicability of the research findings in today's context may not give relevant insights, this study fills the gap in existing knowledge by comprehensively examining the influence of macroeconomic indicators on SSA countries decisions to seek IMF assistance in the present context. Further, the extensive analysis done in this research incorporating predicted probability to rank countries in SSA accordingly to determine which countries had been influenced highly by the macroeconomic indicators used in seeking IMF assistance will aid policymakers in SSA nations to encourage and improve fiscal management to build a more self-sufficient economic framework that diminishes the need for external financial assistance.

Keywords: IMF, Sub-Sharan African, GDP growth, Corruption, Inflation

Impact of Female Labor Force Participation and The Economic Growth in The Sri Lankan Context; An Analysis on The Sri Lankan Female Labor Force Participation and Determinants

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ABSTRACT

The purpose of this research is to examine the impact of female labor force participation on economic growth in Sri Lanka, using time series analysis and the ARDL model. The study covers 32 years from 1990 to 2021 and employs secondary data. The methodology adopted for this study is the autoregressive distributed lag (ARDL) bounds cointegration test, and ARDL error-correction model (ARDL-ECM). Though there are plenty of studies can be found which are based on women's employment and economic growth related to global scenarios, there are not any proper studies related to the Sri Lankan context. Therefore, this study intends to fulfill this research gap in the Sri Lankan context. The results obtained from the tests show the existence of both long-run and short-run relationships. The findings indicate a positive and significant relationship between female labor force participation and economic growth in Sri Lanka. The study shows that an increase in female labor force participation leads to an increase in economic growth in the long run, but the relationship becomes statistically insignificant in the short run. The results also suggest that there is a U-shaped relationship between female labor force participation and economic growth only in the long run.

The study provides valuable insights into the role of female labor force participation in the Sri Lankan economy and its impact on economic growth. The findings suggest that the Sri Lankan government should promote policies and initiatives that support women's participation in the labor force, as this would have a positive impact on the overall economic growth of the country. The results of this study can be used to develop gender-sensitive policies and programs that aim to increase female labor force participation and promote economic growth. The study also has implications for future research since the study is limited to the Sri Lankan context and the results may not be generalizable to other countries. In conclusion, this highlights the need for effective and integrated gender-sensitive policies and initiatives to support women's participation in the labor force. The results of this study have implications for policymakers and researchers and can be used to develop gender-sensitive policies and programs aimed at promoting economic growth.

Keywords: Female labor force participation, Economic growth, U-shaped relationship, Autoregressive distributed lag model, Gender-sensitive policies

Opportunities and Challenges in achieving Sustainable Economic Growth by expanding the Aquaculture and Mariculture Sectors in Sri Lanka

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ABSTRACT

Sri Lanka's location in the Indian Ocean and its cultural heritage has made it a center for international trade and commerce. Recognizing the potential of its marine resources, the country has started focusing on developing its blue economy to promote economic progress, livelihood enhancement, and employment opportunities while protecting the ocean ecosystem. The aquaculture and Mariculture sectors are crucial in this endeavor, and analyzing the opportunities and challenges in these sectors is essential to ensure sustainable and inclusive development. This research focuses on the opportunities and challenges of expanding Sri Lanka's blue economy, particularly in the aquaculture and Mariculture sectors. The qualitative research methodology was employed, with 20 key-person interviews conducted to gain insights into stakeholders' perspectives. Thematic analysis revealed various opportunities such as the global trend towards the Aquaculture and Mari culture, suitable geographical locations in Sri Lanka for Aquaculture and Mari culture, the variety of species to breed, and shrimp culture. It further recognized challenges such as capital issues, technical issues, diseases, transportation issues, and solutions to overcome those challenges including the need to invest more in aquaculture and Mariculture, enhance technology and management practices, encourage foreign collaboration, create a regulatory framework, and add value to production. The sustainable and thriving development of Sri Lanka's Aquaculture and Mariculture industry is crucial for economic growth, resource preservation, and biodiversity conservation. The blue economy, with the right approach, can significantly contribute to the country's economic growth while preserving its natural resources and cultural heritage.

Keywords: Blue Economy, Aquaculture, Mariculture, Fisheries

Navigating Challenges to LGBTIQ+ Inclusion: A Management Perspective on Diversity and Inclusion Policy and Practice

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ABSTRACT

Organizations commonly use diversity management policies and practices to improve justice and equality in the workplace. In Sri Lanka, few corporate sector organizations have made their LGBTIQ+ inclusive policies and practices publicly known. Even with these initiatives, it is doubtful if LGBTIQ+ discrimination can be completely eradicated, especially in non-Western contexts like Sri Lanka where traditional heterosexual masculinity still has a significant effect. Consequently, this paper explores obstacles to openness to LGBTIQ+ diversity in an organizational setting (Pride-H) in which non-discriminatory policies are well-designed and implemented. This study uses a qualitative approach to examine the nuances of LGBTIQ+ inclusion. Semi-structured in-depth interviews with sixteen participants illuminated the difficulties Pride-H has in promoting acceptance of LGBTIQ+ inclusiveness. The study identifies five main barriers that must be overcome before a truly inclusive workplace can be realized: exclusion of LGBTIQ+ individuals in the personal spaces, difficulties faced by LGBTIQ+ people who are closeted, stakeholder reluctance, microaggressions, and the dangers of stereotyping and unconscious biases. The analysis suggests that Pride-H should take aggressive steps to address these issues. Pride-H may become a harassment-free and zero-discriminatory workplace by tackling these problems head-on and becoming a notable role model for other organizations that support equality and diversity. This study adds to the larger conversation on diversity management by offering insights that can help firms comply with international business and human rights norms and promote improvements in the array of workplace inclusivity.

Keywords: Diversity management, LGBTIQ+ inclusion, Obstacles, Policy, Workplace equality

Effect of Organizational Culture in Implementing Knowledge Management Practices: with Special Reference to Domestic Systematically Important Banks in Sri Lanka

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ABSTRACT

Effective knowledge management practices and assessing knowledge have been discovered as necessary for a business to survive, which highlights the fact that knowledge management has developed into an asset for the banking industry. Knowledge management and organizational culture interact closely, which expands the possibilities for improving bank performance through socialization. The aforementioned facets depict the significance of how important organizational culture is to be identified when implementing knowledge management through socialization in the banking industry. The main aim of this study was to determine how organizational culture affected knowledge management practices through socialization in the banking industry. To undertake the research, a special focus has been placed on all four domestic systematically important banks in Sri Lanka. The study was created using an inductive methodology and the interpretivism position of epistemology. Primary research was conducted by selecting 20 executive-level staff from the head offices of all four banks. The study analysis was undertaken using a priori thematic analysis employing predetermined themes based on the SECI model to discover the organization's cultural dimensions. The organizational culture dimensions have been recognized as leadership, team, communication, and mentoring. The findings are to be further tested through a survey in generalizing the findings. The chosen bank in the study encourages prioritizing fostering knowledge management practices through improving the culture towards socialization.

Keywords: Organizational Culture, Knowledge Management, Socialization, Banking Sector

Experimenting the Impact of Organizational Mission Drift on Motivation and Effort of Nascent Social Workers in Sri Lanka

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ABSTRACT

The mission statement of the organization is a specific characteristic that defines the important functions which highlights the uniqueness and difference from the other organization in society. Non-government organizations are not profit-oriented in Sri Lanka. These non-governmental organizations are currently facing a financial crisis due to the economic downturn in Sri Lanka. Although the non-governmental organization has a pro-social mission, they have to change their mission towards profit-oriented due to the economic crisis. This change where an organization diverges from its main purpose of mission can be called the mission drift. The present study captured the impact of mission drift on the pro-social motivation and effort of the nascent social workers in non-governmental organizations. The Nascent social workers are people who are going to be social workers in the future. According to this study, the effort of the social workers is dependent on the anchoring effect of incentives. If employees are provided salary or incentives by the organization, employees exert more effort than the mission mismatch situation though the drifted mission of the organization to increase the productivity of the organization. It will be an advantage for non-governmental organizations to hire employees who match with organization's mission. When their pro-social mission is matched with the organization's mission, they exert more effort to increase the productivity of the organization even without any profit from the organization. However, non-government organizations have to drift their mission towards a profit-oriented mission due to the current economic crisis. In this situation, they can provide salary from the profit for employees to obtain the productivity of employee to the organization.

Keywords: Mission Drift, Pro social motivation, Nascent Social Workers, Non-Governmental Organization, Real Experiment

Constitution of plantation collective as a unique Sri Lankan organization: An ethnographic narrative

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ABSTRACT

The realm of organizational communication has broadened its scope beyond conventional workplaces to encompass non-traditional entities. This evolution stems from the Communicative Constitution of Organisation (CCO) perspective, emphasizing communication's role in shaping organizational dynamics within unconventional contexts. Employing the Four Flows model as its theoretical framework, this paper aims to explore how communication processes influence the tea plantation collective—a distinctive Sri Lankan organization. Motivated by the researcher's personal experiences and dedication to addressing inequalities in marginalized communities, the study utilized short-term organizational ethnography as its primary methodological approach. Conducted as part of the MSc in Management Degree program, this research faced time constraints, necessitating a focus on producing a high-value dissertation within set deadlines. The study primarily drew upon informal discussions, interviews, and observations as primary data sources alongside secondary data. Within the tea plantation community, the presence of the four flows—membership negotiation, reflexive self-structuring, activity coordination, and institutional positioning—is evident. Human agency propels this community, deeply rooted in Sri Lankan culture, valuing collective purpose, relationships, and oral traditions. The community's unity and shared ownership are reinforced by its inclination towards secrecy, creating a familial atmosphere and fostering a strong "we-feeling" among employees. Rejecting individualism, the community relies on shared ownership and oral agreements, fostering a cohesive familial character. Secrecy, not aimed at withholding information but limiting external communication, safeguards the community's collective interests. This study underscores the pivotal role of communication and human agency in molding and sustaining the plantation community as a distinct and tightly-knit organization.

Keywords: Plantation community, Communicative Constitution of Organisations (CCO), Four-flows (FF) model, Organisational ethnography, Short-term ethnography

Exploration of Discursive Norms of Gay, Lesbian and Transgender Employees in Katunayake Free Trade Zone

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ABSTRACT

The study focuses on the discursive norms of gay, lesbian, and transgender employees in Katunayake Free Trade Zone (KFTZ). KFTZ is the country's first Free-trade zone located approximately 29 km (18 miles) northeast of Colombo and is the largest of the country's eight FTZs. When emphasizing the study area of LGBT (Lesbian, Gay, Bisexual, and Transgender) individuals, global north has started research on the field but there is a lack of empirical findings related to Sri Lanka, which became the inspiration to conduct our study on the particular area. However, data relating to such people is extremely difficult to obtain due to socio-cultural and religious reasons. Talking about different sexual orientations is minimal as it is considered taboo in Sri Lankan society. Against this backdrop, we attempt to listen to people with different sexual orientations and to study the discursive norms in the KFTZ. This study sheds light on how discursive norms are reproduced in the apparel sector which has not yet been captured by scholars. The main research question of our study is, 'How the discursive norms are reproduced in the Katunayake Free Trade Zone with regards to gay, lesbian, and transgender factory floor workers in the Katunayake Free Trade Zone?' We occupied Queer theory by Judith Butler (1990) to theorize discursive norms and how discursive norms are reproduced in KFTZ in terms of gay, lesbian, and transgender employees in KFTZ.

We have selected a qualitative approach to conduct the study and have conducted 11 semi-structured interviews (gay (3), lesbian (2), and transgender (6) workers at KFTZ) and observations to gather data. We conducted a thematic analysis to analyze data. We have derived separate themes (6) as institutional contributions to reproducing heteronormativity, roots that fuel the reproduction of norms, public opinions backed by gendered stereotypes, changing 'self' and dual experience, gendered jobs, and religious dogmatism. Under each theme, we have discussed how norms are being reproduced in KFTZ. As theoretical contributions of the study, we bring how discursive norms are being produced in KFTZ and how they are paving the path toward inequalities in KFTZ in terms of sexuality. Further, the participants have socially deviant behaviors in terms of gender performance, which supports the fluidity of gender by dismantling the dichotomy of gender. We strictly adhered to ethical practices while conducting this study.

Keywords: Gay, lesbian and transgender workers, Discursive norms, Apparel sector, Queer theory, Inequalities at work, Sri Lanka

Transformational Leadership and Job Performance: The Roles of Emotional Exhaustion and Work Engagement

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ABSTRACT

This paper attempts to provide a theoretical explanation of how the employee's emotional exhaustion can alter the influence of transformational leadership on the employees' work engagement, which subsequently determines their job performance. Emotional exhaustion is commonly reported by numerous employees in diverse industries and this concept has received greater attention among scholars. Similarly, transformational leadership is widely discussed through numerous aspects in the existing literature. However, the extant literature reveals that emotional exhaustion in the arena of transformational leadership remains understudied and needs further investigation. Hence, based a review of the literature, this conceptual paper proposes that the employee's emotional exhaustion can increase or decrease the effect of transformational leadership on the employees' work engagement. Additionally, this paper proposes that transformational leadership can derive high job performance from employees by improving the employees' work engagement. This paper highlights addressing the gaps in the existing literature and contributing vastly to the literature and managerial practice.

Keywords: Transformational leadership, Emotional exhaustion, Work engagement, Job performance

Investor Response to Sovereign Debt Restructuring: Evidence from Sri Lanka

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ABSTRACT

The existing body of literature presents mixed views on the impact of sovereign debt restructuring announcements on corporate performance and capital market investments, highlighting the divergence of capital market investors' responses to such announcements in different financial markets. Given the absence of solid literature on investor reactions to sovereign debt restructuring announcements in Sri Lanka, we examine the response of investors in the Colombo Stock Exchange (CSE) to the official announcement of the 2023 sovereign debt restructuring. We employ the standard event study methodology to examine investor responses to the debt restructuring announcement in Sri Lanka. Our estimation window spans 240 days, while the test window covers 21 days (from day t-10 to day t+10). The market model is utilized to estimate expected returns, enabling the calculation of abnormal returns. The final sample consists of 265 stocks with return data available for the period from January 2022 to August 2023. Share prices, risk-free rates, and market index values are obtained from TR EIKON. We find significant positive average abnormal returns on the sovereign debt restructuring announcement date. Any abnormal positive return preceding the announcement is absent indicating no information leakage. Further, we find that the investors in the financial sector and the investors of large firms respond positively to the sovereign debt-restructuring announcement. This finding supports the notion that the large-scale private investors of sovereign bonds benefitted from the government's decision to restructure the domestic sovereign bonds owned by the Employee Provident Fund (EPF). This study provides new evidence on how investors respond to sovereign debt restructuring announcements in a frontier market using the event study methodology.

Keywords: Colombo Stock Exchange, Event study methodology, Investor response, Sovereign debt restructuring

The Determinants of Financial Technology Acceptance by the Undergraduates in Sri Lanka: With special reference to final-year undergraduates of the University of Sri Jayewardenepura

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ABSTRACT

The emergence of new technological advancements has offered its users a vast range of new arenas where financial technologies, which is also known as FinTech are one such new arena that has made its users banking and financial-related services and transactions easier and more accessible. Undergraduates who represent the younger generation of the country are more likely to be exposed to these new technologies in completing their academic and related other works. Though many surveys and research have been conducted by researchers from different countries to analyse the factors that affect to usage adaptation of financial technologies, Sri Lanka lacks consideration in relation to this particular field of study. Thereupon, to fill the existing gap in the field of study, this research intends to identify the key underlying determinants of the financial technology usage adaptation of the undergraduates of Sri Lanka by specifically referring to the final-year undergraduates of the University of Sri Jayewardenepura. 305 undergraduates were selected from three major faculties of the university through simple random sampling while gathering information through a structured questionnaire which is constructed upon 5-point Likert scale questions. Structural Equation Modelling has been used to analyze the existing relationship and the magnitude of the variables under consideration. Financial technology usage adaptation remains the dependent variable while Digital Accessibility, Convenience, Digital Capability, Personal Innovativeness, and Social Influence remain the independent variable of the phenomena under consideration. Digital Accessibility (r = 0.084, P= 0.039), Convenience (r = 0.263, P= 0.000), and Personal Innovativeness (r=0.557, P= 0.000) have been identified as the most influential factors determining financial technology usage adaptation, out of which Personal Innovativeness has identified the most significant and highly influential factor that determines the FinTech usage adaptation of final year undergraduates of University of Sri Jayewardenepura. The generated results of the study suggest useful insights to focus on popularizing financial technologies among undergraduates. Thereupon study provides valuable implications to empower FinTech usage among the undergraduate community in Sri Lanka.

Keywords: Financial Technology, Financial services, Final-Year Undergraduates, Usage Adaptation

The moderating effect of financial literacy on the relationship between cashless banking and the financial performance of SMEs in Sri Lanka

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ABSTRACT

The practice of conducting financial and banking transactions without using cash, banknotes, or coins is known as "cashless banking." This study aims to examine how financial literacy moderates the relationship between cashless banking and the financial performance of small and medium-sized businesses (SMEs) in Sri Lanka. The study employed a deductive approach and gathered data from 380 SMEs spread across Sri Lanka's nine provinces. As SPSS-based analysis, results show financial literacy has a positive and significant moderating effect on the relationship between Sri Lankan cashless banking and SMEs' financial performance. Additionally, the development of SMEs in Sri Lanka is significantly and positively impacted by cashless banking and financial performance. Owners of SMEs may enroll in financial literacy programs offered by organizations that support entrepreneurship to gain the knowledge and skills necessary to make informed financial decisions. The study demonstrates that financial literacy and cashless banking, which encourage effective and efficient utilization of their business operations, are necessary for SMEs to achieve financial performance. Besides, the study highlights the importance of financial literacy in promoting cashless banking, which is necessary for the growth of SMEs in developing economies.

Keywords: Cashless Banking, Financial literacy, Financial Performance, Small and Medium Scale Enterprises, Sri Lanka

Professionally steered: Accounting's impact in Sri Lanka's evolving business landscape

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ABSTRACT

This study investigates how the accounting profession in business established its authority within Sri Lanka's VUCA environment by leveraging its expertise. Drawing upon Abbott's sociological analysis, the research employs qualitative methods, combining documentary reviews and interviews conducted from August to October 2023. The findings reveal the accounting profession's adept response to post-COVID challenges, particularly in managing customer relations and navigating heightened competition. This involved integrating business processes with financial considerations, often within multidisciplinary teams acting as internal consultants. Practical implications underscore the significance of comprehensive education, training, and Continuous Professional Development (CPD), and the adoption of a triple bottom-line approach by businesses. Furthermore, the study highlights the importance of a profession's knowledge system in establishing jurisdiction, signaling a shift away from traditional closure strategies based on social class. This research contributes to the accounting professionalization literature by shedding light on the often-overlooked role of the accounting profession in business.

Keywords: Accounting for Business, Jurisdictional Claim, Triple Bottom Line, VUCA World

Institutionalization of beyond budgeting ideas is going beyond the traditional budgeting system: Literature Review

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ABSTRACT

Traditional budgeting is commonly used as a management control tool in organizations. However, there are limitations of traditional budgeting, and budgets have been heavily criticized due to such criticisms beyond budgeting techniques that have been developed. Identifying the gap in literature while budgeting involves improved budgeting systems, beyond budgeting is a management framework. Despite the claimed theoretical merits, and calls for organizations to move beyond budgeting, there is little understanding of how beyond budgeting is practiced in real-life organizations. Addressing the above gap, this research attempts to explore how budgeting ideas have been institutionalized in companies given the limitations of traditional budgeting systems in the prevailing rapidly changing business environment. The objective of this research is to Identify why the companies moved beyond budgeting ideas and abandoned the traditional budgeting system. This research discusses the literature review as a method for conducting research and provides an overview of the different types of reviews as well as some guidelines for both conducting and evaluating a literature review paper. This study would be an important addition to existing management accounting literature in the area of beyond budgeting. This research shows that the offer valuable insights to practicing managers on the implementation of beyond-budgeting ideas when faced with the limitations of traditional budgeting. This article is a comprehensive literature review that adds value to companies' forced offshoring beyond budget. The literature shows that researchers have tested the concept both theoretically and empirically. However, it appears that many companies are moving beyond budgeting due to various problems with the traditional budgeting system. In addition to that many research show that researchers are reluctant to publish studies beyond the budget due to lack of knowledge, theories and methodologies. This paper suggests that further research is needed on the beyond budgeting, and challenges, and issues resulting from the implementation of beyond budgeting.

Keywords: Traditional budgeting, Beyond budgeting, Institutionalization, Business environment, management framework

Digital Transformation of Internship Supervision and Evaluation: A Case Study of a Selected Department of a State University in Sri Lanka

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ABSTRACT

Digital transformation has become the trend in almost every industry nowadays which can also be adopted to improve the productivity of the processes in the higher education sector. It was evident from the literature that it lacks studies to identify how digital transformation using information systems could be adopted to improve the internship supervision and evaluation processes of universities, particularly in Sri Lanka. This research was carried out to identify the limitations of manual internship supervision and evaluation of undergraduates and to develop an information system to digitally transform the internship supervision and evaluation process to avoid such limitations. Department of Information Technology in the Faculty of Management Studies and Commerce at the University of Sri Jayewardenepura was chosen as the case for the study. Semi-structured interviews and document observations were used to identify the limitations of the manual process. The tediousness of manual document maintenance, the difficulty faced by interns in visiting the university frequently for document submissions while interning, and the lack of a common platform to coordinate with process stakeholders were identified as limitations. Thereafter a web-based information system was developed, termed ISES, that avoids those limitations by maintaining a training record book, submitting progress reports digitally, creating a common platform to co-ordinate all parties, and facilitating e-mail notifications to ensure better communication. ISES was later validated by interviewing the same users. This study adds novel findings to the theory area which lacks how digital transformation could facilitate effective internship supervision and evaluation in higher education institutes. As a practical implication, the ISES system developed as a result of this study could be adopted by any higher education institution that offers internships as a course in their degree programs to manage the supervision and evaluation process effectively.

Keywords: **Digital transformation, information systems, web-based information system, internship, internship supervision and evaluation**

Creating Sustainable Value through Consciousness-based Decision-Making in the Era of Artificial Intelligence

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ABSTRACT

In light of the continuous transformations in our environment and the unprecedented era humanity currently faces, the future landscape of work and decision-making is poised for a significant departure from our conventional norms. AI (Artificial Intelligence) experts widely acknowledge the relentless progress of AI and its pervasive influence on our lives. Within this context, the authors of this paper argue that forthcoming leaders must embrace more sophisticated and comprehensive approaches to decision-making, cultivating a mutually beneficial relationship with AI to ensure the survival of organizations. We present a rationale for an approach that comprehensively addresses all phases of problem-solving and decision-making. Our foundation rests on the belief that there is no singular correct method for approaching most real problems. Moreover, we acknowledge that single-frame approaches can lead to frame blindness. By examining decision-making through historical perspectives and considering practical wisdom, ethical concerns, environmental dynamics, and both individual and collective consciousness, this paper presents an integrated framework rooted in consciousness for decision-making. The intersection of ethics, moral consciousness, and artificial intelligence (AI) in decision-making is a critical and evolving landscape. Our proposed framework holds the potential for facilitating holistic decision-making in a rapidly evolving and increasingly complex world. We showcase the advantages of multi-framing by incorporating diverse perspectives from management, applied psychology literature, and the ethical domain. The authors posit that the benefits encompass the development of frame awareness, overcoming frame blindness, and gaining insights into multiple perspectives, including those of various constituents and stakeholders. These elements contribute to making choices that are more robust and sustainable, benefiting people and the planet.

Keywords: Consciousness, Decision-making, AI, Ethics, Practical Wisdom

Electronic Payment Behavior of Sri Lankan Youth and the Effect of COVID-19 Pandemic: A case of Kurunegala District

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ABSTRACT

Electronic payment systems have developed rapidly in recent years. This e-payment system replaced the role of money as a tool to payment. The presences of electronic payment transactions provide many conveniences and advantages for the consumer who purchases products at physical places as well as virtual places. However, the usage of electronic payments is now increasing in Sri Lanka. However, the majority of consumers use cash payment yet. Now Sri Lanka facing to COVID-19 pandemic. According to the World Health Organization, Cashless payments can stop the spread of COVID-19 through cash. The purpose of this study is to identify the level of payment usage and examine the factors that have contributed to the electronic payments in Kurunegala District Sri Lanka. The population of this study is electronic payment system users within 15-40 ages in Kurunegala District. This study was intended to gather information from 250 samples of youngers in Kurunegala District Sri Lanka. The total number of respondents voluntarily participated in an online survey. Respondents were asked to indicate their agreement or disagreement on the Five Point Likert Scale as the scaling method. This study consists of a moderate variable. Mean score and standard deviation were used for all the variables for univariate analysis and correlation coefficient was used for bivariate analysis. The hypotheses were tested using correlation and regression analysis. It's used for analysing the effect of moderate variables. According to survey data, facilitating conditions and usage of electronic payment had a strong positive relationship. Additionally, people use electronic payment systems to do their payments in COVID-19 pandemic. Therefore, study recommend conducting to awareness program, to increase infrastructure, electronic payment facilities to small grocery shop and promoting owners to deposit salaries of private sector employees into bank accounts. By following above facts, can be get the high electronic payment usage in Sri Lanka and can reduce spread of COVID-19 through cash.

Keywords: Electronic Payment System, COVID-19 and Economic Impact, Digital Payments, E-Commerce

Impact of Dress Code Policy on Job Performance of Female Teachers in Sri Lanka

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ABSTRACT

Clothing plays a crucial role in any society as an indicator to reflect the personality, culture, subcultures, religions, occupations, and moral values of individuals. The debate between formal and informal dress codes in the labor market is being seriously deliberation by many scholars. Especially, teachers are subjected to such discussions, because a teacher is considered to be a role model to students. In addition, the dress of teachers may have different implications than other professions. Since the dress code replicates the set of principles in an organization comprised of professionalism, such policies should be more important and proactive. Recently, different parties in Sri Lanka confronted with controversial ideas regarding female teacher's dress codes. However, the existing policies were not reformed and did not considerably measure the relationship between job performance and employee attire by relevant authorities in Sri Lanka. Thus, to examine the soundness of the prevailing dress code policy, the study surveyed the positive and negative impacts on job performance that female teachers encounter due to the dress code policy in Sri Lanka. Further, the study identified certain best practices that could imply modernizing the existing traditional dress code policies. The study was carried out as a qualitative study using in-depth interviews with individuals and group discussions. Fifteen participants were selected as the sample based on the judgmental sampling method while thematic analysis was used to analyze the collected data. Based on the results of interviews, three themes were discussed as the outcomes of the study including the effect of attire on professionalism, school culture and professional attire, and the challenges of wearing professional attire. The study emphasized the importance of adjusting the existing dress code policy for female teachers in Sri Lanka by adhering to the challenges of job performance by the attire.

Keywords: **Dress code policy, Female teachers, Job performance, Professional attire**

Knowledge Mapping of Green Innovation: A Systematic Literature Review

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ABSTRACT

Green innovations (GI) is an emerging field that presents an opportunity to thrive in the competitive market. To review this viewpoint the current study was conducted with the following objectives. a) To identify existing knowledge on green innovation and offer bibliographic insights through a systematic literature review (SLR), (b) To comprehend the areas in which research is lacking within the territory of green innovation. The SLR methodology was employed in this study, following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. 381 articles published between 2015 and 2023 were extracted from Lens.org. database for review. Additionally, a bibliometric analysis was conducted to fulfil the research objectives. The findings revealed that the field of green innovation lacks sufficient scholarly attention, despite being an emerging area. As a result, several gaps have been identified, encompassing various aspects of green innovation. These gaps include areas such as green innovation behavior, green finance, barriers to green innovation, green product innovation, green technological innovation, and more. Further, It provides recommendations for those interested in entering the field of green innovation, as well as information regarding which journals and articles to refer. This study adds to the existing body of knowledge on green innovation by addressing identified knowledge gaps. This knowledge contributes to future researchers aiming to design and conduct studies that target these identified research gaps.

Keywords: **Green innovation, knowledge mapping, research gaps, and systematic literature review**

Ethical Quandaries in Automated Communication Strategies in the Digital Public Relations Industry of Sri Lanka

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ABSTRACT

As the Public Relations Industry increasingly integrates AI-driven tools and automated communication mechanisms, concerns surrounding the ethical use of these technologies have gained significance. This study investigates the nuanced ethical challenges arising from the deployment of automated strategies, particularly focusing on issues related to transparency, authenticity, and the potential for misinformation dissemination. Through a comprehensive exploration of industry practices, regulations, and stakeholders' perspectives, this research provides insights into navigating and mitigating ethical quandaries within the context of Sri Lanka's digital public relations landscape. This study employs a qualitative methodology, specifically utilizing in-depth interviews conducted with renowned professionals within the Public Relations industry. It was revealed that Implementing ethical automated communication strategies in Sri Lanka's digital public relations industry involves prioritizing transparency by clearly disclosing AI involvement, ensuring data privacy aligns with local laws, and guaranteeing the accuracy of automated messages. Moreover, fostering respectful engagement through culturally sensitive language and implementing human oversight for complex situations is crucial. Equally important is ensuring equitable access to information while considering the long-term societal impact to create sustainable, community-centric communication strategies.

Keywords: Communication Strategies, Ethical Quandaries, Digital Public Relations

The Measurement of the University Students' Intention to Use Real-Time Online Learning in Sri Lanka: An Empirical Study with the Decomposition of the Theory of Planned Behaviour (TPB)

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ABSTRACT

Real-time online learning is a newly emerged paradigm in the education system across the world. The worldwide education system has experienced the new-normal mode of teaching and learning with the prime support of real-time online platforms especially during the COVID-19 pandemic. However, the existing body of knowledge has not sufficiently dealt with the student's acceptance of the new learning model even though the situation necessitates further exploration. To explore the student's intention to use real-time online learning, the Theory of Planned Behaviour (TPB) has been adopted as the primary theoretical model. Followingly, the study attempted to decompose the TPB if the antecedents were used three or more times in the literature from 2002 – 2022. Consequently, the study recognized Perceived Usefulness, Perceived Ease of Use, Perceived Risk, and Compatibility as the antecedents of Attitude, Perceived Self-Efficacy, and Facilitating Conditions as the antecedents of Perceived Behavioral Control. This study used a structured online questionnaire to collect the responses from students at national universities in Sri Lanka. Consequently, 382 responses were collected. Data were analyzed using SmartPLS 4 and the proposed hypotheses were tested using PLS-SEM. All of the antecedents are also demonstrated to have a significant positive impact on the corresponding constructs of the TPB, in addition to the hypotheses put forth on attitude, perceived behavioral control, and subjective norm with the behavioral intention to use. The findings will be beneficial specifically to the policymakers to formulate key strategies to incorporate real-time online learning in the education system, thus, education will become more accessible and affordable.

Keywords: Real-time Online learning, Theory of Planned Behavior (TPB), Decomposed TPB, Sri Lanka

Are They Ready to Embrace Diversity? Illuminating the Path of Management Undergraduates Towards Inclusive Excellence

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ABSTRACT

Fostering diversity and inclusion is essential in contemporary educational environments to every student's success. This study explores the crucial topic of undergraduate's readiness to embrace diversity in the academic environment. Based on the positivist ideology and emphasizing quantitative analysis, this study looks into the relationship between management undergraduates' attitudes toward inclusion and their willingness to accept different social groups. Accordingly, the questionnaire method was used to gather data from 324 respondents. The results showed that faculty students are quite ready to accept diversity in the university setting. It is interesting to note that undergraduates, whether they grew up in an urban or rural environment, feel more at ease working with classmates from different social backgrounds. Undergraduates, however, appear to be reluctant to involve individuals of other sexual orientations in university activities. Moreover, those who exhibit high levels of inclusion concerning factors like ability, gender, sexual orientation, rural/urban environment, and ethnicity also appear more open to accepting diversity. The implications of this study extend beyond the mere identification of prevalent opinions, offering practical insights for creating a more inclusive university community. The disparities uncovered emphasize the need for targeted campaigns aimed at changing attitudes, especially regarding sexual minorities. This study provides insightful information on the ongoing initiatives to foster inclusive and diverse learning settings, which pave the way for a more peaceful and encouraging campus community. This research underscores the importance of continuous efforts to bridge the existing gaps and cultivate a truly inclusive educational environment. Policymakers should focus on implementing strategies to address the identified disparities, fostering a more inclusive university community. Continuous awareness campaigns and educational programs can play a pivotal role in shaping a positive and accepting campus environment. By addressing specific challenges highlighted in this study, policymakers can contribute to the development of comprehensive and effective policies that support diversity and inclusion in higher education. Therefore, proactive measures and policy adjustments are essential for creating a more harmonious and supportive educational landscape.

Keywords: Attitudes, Diversity, Faculty, Inclusion, Readiness, Undergraduates

The Effect of Conspicuous Consumption on Social Identity Formation in the Branded Clothing Sector: The Mediating Effect of Product Symbolism

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ABSTRACT

Conspicuous consumption is regarded as a status-related consumption. Thus, products represent social standing, identity, and affiliation with a group. People use the symbolic meaning of products as an external manifestation of consumer identity and social connection to society. Hence, this study focuses on young adults' social identity formation aged 20-35 through the consumption of products that carry identity-related attributes with special reference to the branded clothing sector.

The main objective of this study was to examine the effect of conspicuous consumption on social identity formation and to test the mediating effect of product symbolism on the relationship between conspicuous consumption and social identity formation in the branded clothing sector of young adults. Using the Snowball sampling technique, data was gathered via a survey from 185 young adults aged 20-35 in Sri Lanka who wear branded clothes. The collected data were analyzed using regression analysis with the assistance of SPSS software. The findings revealed that the effect of conspicuous consumption on social identity formation mediated through product symbolism is statistically significant.

Knowing that young adults are driven by conspicuous consumption, marketers can differentiate their strategies. In markets where status and self-identity are highly regarded, marketers should ensure that their products offer consumers a unique value proposition to make a positive and distinct self-image. Since there hasn't been much research on the mediating role of product symbolism in the relationship between conspicuous consumption and the formation of social identities in both Sri Lankan and other national contexts, this study fills a gap in the body of existing literature.

Keywords: Conspicuous Consumption, Social Identity Formation, Product Symbolism, Branded Clothing, Young Adults

Investigating the Key Determinants to Drive Motor Insurance Customer Acquisition in Sri Lanka

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ABSTRACT

There is a significant need for a comprehensive insurance policy for all vehicle owners, especially considering the growing emphasis on health and safety, and public protection. The substantial preference for 3rd party insurance over comprehensive policy covers has created a hurdle for insurance companies, both in terms of acquiring new customers and retaining existing ones. This prevailing trend has presented a significant challenge to the growth potential of general insurance firms in the market. The main purpose of this study is to investigate how factors such as product, price, promotion, and distribution network influence the customer purchase intention towards motor insurance. This was a cross-sectional study using a deductive research approach. Data were gathered from 412 policyholders in Sri Lanka using a self-administered structured questionnaire. Multiple regression analysis was used to determine the factors influencing customer purchase intention towards motor insurance. Based on the analysis, the insurance service [product], insurance premium [price], promotion and distribution network have a significant relationship with the customer purchase intention towards motor insurance policies in Sri Lanka. Among the factors tested, distribution network and insurance service have the most significant impact on customer purchase intention concerning the motor insurance segment. The findings of this study will pave the way for a paradigm shift where insurance firms could understand and develop relevant strategies to improve services provided to existing and potential motor insurance customers. By analyzing what truly matters to Sri Lankan drivers, both insurance service providers, as well as regulatory authorities, can ally and develop a holistic insurance policy that comprehensively covers all aspects of vehicle ownership, filling the void in the current market. According to the findings, it can be advised that insurance corporations should focus more on providing a product with more unique features and invest in creating a solid network of branches across the country that are fortified with skilled and service-oriented personnel who could persuade the customers to buy comprehensive insurance covers. Future researchers can focus on income and educational level as moderators both of which have an impact on consumer behavior. Also, there is a possibility of widening their scope by considering other types of insurance products and expanding the geographical area as well.

Keywords: Consumer Behavior; Insurance Premium; Insurance Service; Marketing Mix; Motor Insurance; Promotion; Sri Lanka

Expanding the Blue Economy in Sri Lanka: Opportunities, Challenges, and Solutions in Developing Marine and Coastal Tourism Sectors

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ABSTRACT

Sri Lanka is focusing on developing its blue economy, which involves the sustainable use of marine resources to promote economic progress, livelihoods, and employment opportunities while protecting the ocean ecosystem. This research analyzes the opportunities, challenges, and possible solutions for expanding the blue economy in Sri Lanka, particularly in the Marine and coastal tourism sectors. The qualitative research methodology used key-person interviews as the primary data collection tool. Interviews were conducted with stakeholders in the Marine and coastal tourism sector, and the data were analyzed using thematic Analysis. The research highlighted the geographical location of the country, diversification of the marine and coastal tourism products, human resource availability of the sector, and opportunities to expand further. The study identified several challenges in expanding the Marine and coastal tourism sector, including limited infrastructure, lack of sectorial collaboration, and insufficient private sector involvement. Potential solutions to overcome these challenges are public-private partnerships, industry infrastructure development, sectorial collaboration, and port development. The potential for Marine and coastal tourism in Sri Lanka is enormous. If the country can implement the right strategies, the blue economy can significantly contribute to its economic growth while preserving its natural resources and cultural heritage. This research's findings can inform policy decisions and guide future investments in the Marine and coastal tourism sector, benefiting Sri Lanka's economy and people.

Keywords: Blue Economy, Marine and Coastal tourism, Nautical Tourism, Port

Investigating Factors Affecting Responsible Tourism Behavioral Intention with The Moderating Effect of The Age of Tourists: Special Reference to The Southern Province In Sri Lanka

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ABSTRACT

Studies on responsible tourism have looked at its core elements, factors that influence it, and perspectives on supply and demand. However, there is still a lack of knowledge about travelers' propensity to adopt sustainable behaviors and the obstacles that stand in the way of making responsible decisions. To close this gap, this research examines the variables influencing behavioral intentions while concentrating on responsible tourism in the Sri Lankan context, specifically focusing on the Southern province in Sri Lanka. Grounded in a positivist philosophy and employing a deductive approach, the study adopts a quantitative methodology, utilizing surveys as the primary research strategy. The self-administered questionnaire serves as the main tool for data collection.

The study's sub-objectives delve into the impacts of Socio-Cultural Responsibility, Economic Responsibility, and Environmental Responsibility on Responsible Tourism Behavioral Intention. The findings reveal that Socio-Cultural Responsibility, Economic Responsibility, and Environmental Responsibility each exert a weak positive impact on Responsible Tourism Behavioral Intention. Moreover, the Research explores the moderating effect of Age on these relationships. The results indicate that Age does not moderate the relationship between Socio-Cultural Responsibility and Responsible Tourism Behavioral Intention or between Economic Responsibility and Responsible Tourism Behavioral Intention. However, Age exhibits a moderating influence on the relationship between Environmental Responsibility and Responsible Tourism Behavioral Intention.

This study significantly contributes to the understanding of Responsible Tourism Behavior, offering nuanced insights into the complex interaction between Socio-Cultural, Economic, and Environmental Responsibilities. The identified weak positive impacts and moderating effects provide a foundation for enhancing sustainable tourism practices. This research holds substantial implications for both academics and experts, guiding future research endeavors and informing policy considerations for fostering responsible tourism in diverse global contexts.

Keywords: Tourism, Responsible tourism, Tourism behavior

Exploring the Eco-Practices of Sri Lankan Small and Medium-Scale Eco Lodges: A Comparative Study with International Eco-Tourism Standards

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ABSTRACT

Tourism in Sri Lanka is one of the main contributors to the economy as its interconnected and diverse market grows with changing expectations of worldwide tourists, nature explorers, adventurers, and alike. As a result, there is a growing inclination towards nature-centric explorers who value diversity in cultural and social interactions which has given rise to what is commonly known as "Alternative Tourism" which is a collective term that is used to describe all other tourism activities except mass tourism. Ecotourism, therefore, falls under the umbrella of alternative tourism.

In this landscape, though ecotourism has carved a niche within the market to stage Sri Lanka's biodiversity, elements of multicultural living, the pulse of rural life, luxuries of simplicity, and other social aspects, existing literature suggests a gap in the appropriate execution of the concept of ecotourism when compared to international markets. The major highlight in the literature is its misconception and exploitation for profit which are the culprits of the ineffective implementation. Considering these challenges, as a primary objective, this study aims to explore the current practices of small and medium-scale eco-lodges in Sri Lanka and to understand if these practices are aligned or diverge from the internationally established practices.

Researchers employed a qualitative approach and engaged in semi-structured interviews with 10 representatives of Sri Lankan small and medium-scaled ecolodges, comprising both owners and managers, using purposive sampling. Thematic analysis was applied to the gathered data.

Findings suggest that the majority of the eco-lodge establishments follow practices such as providing access to natural environments, appropriate waste management, and initiatives related to awareness building amongst guests and local communities about cultural and environmental preservations. Moreover, it was evident that few of the establishments were following international standards by maintaining in-house garden areas for cultivation along with basic waste management practices like segregating the garbage in different bins, and remaining practices such as allowing guests to be engaged in nature-centered activities, experiencing natural adventures, consumption of bio-degenerative products, minimal usage of reusable plastics, engaging local communities for employment were not common amongst the participated entities.

Keywords: Ecotourism, Alternative-Tourism, International Standards of Ecotourism, Small and Medium Scale Ecolodges, Sri Lankan Tourism.

Food Neophobia in Tourism: A Bibliometric Analysis Using R Biblioshiny

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ABSTRACT

This comprehensive study systematically reviews research on Food Neophobia in Tourism from 2001 to 2023, employing bibliometrics techniques. Beyond highlighting noteworthy author contributions and affiliations, the research explores into the evolution of Food Neophobia in Tourism over the past two decades. Analysis of annual production trends reveals a consistent upward track, with 2023 recording the highest number of publications at 14, signaling the burgeoning state of research in this domain. Italy, the USA, and the United Kingdom stand out as leading contributors in terms of publications, with the United Kingdom emerging as a primary force in citations, closely followed by the USA. This underscores their substantial impact on the research landscape, highlighting the global influence of these nations in the study of Food Neophobia in Tourism. Renowned researchers, including Dinnella C, Endrizzi I, Eves A, Gasperi F, Monteleone E, Spinelli S, Torri L, and Visalberghi E, have played pivotal roles, laying the foundation for the continued growth of Food Neophobia in Tourism. This study extends valuable insights to prospective researchers, offering a roadmap for future investigations. It identifies emerging themes such as 'eating disorder, food neophobia, ethnic food, and local food experience,' providing a sound understanding of evolving dynamics in this field. In conclusion, this research significantly contributes to the holistic understanding of Food Neophobia in Tourism. Serving as a rich resource, it not only captures the historical landscape but also anticipates future directions, providing a solid foundation for scholars and practitioners alike in exploring this intricate intersection of neophobia and tourism.

Keywords: neophobia, tourism, culinary tourism, bibliometric analysis

Navigating the Techno-Era Shifts in Trade Dynamic: A Comprehensive Review on Commerce Evolution

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ABSTRACT

Trade, the exchange of goods and services, has been a pivotal force in shaping human societies since the beginning of civilization. Throughout history, it has undergone significant transformations driven by economic shifts, technological advancements, and cultural interactions. The journey of trade, from the rudimentary barter systems of ancient communities to the intricate global networks of the modern era, mirrors the evolution of societies and economies. Technological progress has been a key catalyst in reshaping the landscape of commerce. In essence, the evolution of trade spurred by technology has not only altered the mechanics of buying and selling but has also transformed the very nature of commerce. As we navigate the complexities of these modern trade paradigms, it becomes evident that technology continues to be a driving force, shaping the future of how goods and services are exchanged in our interconnected world. Therefore, the main purpose of this study is to analyse the evolution of commerce over the years with the emerging social and technological trends in the world. The study focused on how the concept of commerce has evolved over the years with the changes in the social and technological advancements in the world. As a result, a comprehensive empirical review was conducted to analyze each concept extensively to identify the impact it created to the concept of trade as a whole. The findings of the study showcase that with technology the concept of commerce has evolved over time. Historically, physical presence was crucial for customers engaging in trade. However, as technology advanced, this requirement diminished significantly. The impact of technology on commerce has been profound, ushering in a revolution through concepts like Electronic Commerce (e-commerce), Mobile Commerce (m-commerce), Social Commerce, Sustainable Commerce, and Ubiquitous Commerce(u-commerce). These developments represent a departure from traditional brick-and-mortar transactions, allowing for new and diverse ways of buying and selling. The findings of this research study provided insights into future possible areas on the emerging trends of commerce such as sharing commerce and livestreaming commerce and it is suggested that further research can be done to identify possible methods to remove the issues which are identified all throughout the evolution of commerce with the emerging concepts in commerce.

Keywords: Electronic Commerce, Mobile Commerce, Social Commerce, Sustainable Commerce, Ubiquitous Commerce

The Role of Learning Motivation in Gamification: Deriving Insights from the Model of Gamification Proposed by Landers

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ABSTRACT

Gamification, when used as a method for employee training, offers a different experience to sustain employees' motivation for learning throughout their training journey. It is anticipated that the incorporation of gamification elements encourages active participation in the learning process, preventing boredom. In this study, the authors reviewed several articles about employee learning motivation and its impact on learning outcomes gained through gamification, with the primary reference being Lander's article from 2015. As a result of this research, a novel conceptual model was formulated, expanding upon Lander's gamification model and introducing seven key propositions. The fundamental concept underlying this model is that the interplay between the characteristics of gamified elements and a learner's behavior/attitude, as well as the connection between instructional content and a learner's behavior/attitude, are both influenced by the learner's level of motivation.

Keywords: **Gamification, Learning Motivation, Employees, Training**

The impact of Work from Home on Employee Productivity in the private Banking sector

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ABSTRACT

The COVID-19 pandemic has taken a significant toll on Sri Lanka's private banking sector, including domestically. This study investigates the impact of working from home on staff productivity in this area. The banking system in Sri Lanka has changed over time from traditional money-lending institutions to sophisticated financial institutions that finance financial growth and wealth management. Employee productivity (EP), driven through technological innovation and operational change, has been a key motif in the trajectory of the banking enterprise. The reason for this observation is to analyze the impact of work-from-home (WFH) on EP in the private banking sector of Sri Lanka. Look at the impact of using quantitative strategies that include regression analysis between key variables WFH, EP, and job satisfaction. WFH can affect your work-life balance (WLB). This was done during the Covid-19 pandemic and its findings may not be generalizable to other settings. This is because of the verification of findings and awareness of the massive and negative effects of working from home on EP. These relationships are assessed using reports from a wide range of sources including the Central Bank of Sri Lanka, industry guidelines, and clinical literature. By considering the specific issues and opportunities within the Sri Lankan banking sector, this investigation contributes to our knowledge of how local influences EP in a private banking context. The findings of this study supply points that can be used to improve regulations and techniques to optimize EP while adapting to the changing painting environment in the public non-banking quarter of Sri Lanka.

Keywords: Banking system, WFH, Employee productivity, Job satisfaction

Determinants of women participation and the wages in the agricultural sector in Anuradhapura district: Heckman selection model Approach

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ABSTRACT

The objectives of the study are to identify the determinants of women's participation and their wages in the agricultural sector in the Anuradhapura district. The cross-sectional data were gathered from 7 villages in Talawa Divisional Secretariat in the district and from each village, 25 rural women were selected randomly during 2022. Results of frequency showed that 66% of the women participated in the agricultural sector and 34% of them did not participate. Heckman selection model was applied in two stages and in the first stage, the Probit model was used to identify the factors that determine the women's participation in the agricultural sector. The results of the model suggest that age, age squared, credit facilities, possibility of getting another job, education level, and other income sources were the major factors that determine the participation of women in the agricultural sector in the study area. In the second stage of the Heckman selection model, the ordinary least square method was employed where the wage was taken as the dependent variable and its results revealed that education, farm experience, and age squared were significantly influencing the wage in the agricultural sector in the district. The findings of the study may help policymakers formulate the appropriate strategies to increase women's participation in the agricultural sector and their income in the future.

Keywords: Credit facilities, Determinants of wage, Farm experience, Heckman selection model, Women participation.

Impact of Financial Rewards on Employees' Job Satisfaction: Special reference to the Apparel Industry in Anuradhapura District, Sri Lanka

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ABSTRACT

The Apparel industry contributes significantly to the Sri Lankan economy. Employees are one of main factors affecting the productivity of the industry. Financial and non-financial rewards impact employees' job satisfaction. Measuring the impact of financial rewards on employees' job satisfaction in the Apparel industry special reference to Anuradhapura District, Sri Lanka is the main purpose of this research, and also identifying the suggestions for improving job satisfaction in the apparel industry in Sri Lanka. According to the previous literature, there was a positive relationship between employee job satisfaction and financial rewards. Data were gathered by using a semi-structured questionnaire. The researcher selected all the employees in the apparel industry in Anuradhapura District as the population of this study and 101 employees were selected as the sample of this study by using the convenience sampling method. Collected data evaluated by using SPSS software. The independent variables are salary, bonus and incentives, and democratic factors like gender, marital status, age, and working experience. The dependent variable is employees' job satisfaction. According to the analysis, researchers conclude that there was a positive relationship between financial rewards and job satisfaction. This study will be of value to the management of the apparel industry and also to employees in the apparel industry to make their own decisions.

Keywords: Apparel Industry, Financial Rewards, Job Satisfaction

What's limiting Entrepreneurship Education?

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ABSTRACT

This paper discusses the pedagogical issues faced by professors who design and deliver entrepreneurship programs by using a framework consisting of eight truisms that describe the dominant thinking of traditional education which forms the basic structure for the vast majority of U.S. colleges and universities. The eight truisms are valid for the majority of the educational programs offered by U.S. colleges and universities but tend to retard the development of entrepreneurship education in higher education, i.e., the eight truisms simultaneously support professional education while retarding the design, development, and delivery of the optimum entrepreneurship education (EE) for future entrepreneurs. As the Kaufman Foundation (2001) claims: ". . . the quality of any entrepreneurship program must be measured in part by how it meets the needs of the students"; rather than in strict compliance with the institutional requirements of tradition-based education.

Keywords: Entrepreneurship education, traditional education, non-traditional

A Study on Determinants of Entrepreneurial Intention among Final Year Undergraduates of the University of Sri Jayewardenepura

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ABSTRACT

One of the ongoing challenges in entrepreneurship research is understanding what factors can divert individuals to alter their minds and intentions toward engaging in entrepreneurial activity. To contribute to the literature on entrepreneurial intention, using Ajzen's theory of planned behavior, which states that attitude toward the behavior, subjective norms, and perceived behavioral control determine intention, this quantitative study focused on examining the determinants of entrepreneurial intention among final-year undergraduates at the University of Sri Jayewardenepura, and additionally, three other determinants were investigated, namely, university entrepreneurship support, perceived innovativeness, and business role models. In this study, the convenient sampling technique was executed for its practical advantages in accessing participants efficiently within the constraints of the study, and the sample of the research consisted of 333 final-year undergraduates from four faculties. A structured questionnaire was deployed as the instrument to collect primary data. The data was analysed using SPSS and, structural equation modelling technique by using AMOS version 23. The study's findings demonstrated that attitude toward behavior and perceived behavioral control have a strong positive impact on determining entrepreneurial intention. Out of the two independent variables, attitude toward behavior had the strongest influence on entrepreneurial intentions. Surprisingly, subjective norms, university entrepreneurship support, perceived inventiveness, and business role models failed to exert a significant effect. Accordingly, this result strongly implies that, rather than focusing on other aspects, attempts to enhance undergraduates' attitudes can result in the achievement of a high level of entrepreneurial intention. Based on the main outcomes, the study presents recommendations for empowering entrepreneurial intention among university undergraduates, particularly emphasizing the role of universities and the general government. By justifying the application of the theory of planned behavior following its significance, the study proposes and calls for new lines of future research to a better understanding of the factors of construction and how these factors affect the entrepreneurial intentions of students.

Keywords: Entrepreneurial Intention, Theory of Planned Behavior, Undergraduates, University of Sri Jayewardenepura, Sri Lanka.

Need Fulfilment and Progression of Online Freelancing Career with the moderating effect of Entrepreneurial Orientation

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ABSTRACT

Online freelancers have the potential to earn foreign currency while working from home. However, they are an understudied segment of the labour force in Sri Lanka. In this study, the effect of need fulfillment and entrepreneurial orientation on the progression of the freelancing career was studied, based on Maslow's Hierarchy of Needs Theory. No sampling frame was available as the freelancing population in Sri Lanka is not defined. Hence, convenient and snowball sampling techniques were used. Responses were obtained through a questionnaire distributed in freelancers' social media communities. There, the effect of freelancers' satisfaction with the level of need fulfillment on their willingness to progress as a freelancer and the moderating effect of individual entrepreneurial orientation on that relationship was analyzed. Further, Maslow's finding that the fulfillment of lower-level needs affects the fulfillment of higher-level needs was checked. A pyramid score was calculated to determine overall satisfaction of needs. Within the sample, only 51% showed a hierarchy in fulfilling needs. Ordinal logistic regression and correlation tests were used in the analysis. Results indicated that there is a significant relationship between satisfaction with need fulfillment and willingness to progress in the freelance career for both the freelancers who follow the hierarchical order and the entire sample (without taking the hierarchy into account). When taken individually, none of the five need types (physiological, security, belongingness, esteem, and self-actualization needs) had a significant effect on the willingness to progress in the freelancing career. In any case, entrepreneurial orientation had no moderating effect on the relationship between freelancers' need fulfillment and willingness to progress as freelancers. Moreover, the more each lower-level need is satisfied, the more the next higher-level need is satisfied. The results indicate that the freelancers are a diversified group, and they do not necessarily follow a hierarchy in fulfilling their needs. The study concluded that overall satisfaction with need fulfillment significantly influences freelancers' career progression. Although individual needs don't impact career progress, fulfilling lower-level needs positively affects higher-level needs, contradicting Maslow's hierarchy. Additionally, entrepreneurial orientation doesn't significantly affect the relationship between need satisfaction and career advancement among freelancers.

Keywords: Career Progression, Entrepreneurial Orientation, Maslow's Hierarchy of Needs, Motivation, Online freelancers

The Effect of Entrepreneurial Marketing on SME Performance: Special Reference in Food Manufacturing Sector in Western Province, Sri Lanka

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ABSTRACT

Entrepreneurial marketing, a combination of unconventional marketing strategies and entrepreneurial spirit, plays a crucial role in the success of small and medium-sized enterprises operating in uncertain environments. In Sri Lanka, Small and Medium Enterprises, particularly, in the food manufacturing sector play a significant role in economic development and income growth. This research examines the effect of entrepreneurial marketing on the performance of SMEs in the food manufacturing sector in the western province of Sri Lanka. While exploring entrepreneurial marketing effect on performance, previous research has yielded mixed results on its dimensions and lacked focus on Sri Lankan SMEs in the western province.

The research focuses on seven dimensions of entrepreneurial marketing: proactiveness, calculated risk-taking, innovativeness, opportunity focus, resource leveraging, customer intensity, and value creation. By examining the effect of entrepreneurial marketing on SME performance, the study aims to contribute valuable insights to a field that has seen limited empirical research, particularly in the food manufacturing sector in the western province of Sri Lanka. Data was collected from 79 respondents using a cross-sectional design and a non-probability convenient sampling technique. The questionnaire, grounded in a literature review and expert opinions, featured closed-ended questions to facilitate quantitative data collection.

Analysis revealed that proactiveness, opportunity focus, customer intensity, and resource leveraging exert a positive effect on SME performance. However, calculated risk-taking, innovativeness, and value creation showed no significant effect on SME performance. Despite these findings, the research provides valuable insights for business owners and managers, offering recommendations for informed decision-making in marketing campaigns. The study also serves as a foundation for further research, urging scholars to delve deeper into the nuanced relationship between entrepreneurial marketing and SME performance. Students can benefit from this study by gaining knowledge and ideas about entrepreneurial marketing in the dynamic context of small and medium-sized enterprises in the food manufacturing sector in Sri Lanka.

Keywords: **Entrepreneurial Marketing, Small and Medium Enterprises, Marketing**

Entrepreneurial Bricolage in SMEs: Exploring the Interplay of Divergent Thinking, Self-Efficacy, and Gender Dynamics

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ABSTRACT

This study investigates the relationships between divergent thinking, self-efficacy, and entrepreneurial bricolage in Small and Medium-sized Enterprises (SMEs), with a particular focus on the moderating role of gender. The high failure rate of SMEs highlights the need for a deeper understanding of these factors to enhance entrepreneurial success and sustainability. The study employed a mixed-methods approach, analyzing data from a diverse sample of SMEs to explore how cognitive processes and gender dynamics influence entrepreneurial activities. The findings reveal a significant relationship between divergent thinking and entrepreneurial bricolage, underscoring the importance of creative problem-solving in the entrepreneurial process, especially in resource-constrained environments. Self-efficacy was also found to be a key determinant of entrepreneurial success, influencing risk-taking and perseverance in the face of challenges. Notably, the study highlights the critical role of gender, with the observed gender disparity (74% males and 26% females) in the sample reflecting broader trends in entrepreneurship and pointing to different experiences and challenges faced by male and female entrepreneurs. The study's implications extend to the development of targeted support and interventions for SMEs. Understanding the roles of cognitive factors and the influence of gender can inform the design of training programs, mentorship schemes, and policy initiatives aimed at enhancing entrepreneurial skills and capabilities. The research contributes to the growing body of knowledge on the factors influencing entrepreneurship and offers practical insights for fostering a more inclusive and resilient entrepreneurial ecosystem. However, the study is not without limitations, including the sample's gender imbalance and focus on specific types of SMEs, which may affect the generalizability of the findings. Future research should aim for a more balanced gender representation and a broader range of business types and stages. This study lays the groundwork for further exploration into the complex dynamics of entrepreneurship, emphasizing the need for creativity, confidence, and inclusivity in supporting the growth and sustainability of SMEs in the global economy.

Keywords: Entrepreneurial Bricolage, SMEs, Self-Efficacy, Gender, Divergent Thinking

Impact of Entrepreneurship Education of Owners and Managers on Growth of Manufacturing SMEs in Western Province, Sri Lanka

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ABSTRACT

Small and Medium Businesses (SMEs) are essential to the GDP, employment generation, and poverty alleviation in developing countries. They also contribute to the GDP. Despite their importance, SME failure rates have been rising quickly. Many academics contend that one important component that might help SMEs develop an entrepreneurial culture and accelerate their growth is entrepreneurship education. The purpose of this research is to find out how owners' and managers' entrepreneurship education affects the expansion of manufacturing SMEs in Sri Lanka's Western Province. The analysis acclimated primary and accessory abstract sources to achieve this goal. Convenience sampling and a quantitative analysis alignment were acclimated to accommodate respondents in the study. Primary data was acquired by the process of a survey with a well-crafted questionnaire. The study's abstracts appear favorable amid the amplification of SMEs in Sri Lanka's Western Province and the owners' and managers' entrepreneurship education.

Keywords: Entrepreneurship education, Owners and Managers, SMEs, Growth of SMEs, Manufacturing enterprises

Applicability of TikTok Marketing to Promote Luxury Real Estate Sector in Sri Lanka: a TAM-Based Study

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ABSTRACT

TikTok, a rapidly growing social media platform with global reach has emerged as a prominent tool for social media marketing in the international real estate sector, facilitating the promotion of properties through innovative content. Despite its widespread adoption on a global scale, the utilization of TikTok for professional purposes within the real estate domain in Sri Lanka appears to be at a notably low level. This observation highlights a distinctive trend in the local market, suggesting a gap in the adoption of TikTok. This study aims to study the applicability of TikTok marketing to promote the luxury real estate sector in Sri Lanka. By examining the dynamics of perceived usefulness, perceived ease of use, attitude, and professional intention, the research seeks to provide insights that can inform strategies for enhancing the integration of TikTok. This study applies the modified Technological Acceptance Model and mainly focuses on real estate professionals' perspectives. A conceptual framework represents the relationship between variables. A structured questionnaire was adopted for data collection, with a five-point Likert scale and data was collected quantitatively from 96 real estate professionals, including agents and marketers using a purposive sampling technique. Partial Least Squares Structural Equation Modeling analyses were employed for data analysis. The research findings revealed that the perceived usefulness of TikTok marketing is currently not substantial in the luxury real estate market. The study suggests that the Sri Lankan luxury real estate market is not ready to promote properties through TikTok marketing, as most real estate marketers use recommendations from experts and face-to-face discussions for buying decisions in Sri Lanka. However, perceived ease of use and attitude have a significant influence on professional intention. The professionals within the luxury real estate sector exhibit a favorable attitude to adopt TikTok marketing. However, in the case of perceived usefulness to the luxury real estate market, it is not qualified, and the favorable attitude may be useful in the future to adopt TikTok marketing to promote luxury real estate in Sri Lanka. These results have practical implications for real estate managers and enrich the academic literature with the contribution of the theoretical implications. By filling a significant research void, the study advances the theoretical understanding of technology adoption in the luxury real estate industry.

Keywords: Tik Tok, Tik Tok Marketing, Technological Acceptance Model, Luxury Real Estate, Professional intention.

Intricacies of Human Secondary Sensation of Architectural Spaces

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ABSTRACT

This research paper delves into the intricacies of the human secondary sensation of architectural spaces, transcending primary sensory experiences to explore the profound impact that built environments exert on individuals. Our investigation extends beyond the traditional boundaries of architectural perception, we explore emotional, psychological, and physiological responses to architectural spaces. Employing a multidisciplinary approach, this study integrates insights from psychology, architecture, and neuroscience to elucidate the complex interplay of factors influencing secondary sensations. The findings contribute to a more holistic understanding of the dynamic relationship between humans and their surroundings. Through a unique off-site experiment, participants were blindfolded and transported to diverse real-world locations, engaged in a nuanced exploration of transitions between spaces with varying wall textures such as Rough, Semi Rough, and Smooth. The research method facilitated an immersive understanding of the complex interplay of factors influencing secondary sensations. Qualitative data was collected through open-ended participants' reflections and augmented by multimedia documentation, revealing a heightened sensitivity to variations in wall textures. Participants consistently showcased an intimate reliance on non-visual sensory cues, underscoring the dynamic relationship between humans and their architectural surroundings. This heightened awareness, extending beyond mere tactile perception, sheds light on the intricate web of emotional, psychological, and physiological responses evoked by architectural stimuli. By unraveling the multifaceted nature of secondary sensations, this research goes beyond conventional architectural studies, advocating for a more inclusive approach to design that accommodates the diverse dimensions of human perception. The integration of insights from psychology, architecture, and neuroscience not only enriches our understanding of spatial cognition but also provides practical implications for architects and designers. This study encourages a paradigm shift, emphasizing the creation of environments that authentically and inclusively resonate with the intricate interplay of human experiences within architectural spaces, shaping a more enriching and harmonious built environment for all.

Keywords: Architectural Spaces, Human Perception, Emotional Responses, Built Environment, Secondary Sensation.

Factors Influencing Intention to Adopt Property Management Services in Sri Lanka: Perspective of Residential Property Owners

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ABSTRACT

Professional oversight ensures consistency in maintenance, operations, and tenant relations, thereby optimizing the performance of real properties. However, the rapidly growing global real estate sector, particularly in residential properties, underscores the importance of effective property management for optimizing returns and achieving the highest and best use of assets. Similarly, despite substantial industry expansion and attractive service offerings of property management companies, adoption of these professional services remains relatively low among Sri Lankan residential owners. This highlights the need to elucidate factors influencing usage intentions to promote service uptake. In response, this study aimed to identify the factors influencing the adoption intention of property management services in Sri Lanka focusing on the perspective of residential property owners. A structured questionnaire is adopted for data collection, with a five-point Likert scale, and administered among 95 residential property owners in Colombo districts selected using a purposive sampling technique. Partial Least Squares Structural Equation Modeling analyses were employed for data analysis. The findings revealed that perceived usefulness, awareness, and favorable attitudes positively predict adoption intention to use property management services, whereas, social pressures, control perceptions, and price concerns had insignificant effects. This suggests that external forces and affordability may not directly influence willingness to use services. The study validates the theoretical framework emphasizing the importance of addressing perceived usefulness and fostering positive attitudes among potential users and offers practical implications for marketing strategies to improve demand for these services. This timely investigation enriches academic literature by validating the theoretical framework emphasizing the importance of addressing perceived usefulness and fostering positive attitudes among potential users. Further, this study offers practical implications for marketing strategies to improve demand for these services and other stakeholders with insights to promote service professionalization aimed at optimizing residential sector returns and community prosperity.

Keywords: Residential, Property management, Theory of Planned Behavior, Awareness, Intention

Biogenic Building Skin for Tropical Context: A Sustainable Approach for Living Walls in Sri Lanka; A Review

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ABSTRACT

In the contemporary landscape of escalating global challenges, characterized by the swift pace of urbanization and escalating environmental concerns, the demand for sustainable building solutions has risen to the forefront as an imperative. This review paper undertakes a thorough examination of two cutting-edge technologies – pervious concrete for green walls and bio-colonization layered concrete panels – in response to this critical necessity, specifically within the distinctive environmental context of Sri Lanka. An extended review conducted on two novel technologies such as, Pervious concrete, known for its permeability, allows for effective water drainage and absorption, reducing the risk of flooding in urban areas. The review delves into the adaptability of this technology within Sri Lanka's unique environmental context, considering factors such as local climate, soil conditions, and vegetation. Field studies form the cornerstone of this investigation, providing invaluable insights into the feasibility and potential challenges associated with implementing previous concrete for green walls in Sri Lanka. The second technological innovation explored in this review is bio-colonization layered concrete panels. These panels leverage the natural growth of microorganisms, such as moss and algae, to create a living, breathable surface. The paper assesses the adaptability of this technology to the Sri Lankan environment, considering factors like humidity, temperature, and indigenous flora. Field studies contribute nuanced perspectives on the feasibility and challenges associated with the integration of bio-colonization layered concrete panels in sustainable building practices. As the global community strives for sustainable urban development, understanding the intricacies of these innovative technologies becomes paramount. The review not only highlights the potential benefits of pervious concrete and bio-colonization layered concrete panels but also sheds light on the challenges that may hinder their widespread adoption. By grounding the investigation in field studies, the paper aims to provide practical insights that can inform decision-making processes and contribute to the development of context-specific, sustainable building solutions in Sri Lanka and beyond.

Keywords: Bio-colonization layered concrete panels, Building Skin, Pervious concrete, Living walls, Tropical context

Relationship Between Real Estate Components and Customer Satisfaction in Supermarkets in Colombo

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ABSTRACT

Supermarkets being the preferred retail option for the majority of customers in Sri Lanka, customer satisfaction and customer attraction hold paramount importance. Prior research demonstrates the influence of service quality, store environment, and ambiance on customer satisfaction in supermarkets. However, there is meager evidence on research related to real estate components in enhancing overall customer satisfaction. Thus, this research focuses on the relationship between selected real estate components and customer satisfaction among the service quality measures. in retail supermarkets. This study employs a quantitative approach and utilizes data collected from 80 customers selected through convenience sampling. An equal number of customers were surveyed from four types of supermarkets, located within a 3km distance on a high-level road with proximity to a higher education institute. The data collection was carried out through face-to-face interviews using a five-point Likert scale questionnaire. Data analysis centered on correlation analysis and coefficient analysis. Results reveal that all real estate components, including Store Policy, Proximity to Transport, Parking Facilities, and Physical Aspects, are among the significant influences on customer satisfaction in supermarkets. Equal importance is depicted in the service quality components emphasizing that Reliability and customer loyalty have the highest impact. Hence supermarket operators can enhance customer satisfaction and boost customer attraction by maximizing these factors.

Keywords: Customer satisfaction, customer attraction, Supermarkets service quality, Real Estate components

Leadership Qualities Found in Lord Ram in Ramayan

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ABSTRACT

Ramayana is the greatest epitome of India it teaches us how to live life every day. It has many lessons of obedience, courage, hospitality, leadership, and humility, all leading to the path of righteousness. Lord Rama, the Supreme Lord, appeared at the beginning of the Treta Yuga i.e. about 13,00,000 years ago in the city of Ayodhya. Even though Ramayana is age-old we cannot imagine the then environment, but the teachings are applicable anytime and are Evergreen in time. We can find many leaders in Ramayana. Where each one is a leader demonstrating a different type of leadership according to the attitude, righteousness, belief, and situation. Very few well-known leaders mention Rama, Dasharata, Ravana, Vali, Valmiki etc.

But the one who stands out is Lord Rama. His ideologies, strategies, philosophy, and administration are applicable even in this digital era. He is an amalgamation of a good administrator, warrior, ruler, caretaker, family man, friend, and mentor etc., He has his style and approach to dealing with every situation in his life. He is a proven leader. The proposed research attempts to bring out his strategies and approach in dealing with every situation so that it becomes a thumb rule to achieve success through righteousness. Just like Ramayana is a complete epic in all aspects depicting every aspect of worldly affairs, in the same way, Rama is a complete man starting from ruling a big dynasty to attending to a strong devotee, Shabari aspirations.

The work is based on numerous literatures as it cannot be simulated or generated in real time environment. Attempts have been made to decipher some slokas of some epics narrating Rama's approach or stand for a given issue.

Keywords: Leadership, Qualities, Allies, Diplomacy, Delegate, Righteousness

Role of Fintech in Green Economic Growth: Evidence from Emerging Economies

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ABSTRACT

The environmental damage that conventional economic expansion causes has prompted policymakers and academic experts to focus on sustainable economic growth. Technological innovation is one of the most important factors propelling the green economy forward, particularly in the financial sector. This research aims to determine the role of financial technology developments on the green economy's expansion. The study considered 23 emerging nations from 2005 to 2021. All the negative externalities caused by traditional growth methods are subtracted when measuring green economic growth. This study employed Fully Modified Ordinary Least Square (FMOLS) to estimate the model. The results show that Fintech is essential for emerging nations to achieve sustainable economic growth. FDI, GFCF, and R&D impact green economic growth positively, while trade openness is negative. The findings demonstrate that encouraging Fintech innovation is critical to long-term economic prosperity.

Keywords: Green Economic Growth, Fintech, Foreign Direct Investment, Environmental Sustainability, Sustainable Development

Policy initiatives for building inclusive society: A case of poverty alleviation in Bangladesh

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ABSTRACT

Redistributive public policies are adopted to uplift people's well-being and their living conditions. Keeping this assumption in mind, the Bangladesh government has taken several initiatives with a special emphasis on poverty reduction. Because Bangladesh with its higher poverty rate struggled to progress slowed down the development progress. It is proven that the high poverty rate of a country stymies its gradual progress and greatly influences the socio-economic of people. The objectives of the study are to investigate how policy interventions contribute to reducing poverty significantly in Bangladesh and analyze the effects on the livelihood of the poor section. The study followed content analysis for the first objective while a qualitative approach was employed to capture the real scenario of the beneficiary stakeholders through 26 KIIs. A total of 20 direct beneficiaries including 8 females of Dhanbari Upazila (Sub-district) of Tangail district and 6 policy implementers were interviewed. The study found that appropriate policy initiation and its effective implementation mechanism significantly contributed to poverty reduction as the poverty rate went down from 40.0 to 20.5 percent in 15 years. It indicates that target-based initiatives for the group, direct contact and connecting the poor through ICT, inclusiveness in development, constitutional obligation and philosophical foundation, continuation in policy initiative, incremental allocation of budget increase, and strong institutional framework combing the collaboration of government, non-government and international organizations were the notable mechanisms and underlining factors. Several policy initiatives helped increase income, creating employment and enhancing the social status of the poor ensemble. It is also evident that these policy interventions on targeted poverty reduction contributed a lot during the coronavirus outbreak. To reap this benefit, the government should continue with such initiatives as a systematic approach in the permanent policy reduction framework to systemize the policy interventions.

Keywords: Poverty alleviation, targeted policy initiative, socio-economic development, Bangladesh

Sustainability Narratives in CEO Letters of Tourism and Hospitality Companies – An Impression Management Perspective

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ABSTRACT

Sustainable tourism has been stressed in the Sustainable Development Goals (SDGs) by the United Nations Sustainability Development Group. The tourism and hospitality sector affects local communities worldwide. It must, therefore, make sure to strive toward an equitable and sustainable future for the people and the world since this industry can have a long-lasting effect on lives, communities, and economies. While studies have demonstrated the utility of Chief Executive Officer (CEO) letters in diverse Impression Management (IM) facets, such as fostering inclusivity within the organization and its broader societal context, the way these letters can effectively communicate an organization's sustainability endeavours and their alignment with the Sustainable Development Goals (SDGs) remains an underexplored area.

To understand the responsiveness toward SDGs in the Tourism & Hospitality (T&H) sector, the study explores the CEOs' letters to shareholders of airlines, amusement parks/other recreation, hotels and resorts, restaurants, and the travel industry. The study explores the sustainability narratives in CEOs' letters using the qualitative content analysis method. The study sample comprises CEO letters of 26 leading companies extracted from the annual reports of the period FY 2012-13 to 2021-22. These companies are listed on the Bombay Stock Exchange (BSE), India. The investigation is carried out by analyzing the letters as an impression management strategy, building on theories of social identity and legitimacy. The narrative of each letter was carefully analyzed to unearth the sustainability-related CEO comments used.

The present study used occurrence-based content analysis. Transcripts of letters to T&H company shareholders show that select corporations use a lot of "cues" to boost their reputation as socially conscious businesses. These cues were studied to construct a theoretical understanding of the IM strategy connected to sustainability, developed through the inductive generation of first and second-order codes. The content of the letters was carefully examined, and connections between the CEOs' letters and UN SDGs were found. SDGs 3, 4, 6, 7, 8, and 11 are the most prevalent. The results reveal that only 37% of letters contained such cues. Amongst the various industries of the sector, airlines (77%) are most actively engaged in IM through letters, while restaurants (20%) are least actively involved in IM through letters. The sustainability narratives of such companies highlighted their initiatives regarding 'support to community', 'education and skill development', 'sustainable management of water and sanitation facilities', 'sustainable energy', 'promoting employability and sustainable economic growth' and "inclusive, safe, resilient and sustainable human settlements'. Such cues have linkages with SDGs 3, 4, 6, 7, 8 and 11.

Keywords: impression management, sustainability, CEOs letters, letters to shareholders, legitimacy

Impact of Hybrid Mode of Working on Employee Performance in the Post-covid 19 Pandemic Era

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ABSTRACT

During the COVID-19 pandemic, most businesses adopted hybrid work arrangements, adapting to changing workplace demands. This study explores how Technologies 4.0 (advanced technologies) and employee motivation affect the link between hybrid work models and the performance of younger workers (Millennials and Gen-Z) in Kerala's IT sector. Based on a survey of 155 employees, the study shows that the hybrid work model has a significant impact on performance. While basic technologies don't have a major role, the study emphasizes that employee engagement is a key factor. As hybrid work options become more common, they will continue to shape the future of work.

 Keywords: Hybrid mode, Employee Performance, Employee Engagement, Technology 4.0, Generation Z, Future of jobs.

Full Papers

Effectiveness of Imposing Maximum Retail Price and Import of Rice to Ensure Availability of Rice at an Affordable Price to Consumer

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ABSTRACT

The purpose of this study is to assess the effectiveness of imposing a maximum retail price of rice and import of rice to regulate the retail price of rice in the market to secure the consumer. Interviews were conducted with subject specialists in three key government organizations responsible for in intervening to rice market, two representatives of the rice miller association, and a representative of the importer's association. Market prices of main rice types in Colombo districts, maximum retail price, seasonal production, and import figures were used from 2015 to 2022 in this study. Further, legal aspects and the regulations made by respective agencies were used. One sample t-test and right tail tests through SPSS software were used in data analysis. The results of the one-sample t-test and the right tail test proved that the market price was significantly higher than the maximum retail price of the selected main rice types throughout the study period from 2015 to 2022. In addition, the Study identified that the maximum retail price was not imposed in the critical periods, from October to January of the following year in certain years. Further, the Study identified in certain years that rice imports were made without considering the rice availability from local production. It may be due to the absence of a proper mechanism to assess the stock availability or rice importers get an opportunistic advantage to import rice. The study assumed that secondary data used in the study would represent the retail market price. Even though the market has different grades, the study considered only the price of grade 01 based on the availability of data. The results of this study provide new insights to policymakers and the key players in the industry to revisit policy formulations and implementations. Even though most of the researchers have conducted their research based on the value chain and market concentration, this study focused the impact of policy-level implementations.

Keywords: Maximum retail price, Market price, Rice types, One sample t-test, Right tail test

INTRODUCTION

The Sri Lankan rice industry experiencing the critical issue of high price fluctuation, rice scarcity during the offseason, and lower prices for paddy during peak harvesting time. Lower prices during harvesting affect severely the farmers as more than 60 percent of the surplus production reaches the market within three months, especially in the *Maha s*eason (February,

March, and April) (Wijesooriya et al., 2021). High price fluctuation of rice creates uncomfortable for consumers. During the off-season, SMS millers are facing business failures due to the inability to compete with large-scale millers. During the last decade in Sri Lanka, the supply of rice from domestic production has been higher than the total household requirement except in 2017 and 2022. The domestic supply of rice in 2017 was lowered by 46.1 percent due to the unfavorable weather conditions that prevailed in the country. Accordingly, 1.7 million metric tons of rice was available for domestic consumption, which was a 0.65 million metric tons deficit from the 2.35 million metric tons annual consumption requirement (Central Bank, 2017). In 2022, due to the impact of the ban on the importation of inorganic fertilizer and other agrochemicals, the annual paddy production declined by 34 percent. Accordingly, 2.1 million metric tons of rice was available for domestic consumption, which was a 0.25 million metric tons deficit from the annual consumption of 2.35 million metric tons. However, to arrest the price pressure and to ensure food security, 0.783 million metric tons of rice were imported in the year 2022 (Central Bank, 2022).

Out of the country's total consumption, assumed around 33 % is supplied by a few large-scale leading rice millers, and the rest is supplied by small and medium-scale (SMS) millers (Thibbotuwawa, 2021). The operation of SMS millers is limited during the off-season due to the unavailability of paddy at an affordable price (Wijesooriya et al., 2021). The upstream of the rice value chain consists of farmers, collectors, middlemen, brokers, and millers. The downstream of the value chain mainly consists of wholesalers, retailers, supermarkets, and the consumer. The large-scale millers are the most specific actors in the middle of the rice value chain, which can impose market power either upstream or downstream, which is common in most paddy-producing countries (Weerahewa et al., 2017). Prasanna (2019) and Wijesooriya et al. (2021), urged that a few politically backed large-scale mill owners control the industry with their significant market share, storage facilities, sophisticated technology, easy access to credits, and political patronage. In addition, brand loyalty regulates the market since well-established brand loyalty is a crucial factor in the present concentrated market (Wijesooriya et al., 2021).

These technologically efficient large-scale millers are blamed for anti-competitive actions such as price discrimination, the artificial creation of scarcity, exercising lobbying power, earning an excessive profit, and creating entry barriers (Wijesinghe et al.,2017). The Consumer Affairs Authority (CAA) has been imposing a maximum retail price (MRP) for rice to stabilize and regulate the price in the market as the directive of the Government to secure the consumer. The

selling of rice beyond the MRP is illegal and CAA takes legal action in such instances. Further, Premarathna et al. (2016), stated that even though the prices are fixed by the government, the effectiveness is limited. In addition, the government allowed the import of rice to stabilize the market price by increasing the supply, especially during the off-season. However, Bandara et al., (2023) urged that the retail price of rice in the market vary with the availability and the imposed MRP has not regulated the market price of rice. Therefore, this study aims to assess the significance of imposing MRP and increasing supply through the import of rice to regulate the retail price of rice in the market.

LITERATURE REVIEW

Past scholars; Wijesooriya et al. (2017), Henegedara (2006), Damayanthi (2006), Wickremasinghe et al. (2016), and Prasanna (2018) highlighted the ineffectiveness of the government paddy purchasing mechanism to meet the need of producers and reduce the bargaining power of the farmers. This ineffectiveness of the government purchasing mechanism may be a result of the opportunistic actions of leading rice millers which has less evidence in the literature. On the other hand, the reduction of farmers' bargaining power may be due to the information asymmetry, and cost incurred to find the market information as well as may be due to the inability to process information. Wickremasinghe et al. (2016), urged that surplus production in the *Maha* season reached the market starting from Ampara. The sharp price drop was observed when the government's role in purchasing is not prominent, and it will continue for other regions as well. Wijesooriya et al. (2021), further, insisted that rice prices become stable to a certain extent when the guaranteed price (floor Price) is implemented and the ratio between the market price of paddy and the retail price of *Nadu* (long grain white) rice ranged between 1.97-2.2. When the guaranteed price has not been implemented, the ratio between the market price of paddy and the rice retail price tends to exceed the above 2.2. Damayanthi (2006), identified the issues in the government purchasing scheme, such as quality checking, delay in payments, delay in marketing, issues related to packing and transportation, the inefficiency of the purchasing mechanism, and corruption in the paddy purchasing mechanism, and the distant locations of paddy purchasing centers from urban areas. In addition, Weerahewa (2004), analyzed the impacts of liberal and protectionist policies on the paddy sector in Sri Lanka and revealed that liberalization would support farmers to be more competitive in an environment of significant holdings managed by entrepreneurial farmers. The economic gains of paddy farming in Sri Lanka were studied by Henegedara (2006) and he

revealed that less competitiveness in paddy marketing is the leading cause for farmers to have an unfair price or a price below the guaranteed price during the harvesting period. The lesser effectiveness of cooperative societies, farmer organizations, and government purchasing mechanisms is mainly due to less capability in handling market risks. Further, their study confirmed that price determination is mainly done by private traders. Prasanna (2018), confirmed that paddy farmers do not derive an adequate net income from paddy farming, and the majority of farmers are compelled to sell their harvest at a lower price during the harvesting period, which may be insufficient to cover the cost of production adequately. Their study further revealed the existence of an oligopolistic market structure and pre-modern economic characteristics of the paddy marketing channel. These characteristics eventually weakened the farmers' bargaining power in marketing and forced them to accept the trading terms offered by traders. Damayanthi (2006) studied the problems in paddy marketing and revealed that 85% of sampled farmers selling their harvest to private traders have issues related to having a fair price at the harvesting time. Wijesooriya et al. (2017), stated that the farm gate price of paddy during the harvesting months, is well below the guaranteed price, particularly in areas where high supply of to the market, low storage facilities, fewer infrastructure facilities, fewer private millers, and low-income families.

As investment made in rice mills is highly specific, most large-scale millers adopted vertical integration beyond the main role of paddy processing. They act in all the functions from farm gate to consumer such as buyers and stock controllers of paddy and as wholesalers and retailers of rice in many instances. This vertical integration and use of modern technology create the miller's ability to buy large quantities of paddy at once, especially during the harvesting period, and to maintain large paddy storage that can influence the rice market. This scale of the operation with an increasing return to scale can increase the productive efficiency of the milling operation as well (Wickremasinghe et al., 2016).

The physical asset specificity is highly relevant as established rice mills are difficult to move to other locations. Only a few exceptional studies are available in asset specificity across different industries while controlling for different types of functions. Site specificity is another important attribute as in certain districts such as Hambanthota and Kurunegala, millers are spread all over the paddy-producing areas of the district which enables farmers to directly sell their paddy to the mill while reducing the transaction cost. In contrast, in Anuradhapura and

Polonnaruwa, the role of village-level paddy collectors was prominent as mills are concentrated in urban areas which leads to higher transaction costs (Wickremasinghe et al., 2016).

Wijesooriya et al. (2021) urged that the limitation of the operation of SMS millers during the off-season due to the unavailability of paddy at an affordable price, created uncertainty for SMS millers to continue their business. Therefore, it is very clear that the poor performance of SMS millers even having around 57% of the market share is the main cause of the issues in the rice industry.

> Hypothesis 1: There is no significant difference between the Market Price of Rice and the Maximum Retail Price

MATERIALS AND METHODS

Two interviews were conducted with the subject specialist key officials of the Hector Kobbekaduwa Agrarian Research and Training Institute (HARTI), two interviews with the subject specialist of the Consumer Affairs Authority (CAA), two subject-specialized officers of the Paddy Marketing Board. In addition, two interviews were conducted with the representatives of the United Rice Producers Association and one interview with the Essential Food Importers Association.

HARTI is mandated to conduct research relating to the agrarian sector in Sri Lanka. Accordingly, the institute conducts market surveys, collects the daily market price of food commodities, and publishes them as daily, weekly, and monthly food commodity bulletins. Wijesooriya et al. (2021), stated that the Colombo district is considered as the central rice market in the country as it contributes high market potential as the production deficit is 25% in Colombo. Jayasinghe (2006) suggested that prices in Colombo and other regional markets are highly integrated either in surplus or deficit markets. Therefore, the retail market prices of rice in the Colombo district were used in this study. The monthly average retail market prices of major rice types; long grain white (LGW / *Sudu Nadu*), short grain white (SGW / *Sudu Samba*), redraw (RR / *Rathu Kekulu*), and white raw (WR / *Sudu kekulu*) published by the HARTI were used for this study for the period of the year 2015 to 2022. These selected four major rice types consume 91% of the population in the country; LGW: 33%, SGW: 16%, WR: 21%, and RR: 21%. (Ministry of Health and Indigenous Medicine, 2017).

Consumer Affairs Authority (CAA) was established as per the Consumer Affairs Authority Act number 09 of 2003. CAA is governed by a Board of Directors and a consumer affairs

council, an independent body that has been established to consult the Board of Directors. CAA is mandated to protect consumers against unfair trade practices, ensure consumers have adequate access to goods and services at competitive, and seek redress against unfair trade practices, restrictive trade practices, or other forms of exploitation of consumers by traders. Accordingly, the maximum retail price (MRP) has been imposed through a gazette notification, as per the provision in section 20(05) of the Consumer Affairs Authority Act number 09 of 2003. Accordingly, the MRP of four selected main rice types was used in this study from 2015 to 2022.

The government allows importing rice to increase the supply in the market expecting a stabilized market price of rice to secure consumers. The rice importers have been conducted either Government or through members of the Essential Food Commodity Importers Association. Therefore, the monthly rice import quantities to the country were obtained from the monthly food commodity bulletin published by HARTI.

DATA ANALYSIS

As identified through the interviews with the subject specialist of CAA, once MRP is imposed, the retail price of rice in the market should be either equal to or lower than the MRP. No, any organization can sell rice beyond the MRP. Hence if the MRP is imposed effectively, the market price of rice should be either equal to MRP or lower than MRP. If it is not imposed effectively, the market price of rice might be higher than the MRP. Therefore, MRP is considered as the specific value to analyze the deviation of market price with the MRP, and the appropriate statistical method is the one-sample T-test. The one-sample t-test is a statistical hypothesis test used to determine whether an unknown population means is different from a specific value (Oliver, 2014). Therefore, one sample t-test was used for the analysis.

The parameters for the t-test are as follows.

Test value = Maximum Retail Price (MRP) = μ_0

μ-mean monthly retail price

$H_0:\mu=\mu_0$ vs $H_1:\mu\neq\mu_0$

If t-value > Table-value then H_0 must be rejected.

Once the MRP is imposed, retail price $\leq$ MRP.

In the second step, the right tail test was conducted to identify whether the sample mean was higher than the test value for the instances where a significant difference was observed between mean monthly retail prices and the MRP in one sample t-test.

The right tail test is used when the sample mean is greater than μ_0

μ-mean monthly retail price

$$H_0: \mu \leq \mu_0 \quad vs \quad H_1: \mu > \mu_0$$

If t<0   then   p-value=1-Sig/2

If t>0   then   p-value=Sig/2

$$If \; P-value \; for \; t-test < 0.05 \; then H_0 \; must \; be \; rejected$$

RESULTS

Results of the Analysis of One Sample t-Test

The MRP was revised seven (7) times during the considered study period as shown in Table 01(The Gazette of the Democratic Socialist Republic of Sri Lanka, 2023). The results of the analysis of the one-sample t-test are also shown in Table 01. Accordingly, H_1 can be accepted in all four rice types from January 2015 to January 2017, from February 2017 to July 2017, from June 2020 to September 2020, from January 2021 to October 2021, and from May 2022 to December 2022 as the test values are higher than the critical value. The MRP of LGW from August 2017 to May 2019 was Rs. 74.00 and the MRP was not imposed for the other three selected rice types (The Gazette of the Democratic Socialist Republic of Sri Lanka, 2023) and H_1 can be accepted in the LGW rice type as the test value is higher than the critical value. The MRP from June 2019 to December 2019 was imposed only for SGW and LGW rice types and not for both WR and RR (The Gazette of the Democratic Socialist Republic of Sri Lanka, 2023). According to the results of the one-sample t-test shown in Table 01, H_1 can be accepted in the LGW and SGW rice types from June 2019 to December 2019 as the test values are higher than the critical value. Therefore, results proved that the market price (MP) of selected all four rice types during the considered period showed a significant difference with MRP.

Table 01: Results of the Analysis of One Sample T-test

Period	Type of rice	MRP	T- value vs $t_{\alpha, df}$	Sig.- Value	Result
January 2015 to January 2017	SGW	77.00	27.141>2.064	0	Accepted H_1
January 2015 to January 2017	LGW	68.00	12.670>2.064	0	Accepted H_1
January 2015 to January 2017	WR	66.00	5.558>2.064	0	Accepted H_1
January 2015 to January 2017	RR	66.00	4.191>2.064	0	Accepted H_1
February 2017 to July 2017	SGW	90.00	7.574>2.571	0.001	Accepted H_1
February 2017 to July 2017	LGW	80.00	9.458>2.571	0	Accepted H_1
February 2017 to July 2017	WR	78.00	4.835>2.571	0.005	Accepted H_1
February 2017 to July 2017	RR	78.00	4.179>2.571	0.009	Accepted H_1
August 2017 to May 2019	LGW	74.00	21.603>2.080	0	Accepted H_1
June 2019 to December 2019	SGW	85.00	13.859>2.447	0	Accepted H_1
June 2019 to December 2019	LGW	80.00	8.604>2.447	0	Accepted H_1
June 2020 to September 2020	SGW	98.00	3.899>3.182	0.03	Accepted H_1
June 2020 to September 2020	LGW	96.00	12.347>3.182	0.001	Accepted H_1
June 2020 to September 2020	WR	93.00	8.863>3.182I	0.003	Accepted H_1
June 2020 to September 2020	RR	93.00	10.653>3.182	0.002	Accepted H_1
January 2021 to October 2021	SGW	94.00	18.520 > 2.262	0	Accepted H_1
January 2021 to October 2021	LGW	92.00	14.951>2.262	0	Accepted H_1
January 2021 to October 2021	WR	89.00	18.807>2.262	0	Accepted H_1
January 2021 to October 2021	RR	89.00	11.851>2.262	0	Accepted H_1
May 2022 to December 2022	SGW	230.00	2.926>2.365	0.022	Accepted H_1
May 2022 to December 2022	LGW	220.00	3.283>2.365	0.013	Accepted H_1
June 2022 to December 2022	WR	210.00	3.268>2.447	0.017	Accepted H_1
June 2022 to December 2022	RR	210.00	3.779>2.447	0.009	Accepted H_1

Note: α= 0.05 significant level   (source: Author Calculated,2023)

The precise market price data is not available from January 2020 to May 2020 and from October 2020 to December 2020 may be due to the lockdown situation in the country as a result of the pandemic situation.

Results of the Analysis of the Right Tail Test

As the results of one sample t-test showed a significant difference between the MRP and the MP and the mean market prices were higher than the MRP, the right tail test was conducted to identify whether the MP was significantly greater than the MRP.

Table 02: Results of the Analysis of the Right Tail Test

Duration	Rice type	P value	P value vs α	Result
January 2015 to January 2017	SGW	0	P=0< 0.05	Accepted H_1
January 2015 to January 2017	LGW	0	P=0< 0.05	Accepted H_1
January 2015 to January 2017	WR	0	P=0< 0.05	Accepted H_1
January 2015 to January 2017	RR	0	P=0< 0.05	Accepted H_1
February 2017 to July 2017	SGW	0	P=0 < 0.05	Accepted H_1
February 2017 to July 2017	LGW	0	P=0< 0.05	Accepted H_1
February 2017 to July 2017	WR	0.002	P=0.002< 0.05	Accepted H_1
February 2017 to July 2017	RR	0.004	P=0.004< 0.05	Accepted H_1
August 2017 to May 2019	LGW	0	P=0< 0.05	Accepted H_1
June 2019 to December 2019	SGW	0	P=0< 0.05	Accepted H_1
June 2019 to December 2019	LGW	0	P=0< 0.05	Accepted H_1
June 2020 to September 2020	SGW	0.015	P=0. 015 < 0.05	Accepted H_1
June 2020 to September 2020	LGW	0	P=0< 0.05	Accepted H_1
June 2020 to September 2020	WR	0.001	P=0. 001 < 0.05	Accepted H_1
June 2020 to September 2020	RR	0.001	P=0. 001 < 0.05	Accepted H_1
January 2021 to October 2021	SGW	0	P=0< 0.05	Accepted H_1
January 2021 to October 2021	LGW	0	P=0< 0.05	Accepted H_1
January 2021 to October 2021	WR	0	P=0< 0.05	Accepted H_1
January 2021 to October 2021	RR	0	P=0< 0.05	Accepted H_1
May 2022 to December 2022	SGW	0.011	P=0. 011 < 0.05	Accepted H_1
May 2022 to December 2022	LGW	0.006	P=0.006<0.05	Accepted H_1
June 2022 to December 2022	WR	0.008	P=0.008<0.05	Accepted H_1
June 2022 to December 2022	RR	0.004	P=0.004<0.05	Accepted H_1

According to the results of the analysis of right tail test shown in Table 02, the study identified that all selected four main rice types during the considered period from 2015 to 2022 accepted H_1, which confirmed that the MP is significantly greater than MRP.
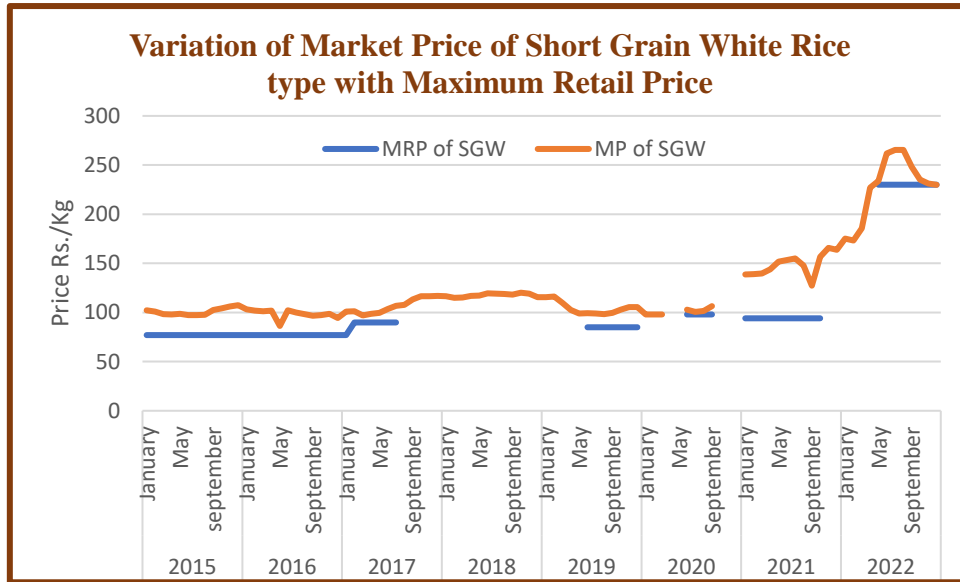
Figure 01: Variation of the Market Price of SGW Rice Types with MRP
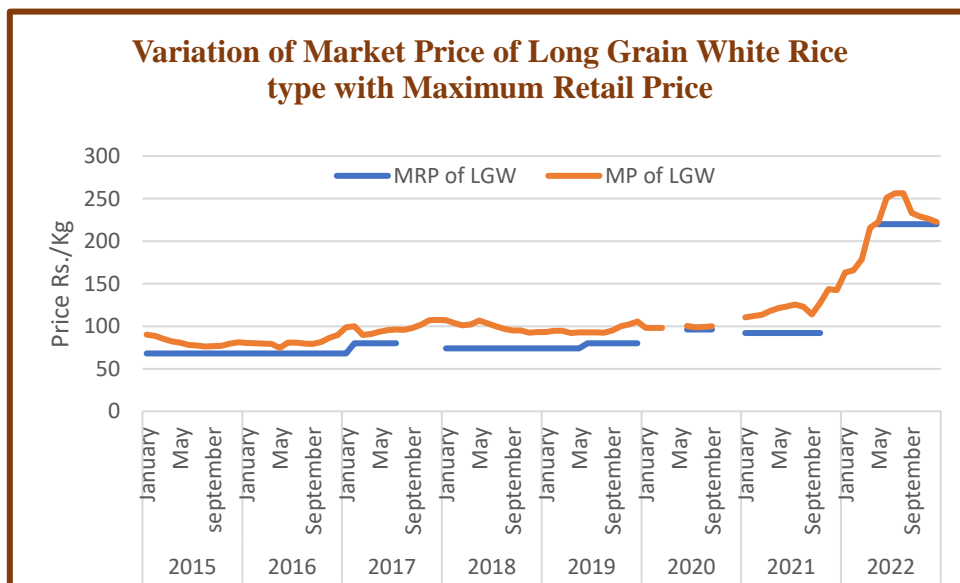
Figure 02: Variation of Market Price of SGW Rice Type with MRP

The variation of MP of SGW rice type with MRP is shown in Figure 01 and the variation of MP of LGW rice type is shown in Figure 02. Accordingly, the study identified that the MP of SGW and LGW was greater than the MRP during the entire study period.

The Variation of MP of WR and RR rice types is shown in Figure 03. Except in June 2016 MP of RR was greater than the MRP and MP of WR showed a higher MP than MRP during the entire study period from 2015 to 2022.
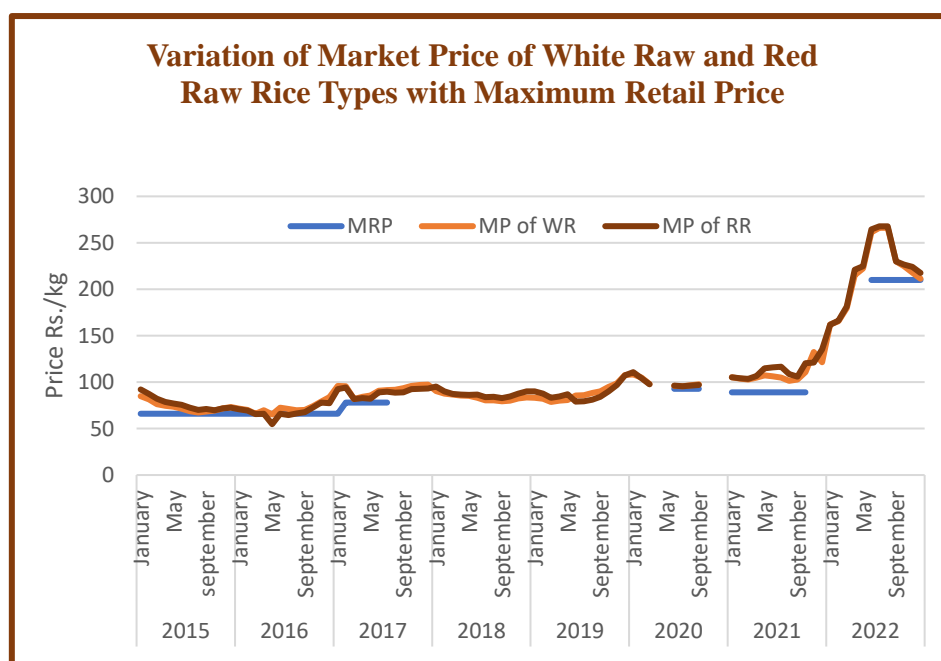
Figure 03: Variation of MP of WR and RR Rice Types with MRP

Results of the Interviews with Key Stakeholders

The study identified during the interviews with stakeholders that, once the CAA publishes the gazette through the media regarding the MRP, complaints come to the 1977 hotline regarding the places selling rice beyond the MRP. In addition, field officers are visiting the market as they have assigned targets. When a particular shop sells at a higher price than MRP, legal action will be taken against the shop owner. Sometimes if the product is branded, legal action is taken against the miller. Legal action can be taken only for organized business places (registered business places). Small boutiques and open markets (*Pola*) have not been considered for legal action as those places are not a legal body to charge against. At certain times, the miller will unload rice to the retail or wholesale shop indicating in the invoice an MRP. In addition, additional charges will be noted in the invoice as transport charges. Therefore, the selling price consists of the cost of rice as well as transport costs. However, the shop owner has to bear additional costs or needs to transfer them to the consumers, especially during the offseason.

Based on the consumer demand, processing technology, and quality of the raw material (Paddy), the rice available in the market has different quality levels even in the same rice type.

Moisture content, broken percentage, uniform color, and discolored grains are the main quality factors of rice (Rice Knowledge Bank, 2023). According to these quality factors, three grades; grade 1, grade 2, and grade 3 are available in the market at different prices. However, the MRP is imposed only for a rice type without considering the quality factors or the grades available in the market.

DISCUSSION

Impact of Impose of Maximum Retail Price

The study identified that imposed MRP to be done based on the quality factors enables millers to enhance the quality of rice in the industry. As the MRP is not considered a quality factor, almost all the millers tend to produce rice as per the imposed MRP to get higher profit. The representative of the United Rice Producers Association also proposed to impose MRP based on quality such as premium quality, normal quality, and lower quality. Otherwise, millers tend to reduce their quality due to the imposed MRP which affects competitiveness. The premium brands are available in the market as a handy and attractive package that is produced by large-scale millers. The validity of MRP for such premium handy packs is questionable.

As shown in Figures 01,02, and 03, all four rice types show almost higher MP than the MRP. Scholars: Thibbatuwawa (2021), and Wijesooriya et al. (2021) urged that the MP of rice be greater than the rest of the year from October onwards to the January of following years which requires the imposed MRP to regulate the MP of rice. However, the MRP for SGW was not imposed from October onwards to January of the following year in 2017, 2019, and 2021 even though it consumes 16 percent of the population. Similarly, the MRP was not imposed for LGW in 2016, 2019, and 2020 even though it consumes around 33 percent of the population. Further, the MRP for WR and RR was not imposed in 2017, 2018, 2019, 2020, and 2021 from October onwards to January of the following year even though it consumes more than 42 percent of the population. Accordingly, the study identified that the MRP was not imposed during the required period to regulate the MP in certain years. The main reason for not imposing MRP in the required time may be an opportunistic action of key players in the industry; may be large-scale millers, hidden political hand, importers, or policymakers.

Managing the Supply and Demand of Rice

Recent literature on the study of paddy-to-rice conversion was not available under local conditions and for the local paddy varieties. The paddy-to-rice conversion ratio varies with

processing types, machinery used, the quality of the rice, and the quality of the paddy. In modern types of machinery, the amount of brand removal is much higher to get a shiny appearance to attract consumers without considering the nutritional loss.

The percentage of broken in the rice is also low to meet the consumer attraction. The PMB used 63 percent for raw rice and 65 percent for parboiled rice as conversion ratios from paddy to rice based on the test conducted with the Institute of Post-Harvest Technology. However, the Department of Agriculture uses the conversion ratio from paddy to rice as 68 percent which is an overestimation in their crop forest publication (Department of Agriculture, 2022). Therefore, 63 percent were used in this study as a paddy-to-rice conversion ratio.

Representatives of the United Rice Producers Association urged with their experience that the cultivation of *Keeri Samba,* a kind of SGW paddy type is becoming popular in the country due to high demand and high income for farmers. However, the average production varies based on the different districts. The yield in Vavuniya and Mannar districts is around 2,500 Kg/ac and however, in Ampara or Polonnaruwa, the yield becomes 1,800Kg/ac. The milling outturn is also lower around 58 percent. In contrast, the yield of LGW (Nadu) becomes 2,200kg/ ac and the outturn will be around 64 percent. Under these circumstances, the discrepancy of national-level production statistics may have occurred due to this lower production and milling outturn of Keeri samba.

The last ten years' average paddy production in the *Maha* and *Yala* seasons are 2.599 million metric tons and 1.581 million metric tons respectively (Author, 2023). During the study period from 2015 to 2022, lower production than the average during both the *Maha and Yala* seasons was observed in 2017, and 2022 as shown in Figure 04. Even though the *Maha* season of 2018 showed a lower production than average, the annual production exceeded the consumption requirement. In contrast, as shown in Figure 05, except for 2017 and 2022, in all other years from 2015 to 2022, the rice availability from domestic production exceeds the annual consumption requirement. The lower production in 2017 was reported due to the prevailing adverse weather conditions in the country and 2022 was reported due to the ban on inorganic fertilizer and agrochemical imports (Central Bank 2022). However, even with the excess availability of rice from domestic production, an immense quantity of rice imports was observed in 2015, and 2018. Further, the quantity imported in 2022 exceeded the deficit amount.

The country's surplus rice availability from production was 547,900 metric tons and 37,800 metric tons respectively in 2015 and 2018. However, 284,100 metric tons in 2015 and 249,537 metric tons in 2018 were imported without considering the surplus in the market. Generally, scarcity in the market was observed from October onwards up to January of the following year. However, as shown in Figure 06, a significant quantity; 260,000 metric tons (91% out of the total imports) in 2015 and 237,145 metric tons (95 percent of the total imports) in 2018 was imported from January to May which is the time of harvest of main *Maha* season. It may be a loss of opportunity for farmers to sell their paddy at a higher price due to the excess supply of rice in the market**Figure 04: Seasonal paddy production during the last 10 years**
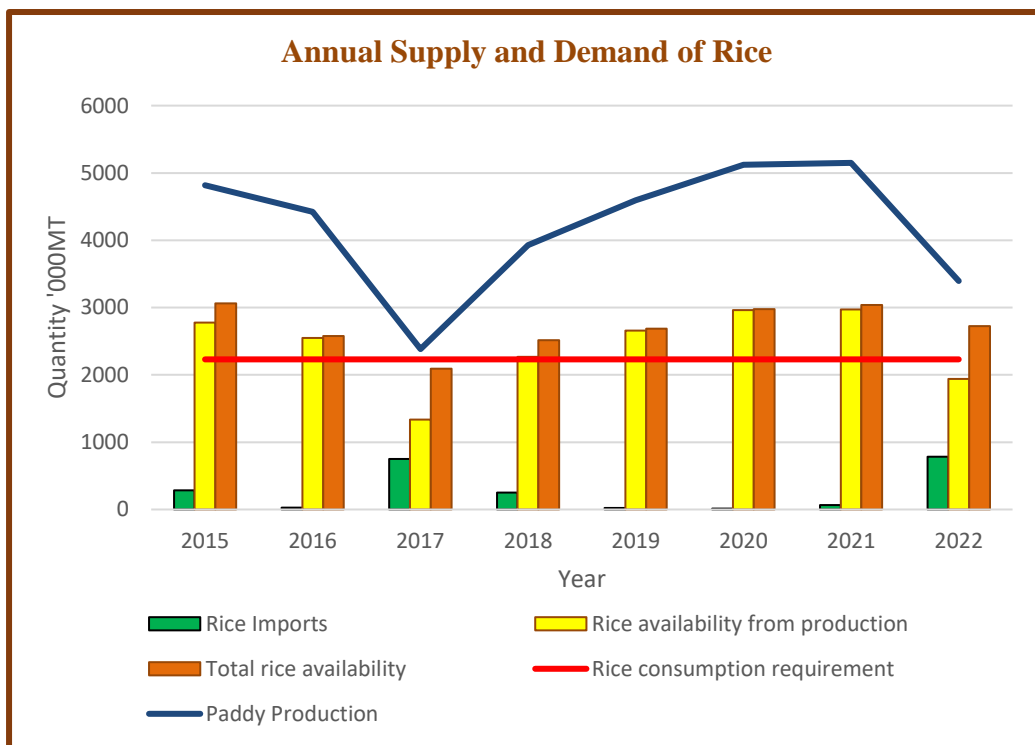
Figure 05: Supply and Demand of Rice from 2015 to 2022

MONTHLY RICE IMPORT QUANTITIES
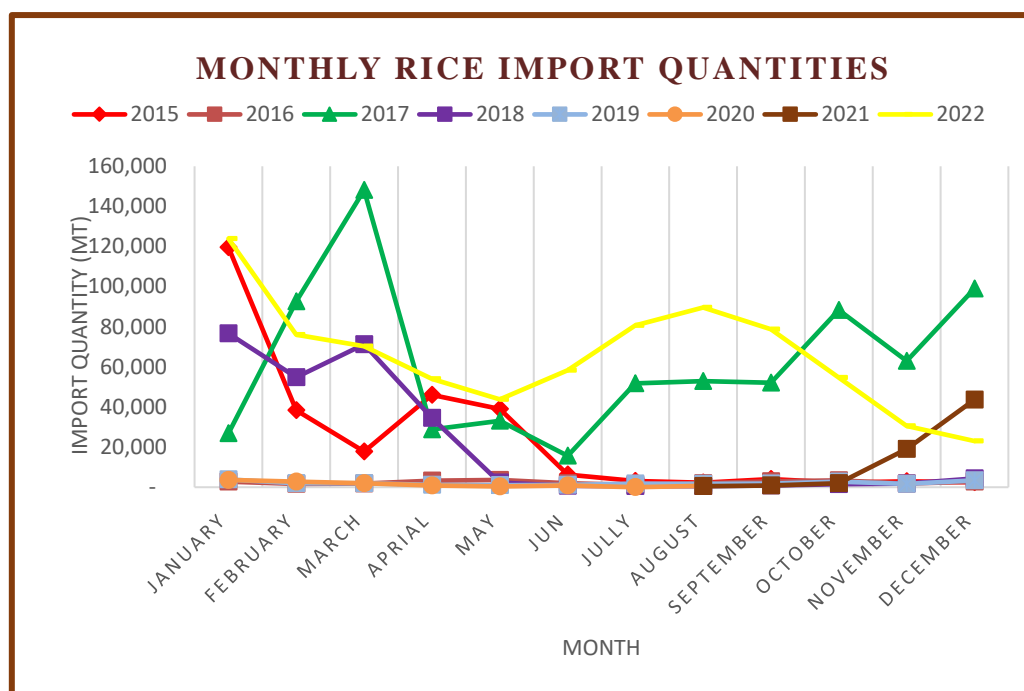
(source: Hector Kobbekaduwa Agrarian Research and Training Institute, 2023)

Figure 06: Import Quantities of Rice

The country had 892,500 metric tons (40% of the annual rice requirement) of deficit production in 2017 due to the prevailing adverse weather conditions. Therefore, 752,028 metric tons of rice was imported in 2017. However, the imported quantities were not adequate to replace the deficit quantities to meet the annual consumption requirement. The country had 290,000 metric tons (13% of the annual rice requirement) deficit of rice in domestic production in 2022. Hence to fulfill this 290,000MT of rice deficit, 783,418MT, around 2.7 times out of deficit was imported in 2022 (Hector Kobbekaduwa Agrarian Research and Training Institute, 2023). Under these circumstances, the study identified that rice imports took place without a proper assessment of the rice availability from local production. The import of rice without considering the rice availability from local production may be due to the absence of information on stock availability or else rice importers are getting an opportunistic advantage of importing rice by misguiding the policymakers.

The representative of the Essential Food Importers Association urged that rice imports take place with the policy decision of the government. In certain years government banned the import of rice and adjusted taxes to enable importers to import rice. Based on the trend in the market price of rice and the respective policy decisions they import rice. The quantity authorized to import will be decided by the Government at a certain time and most of the time

no restriction on import quantities. Under these circumstances, the import takes place based on previous experiences (heuristics). As discussed in the assumption of bounded rationality in transaction cost economics, economic actors make decisions about their mental capabilities of processing information or else based on the heuristics (Simon, 1990). The getting decisions based on heuristics is not always economical and it can create a loss.

According to sections 04 and 10 of the Paddy Marketing Board Act no 14 of 1971, facilities for sale, supply, transport or distribution, hulling, milling, or processing of paddy and rice are allowed only for authorized purchasers who get a permit from the PMB (Paddy Marketing Board, 1971). Accordingly, an order has been published in the gazette by the Minister (The Government Gazette, 2010). Under these circumstances, the millers should report their processing condition and stock availability every month. However, PMB has not made any formal procedure to implement this regulation may be due to the opportunistic action of key players in the industry. If the PMB assesses the stock level, it will assist policymakers in ensuring food security and identifying import requirements.

CONCLUSION

The MRP has been imposed to regulate the market price of rice, especially during the off-season which we can observe a higher market price from October to January of the following year. However, in certain years the MRP was not imposed for all rice types or certain rice types during the period which observed higher market price. There are several grades of rice available in the market with different qualities at different prices. The study identified that the imposed MRP did not consider quality factors such as broken percentage, moisture content, percentage of discolored grain, etc. Meantime the MRP was imposed based on the rice type irrespective of the grades. The analysis of MP with MRP through one sample T-test and the right tail test proved that MP of selected four main rice types are significantly greater than MRP throughout the study period from 2015 to 2022. Therefore, the study suggested that imposed MRP was not successfully implemented and the regulating retail market price was not attained as expected by the Government to safeguard the consumers during the considered study period. Therefore, the Study confirmed that rice is not available at an affordable price to consumers.

According to the order published by the gazette as per the provision act no. 14 of the Paddy Marketing Board Act 1971, regulating rice processing, storing, and milling, millers should report their processing condition and stock availability every month to the PMB. However, PMB has not made any formal procedure to implement this regulation continuously. If the

PMB assesses the stock level, it will assist policymakers in ensuring food security and identifying import requirements during production deficit instances. Under these circumstances, the study identified that due to the absence of information on stock availability, rice importers might get an opportunistic advantage of importing rice by misguiding the policymakers. In other words, the assumption of opportunism and bounded rationality are prominent in the industry as discussed in Transaction cost economics (Williamson, 1981). Hence can observe an immense quantity of rice imports in 2015 and 2018 even with the surplus rice availability and 2022 beyond the deficit rice requirement. Further, 2016, 2019, and 2021 rice imports were reported even without a production deficit. Therefore, the study confirmed that imports were made without considering the rice availability from domestic production in the country. Hence economic actors and policymakers should make appropriate decisions enabling market forces to decide the price of rice ensuring the availability and impose of MRP to make available the rice at an affordable price for the consumer.

The way forward and recommendations

- o As the price of rice varies with the quality criteria, recommend studying the feasibility of imposing MRP based on designated quality criteria.
- o Recommend studying the limitations and adopting appropriate strategies to implement MRP in the retail market to make sure the availability of rice to consumers at an affordable price
- o Recommends to adopt regulations to monitor rice processing and stock management to ensure food security and allow importations of rice only during identified deficit conditions based on stock availability.

Limitations

This study is mainly conducted based on the information published in the Monthly food commodity bulletin published by HARTI. Therefore, the market prices and the import figures are assumed as true and correct. In certain periods, market prices of respective rice types are available in either one, two, or three grades. As the imposed maximum retail price is valid for all grades in respective rice types, the price of grade 1 was considered in this study. There might be instances where lower market prices with lower quality have not been considered in this study.

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Unraveling the Effects of the Financial Crisis on the Going Concern of Sri Lankan SMEs: A Qualitative Inquiry

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ABSTRACT

Small and medium-sized enterprises (SMEs) play a pivotal role in the growth, employment, and social stability of national economies. The objective of this research is to explore the impact of the financial crisis on business continuity by taking Sri Lankan SMEs as a case. Past literature does not adequately address how severely SMEs are affected, how they are still surviving, or potential techniques for overcoming the difficulties. To achieve this objective, the purposive sampling method was utilized to select a sample of twelve SME owners, representing the Sri Lankan SME landscape, with at least five years of operational history from the years 2018 to 2022. In-depth interviews were conducted to identify and analyze the effects of the financial crisis on the going concern of SMEs. The findings revealed that the financial crisis had affected SMEs in varying degrees. Numerous SMEs have grappled with escalating costs, insufficient working capital, and the threat of bankruptcy. Moreover, it's evident that the financial crisis significantly affected SMEs, marking the onset of Sri Lanka's recovery journey. Despite these challenges, the study also uncovers a positive aspect for SMEs in Sri Lanka. The crisis has spurred domestic production due to currency fluctuations and import restrictions. The paper explored how the increased availability of financial resources, amidst macroeconomic restrictions, could influence these dynamics. In summary, this study sheds light on the specific repercussions of the financial crisis on SMEs in Sri Lanka. By implementing the recommended strategies, SMEs cannot only navigate the challenges posed by the financial crisis but also capitalize on new opportunities for growth, development and advancement. The insights gleaned from this study hold great value for policymakers, SME owners, banks, financial institutions and other stakeholders in crafting effective strategies and support systems to sustain and bolster the SME sector during financial tumult.

Keywords: Case Study, Financial Crisis, Going Concern, SMEs

INTRODUCTION

Small and Medium-Scale Enterprises (SMEs) have gained significant recognition as a strategic sector, particularly in developing countries facing pervasive economic challenges such as unemployment and poverty. SMEs are characterized by their smaller employee count, assets, and revenues compared to large-scale businesses. The specific definition of SMEs varies from

country to country, however, it is observed that these enterprises play a crucial role in providing employment opportunities, especially for the youth, and contribute to the fight against poverty (Sri Lanka Export Development Board, 2021). SMEs are the engine of sustainable growth of economies in developing countries and economic growth includes increase in GDP and income per head (Nyanga et al., 2013). A significant section of Sri Lanka's population is supported by SMEs, which play a key role in the country's development (Central Bank of Sri Lanka, 2021).

The vulnerability of SMEs to economic changes has been well documented in the literature. Currently, Sri Lanka is experiencing a financial crisis, which reached its peak in 2022. That poses significant challenges for SMEs operating in the country. Given the circumstances, it is crucial to examine how this ongoing crisis has impacted the ongoing concerns of SMEs in Sri Lanka. However, there is a lack of comprehensive studies on this specific topic, especially in the Sri Lankan context, as the ongoing crisis is unique and unprecedented. Therefore, this study fills a significant gap in the existing literature by providing valuable insights into the effects of the recent financial crisis on SMEs in Sri Lanka. The research draws information directly from relevant sources, ensuring a reliable and accurate analysis of the situation.

However, there is a lack of comprehensive studies on this specific topic, especially in the Sri Lankan context. Therefore, this study fills a significant gap in the existing literature by providing valuable insights into the effects of the recent financial crisis on SMEs in Sri Lanka. The research draws information directly from relevant sources, ensuring a reliable and accurate analysis of the situation. By filling this gap in the literature, this study has the potential to generate valuable insights and the reliable and accurate analysis provided can serve as a foundation for further research and can contribute to the broader academic knowledge on the subject. Researching the obstacles that SMEs encounter during a financial crisis and the tactics they use to overcome these hurdles can yield important insights and advance knowledge of the dynamics that exist within the SMEs sector. The conclusions from this study can be advantageous to a wide range of stakeholders and have numerous practical implications. The research study is a useful tool for academics, industry practitioners, policymakers, and SME owners since it sheds light on the difficulties faced by SMEs in Sri Lanka during the financial crisis and the techniques used by these SMEs to remain sustainable. To enhance the resilience and sustainable future of SMEs in Sri Lanka, it can provide useful guidance, influence policy initiatives, and educate decision-making processes.

REVIEW OF LITERATURE

Defining SMEs and their significance

In the Sri Lankan context, SMEs are defined based on the number of employees and annual turnover, as outlined in Table 1 of the national policy framework for SME development published by the Ministry of Industry and Commerce in 2020.

Table 1: Defining SMEs in Sri Lanka

Size / Sector	Criteria	Medium	Small	Micro
Manufacturing Sector	Annual Turnover	Rs. Mn. 251 – 750	Rs. Mn. 16 – 250	Less than Rs. Mn. 15
	No. of Employees	51 – 300	11 – 50	Less than 10
Service Sector	Annual Turnover	Rs. Mn. 251 – 750	Rs. Mn. 16 – 250	Less than Rs. Mn. 15
	No. of Employees	51 – 200	11 – 50	Less than 10

Source: Based on (Ministry of Industry and Commerce, 2020)

According to the Asian Development Bank, SMEs account for more than 75% of businesses in Sri Lanka and contribute to over 20% of exports, 45% of employment, and 52% of the Gross Domestic Product (GDP) (Chen & Sabyasachi, 2022; International Finance Corporation, 2020). However, the current financial crisis has significantly impacted the Sri Lankan economy. The country is facing an unexpected economic downturn marked by high inflation, rising commodity prices, power shortages, and fuel scarcity. This crisis is further compounded by a notable decline in agricultural production resulting from failed agricultural development initiatives. Recent assessments conducted in nine districts in June indicate that 58% of households have lost over 50% of their income, and the crisis has also affected businesses nationwide (OCHA, 2022).

In the present global economy, SMEs are crucial to the industrial systems of developed as well as developing countries. They are recognized as the most productive organizations in the world's economy, and they are crucial to the growth of a country. SMEs are essential to the private sector of every country. Additionally, as globalization progresses, they have come to play a crucial role in expanding local businesses' access to global markets and engaging in local

market competition with multinational rivals. In the process of internalization, SMEs in the global market face several benefits and drawbacks. The advantages of being small, adaptable, and responsive to adjust, on the other hand, the drawbacks of size may offer SMEs alternative options during the globalization period. SMEs will benefit from different variables through internalization depending on the economic, geographical, and cultural variations between nations (Ensari & Karabay, 2014). In emerging economies, SMEs are possibly the most dynamic businesses. According to empirical data from around the globe, the growth of SMEs has captured the attention of the entire world. It is impossible to overstate the significance of SMEs in the modern economy. An enterprise survey found that the main barrier to the expansion of a SME is access to financing (Wang, 2016).

The continuity and survival of SMEs in the financial crisis

In the field of accounting, the concept of going concern suggests that businesses will continue their operations for an indefinite period. It assumes that the business will be able to operate in the foreseeable future. The risks that can impact the going concern of SMEs are significant and need to be effectively managed (Kaya & Uzay, 2017). The Going Concern Assumption (GCA) is a fundamental prerequisite for economic growth and stability, both at the national and corporate levels. During economic and financial crises, when internal and external resources become scarcer or uncertain, management decisions increasingly focus on corporate efficiency and effectiveness (Zéman et al., 2018).

In 2022, the deepest economic and political crisis happened in history. Therefore, the power outages, queues, and shortages of essential commodities made the people suffer highly due to the economic crisis (Weerakoon, 2023). As per the information published by the (The World Bank, 2022) there was a decrease in growth and poverty and signs were showing in the last five years. External imbalances were heavily influenced by a restrictive trade system, a poor environment for investing, times of weak monetary policy, and a fixed exchange rate. Tax cuts in 2019 along with ongoing fiscal inequalities, which are mostly caused by inadequate revenue collections, have led to substantial fiscal deficits, significant gross financing needs, and a quick increase in unsustainable debt. Further, it is evident that, in the year 2019, the government had cut down taxes resulting in a loss of substantial revenue (Perera, 2023).

Despite the recognition of their importance, significant progress in SME development has been limited. Government incentives and benefits, along with support from banks in previous years, have helped SMEs sustain their operations. However, recent financial crises, including the

COVID-19 pandemic, have deteriorated the survival conditions for SMEs in Sri Lanka. Previous research indicates high failure rates and low growth compared to other countries in Sri Lanka (Sriyani, 2022). The financial crisis further exacerbates the unfavorable environment for SME growth and survival. Access to capital is a major constraint for SMEs due to lending conditions and the reluctance of banks in developing countries to provide credit. High loan interest rates, inflation, and overall sluggish economic development pose significant challenges for SMEs (Santos, 2021). SMEs face various difficulties during the crisis, such as liquidity problems due to revenue losses and increased inflation impacting their ability to pay wages. Demand for goods and services has significantly decreased, leading to order cancellations and reduced customer visits (Robinson & Kengatharan, 2020). These challenges, combined with high production costs, reduced demand, raw material shortages, power outages, and working capital and liquidity issues, have adversely affected the financial performance and capacity utilization of SMEs (Sriyani, 2022).

The negative consequences have put a significant number of jobs at risk, particularly due to import restrictions (Kulatunga, 2022). Industries like tourism and construction have been particularly affected, with delays in construction projects and losses in the hospitality sector (Shukla, 2022). It is important to note that all the previous literature clearly explains how important SMEs are to the economy of a country. Certain external factors and forces that are uncontrollable affect the survival of these SMEs. During financial crises, high inflation rates have a significant impact on SMEs, leading to increased operational expenses (Dawood, 2022). To navigate challenges, SMEs are becoming more outward-focused, seeking opportunities in the surrounding environment (Kottika et al., 2020). All decisions made before the crisis become unimportant, while survival becomes the key factor. With the sudden fluctuations in the inflation rate, it is challenging for SMEs to keep up with their daily business expenses.

SMEs struggle to obtain loans and meet their capital requirements due to limitations in the financial system, which prioritizes larger and more qualified clients. Government interventions such as grants, special loans, refinancing schemes, and credit guarantee schemes have been proposed to address this issue. The "Twin Pillar Approach to Access to Finance" advocates for ensuring funds are available to SMEs and improving banks' perception and support for SMEs (Wijesinha & Perera, 2015). In Pakistan, SME performance is affected by various barriers, including infrastructure and funding limitations, economic constraints, corruption, and managerial concerns. These challenges have a significant positive correlation with entrepreneurial SME failure (Khan, 2022).

Overall, SMEs face numerous challenges during financial crises, but their ability to navigate and innovate is crucial for survival. Government support, access to finance, and strategic resilience are key factors that influence SME success during economic downturns.

DATA AND METHODOLOGY

The study was exploratory and was among the initial studies that focused on the 2022 financial crisis in Sri Lanka. Primary data was collected from SME owners to facilitate a multiple-case study approach. Purposive sampling was used to select the twelve SME cases, representing the entire population of SMEs impacted by the financial crisis in Sri Lanka. The sample consisted of SMEs that have been in operation for at least five years, from 2018 to 2022. Data was gathered through interviews with SME owners. Thematic analysis, a qualitative analysis method, was employed to analyze the data and identify recurring themes (Braun & Clarke, 2006; Kiger & Lara, 2020). To ensure the trustworthiness and quality of the study, the eight Big-Tent criteria proposed by Tracy were considered. The study aimed to make a significant contribution by providing new knowledge and insights from SME owners, and ethical considerations were followed by ensuring confidentiality and obtaining the owners' approval for data usage. The meaningful coherence of the study was reflected in the results and their implications (Tracy, 2010).

Table 2: Respondent profile

Respondent No.	Category of the Respondent	Industry	Number of Employees	Location
SME Owner 01	Partner	Cottage textile industry	15	Kurunegala
SME Owner 02	Owner	Plastic manufacturing industry	Contract	Colombo
SME Owner 03	Owner	Automotive industry	15	Kurunegala
SME Owner 04	Owner	Herbal industry	32	Galle
SME Owner 05	Owner	Cushion manufacturing industry	50	Biyagama
SME Owner 06	Owner	Spice industry	Contract	Kandy
SME Owner 07	Owner	Automotive industry	08	Colombo
SME Owner 08	Owner	Furniture industry	15	Colombo
SME Owner 09	Owner	Pharmaceutical industry	17	Colombo
SME Owner 10	Owner	Bakery industry	10	Gampaha
SME Owner 11	Owner	Water Supply and vehicle rental service industry	10	Galle
SME Owner 12	Owner	Building Contract Industry	15	Colombo

Source – Author's work

Each interview is named case-wise to maintain the anonymity of the SMEs. These interviews have been conducted with the voluntary participation of SME owners, and the interviews were recorded with their consent. The confidentiality of the data collected through the interviews was maintained by adhering to the institutional ethical guidelines.

RESULTS AND DISCUSSIONS

Exploration of Financial Impact on SMEs

SMEs face a range of financial challenges that impact their growth, sustainability, and competitiveness. Adapting financial strategies, seeking funding options, and focusing on efficiency can help SMEs navigate these challenges and thrive in the market.

When investigating how the financial crisis affects the going concern of SMEs, most of the SME owners stated that the Sri Lankan financial crisis has resulted in a significant fall in SMEs' profitability. SMEs are dealing with decreasing demand for their products and services because of reduced consumer expenditure and business uncertainty. Limited credit availability and increasing borrowing rates hindered their capacity to invest and develop, reducing profitability. The general financial crisis has produced a tough environment in which SMEs face several hurdles to maintain good profit margins.

> "*Even though we did not have a profitable business, we were given all the things that our customers needed."* (SME Owner 02)

SME owner 02 emphasizes that although their business didn't generate significantly higher profits, they successfully met their customers' needs. He believes that safeguarding and serving their customers hold greater value.

> "*There are times when the business runs at a loss. That means less profit and less business."* (SME Owner 03)

SME Owner 03 mentions that it's challenging for the business to thrive when it operates with a deficit, resulting in reduced profits and decreased business activity during the financial crisis period.

> "*I am not happy about the way it is going on right now after 2022 due to this country's economic crisis. The sales have come down. As a result, profits come down. So overall, I would say it is terrible for the business. I am not very happy with the current situation."* (SME Owner 09)

SME owner 09 mentioned that he is dissatisfied with the current trajectory since 2022 due to the country's financial crisis, which has led to a decline in sales and subsequently reduced profits. Further, this situation has left him with a strong sense of unhappiness and dissatisfaction.

Due to the financial crisis, SMEs in Sri Lanka experienced a decline in business activity. The crisis affected consumer spending and investment confidence, slowing economic development. SMEs, who are more vulnerable to economic changes, led the overall fall in business. Numerous SME owners have highlighted that they encountered difficulties stemming from fuel and dollar crises, exacerbating the already challenging situation.

> *"In 2021, our sales decreased with the dollar crisis. Sales decreased because people did not have money. Our business has been zero since January, February 2022. When we don't have dollars, we can't import anything."* (SME Owner 01)

SME owner 01 mentioned that the negative impacts of the dollar crisis were evident in dropping sales throughout 2021, which were caused by customers' financial constraints. These challenges intensified, causing a complete cessation of business activities from January 2022 to February 2022 due to the inability to import goods without an adequate supply of dollars.

> *"Before 2022, I think it's when the crisis started, so before that, we were performing really smoothly, but during 2022, there was an instant breakdown. Time breakdown because of the fuel problems. In 2022, our liquidity decreased a lot because we were not able to distribute regularly, so the pattern was instructed, which is that in 2022, it was tough to run the business."* (SME Owner 04)

The perspective provided by SME owner 04 highlights that the business had been operating smoothly without major issues in the years prior to 2022. However, a sudden and substantial breakdown emerged in 2022, largely attributed to fuel-related problems. This disruption not only gave rise to operational challenges but also resulted in reduced liquidity due to irregular distribution.

> *"During the crisis, we lost many jobs. Tenders decreased. During the Corona virus, we didn't face it like that. We did jobs in hospitals. Then, with the dollar crisis, materials could not be purchased. The price today is not the price tomorrow. Imports stopped."* (SME Owner 08)

The crisis had a significant impact on the workforce of SME Owner 08, leading to substantial job losses. Additionally, he added that there was a notable decrease in the availability of tenders. Unlike their approach during the COVID-19 pandemic, they have managed to secure hospital projects; however, the challenges posed by the dollar crisis disrupted their operations. Fluctuating material prices and the uncertainty of future costs became prominent issues as the

crisis unfolded, resulting in a halt in imports and further complicating the business environment.

The SME owners' decision to keep the business operational despite the financial crisis showcases their determination and resilience. Rather than opting to close the business, they demonstrated their commitment to weathering the challenges.

> *"There are no plans to close. There is no plan as our partnership is with my wife's brother. Then, because we have separate financial strength, we can hold on to this."* (SME Owner 01)

The SME Owner 01 made it clear that the business will continue operating, primarily due to the familial partnership with his brother-in-law. The commitment to sustaining the venture is resolute, and his personal financial solidity serves as an additional pillar fortifying their capability to uphold the business over an extended duration.

> *"No, we didn't think so because, as we had our own internal savings, we had a good amount of savings from our previous business operations, so we had enough savings to run the business without much problem."* (SME Owner 04)

SME Owner 04 stated that their own savings were set aside. Moreover, he mentioned that their successful past business endeavors had generated a substantial amount of savings, providing them with a comfortable buffer to smoothly continue their operations without major concerns.

> *"No, we did not want to close. Actually, because you know that, normally businessmen, we should have entrepreneurship skills. We have to find out how to run the business."* (SME Owner 05)

According to the owner of SME 05, it's crucial for entrepreneurs to tackle obstacles and discover methods to maintain their businesses. As businesspeople, it's ingrained in their nature to embody the entrepreneurial mindset, always striving to discover inventive methods to ensure the ongoing prosperity and functionality of their ventures.

> *"I didn't want to close. I used to do a bigger business in marketing. We are trying to move forward with the experience and have not thought of closing the business."* (SME Owner 07)

The owner of SME 07 mentioned having overseen a more extensive marketing venture before. Drawing on their amassed expertise, they're resolute about advancing, and the idea of closing the business hasn't even been considered.

Amidst the financial crisis, the decisions made by SME owners, whether to persist or contemplate closure, were shaped by diverse factors like the business's growth potential, customer retention, and strategic maneuvering in adversity. This demonstrates their faith in problem-solving and adaptability, reflecting their entrepreneurial spirit. While most SME owners chose to endure the crisis, a minority contemplated shutting down due to factors like reduced earnings, resource constraints, and the challenging economic environment.

> *"There were times when I thought to close the business. That means that without the business we used to have, some of my employees went abroad. That is because they also had a problem with the situation in the country."* (SME Owner 03)

The owner of SME 03 contemplated shutting down the business due to the departure of certain employees who had previously worked there. These employees have chosen to leave the country owing to their individual apprehensions about the prevailing conditions.

> *"After the financial crisis, the dollars were completely lost. After that, we could not import anything without dollars. I couldn't bring anything. Then many factories here were closed."* (SME Owner 02)

SME Owner 02 has mentioned that the aftermath of the financial crisis resulted in a complete loss of their dollar reserves. This has left them unable to import goods without dollars, leading to the closure of several local factories.

Managing Resources in SMEs

For a business to achieve its goals and objectives efficiently and effectively, resource management has to be done properly. In a crisis, an enterprise's performance can also be changed based on the methods that they use to manage their business resources. In the 2022 financial crisis, SMEs had to face difficulties managing their resources. As per the interviews that were conducted, different SME owners from different SME sectors had to face various challenging problems.

The increase in raw material prices can have an impact on different aspects of operational activities as well as financial activities. The raw material price increase is a common problem faced by many of the SME owners that were interviewed.

> *"During the crisis, the price of raw materials increased by three times."* (SME Owner 01)

> *"So, as I see it, the main impact is on raw material expenses and transport expenses, and overall, many expenses have increased for small and medium-scale businesses. At that time, the normal raw material price was increasing like three times."* (SME Owner 04)

SME Owner 01 and SME Owner 04 mentioned that the raw material prices have increased by three times. According to SME Owner 04, transportation expenses had increased due to the fuel crisis that occurred during the financial crisis period.

> *"In our case, the business decreased a lot. That means we could not import parts, and that decreased our sales."* (SME Owner 03)

> *"After the import of new vehicles stopped, we repaired and sold secondhand vehicles. Then we had a problem with the economic crisis, and the price of paint rose a lot."* (SME Owner 07)

SME Owner 03 and 07 both highlighted that they had to face difficulties in importing the parts, and this was mainly due to the dollar crisis. As they mentioned, due to the short supply of dollars, the prices of parts increased.

> *"Reduction in consumption or spending power of consumers then number three cost of operation has increased due to the increase in power, fuel, or energy. And also due to the dollar. With the rupee being revalued against the dollar, some of the input's costs have increased."* (SME Owner 06)

SME Owner 06 from the spice industry explains how the cost of operation increased due to the increase in raw material prices and the increase in costs.

> *"Then, with the dollar crisis, materials could not be purchased. The price today is not the price tomorrow. Imports stopped. It became harder to purchase material."* (SME Owner 08)

As mentioned by the SME Owner 08 from the furniture manufacturing industry, the dollar crisis impacted a higher amount when purchasing materials. Many of the SME owners mention that the dollar crisis has affected the purchasing of raw materials, as it has increased the operational costs of the business.

Labor is a key factor for a business organization as it determines the organizational performance and has an impact on the overall effectiveness of the organization. For organizational survival, the SME owners had taken different actions regarding their employees.

> *"Then something like this happened to us. There were about 25 weavers in our business. There were about 100 lakhs of finished goods, and the first thing we did was reduce the workforce by about fifty percent, and then we reduced production."* (SME Owner 01)

SME Owner 01 was straight in that he mentioned that he had to reduce the workforce when their sales were reduced. He was interested in the well-being and satisfaction of the employees.

> *"When it was closed, we always gave them their food and dry food, and from time to time, we put them in the cars and went to their houses, and we fed them that way for some time."* (SME Owner 01)

He mentions that even though, due to the crisis, he had to cut down the employee force, he took care of his employees.

> *"Yes, we actually increased their salaries." "No, we gave them the same employee benefits without cutting down on any because we had old staff."* (SME Owner 03)

SME Owner 03 said that during the crisis, he did not cut employee salaries or any other benefits given to them since they had employees who were working for a long time.

> *"My mattress division was running for ten to twenty days per month, and still we are paying their basic salary and some incentives, and this year I paid some bonuses. Promotional bonus. I don't want to throw people away during this harsh period. This is a very harsh period for everyone."* (SME Owner 05)

SME Owner 05 was trying to keep the job security of the employees even though this was a rough time for every business.

The SME Owner 02, who was not maintaining permanent staff, was not focused on employee benefits, as he mentioned that he was not bound to pay a monthly salary for the staff.

"The advantage we have is that we do not maintain a permanent staff. Engineers and electricians hire when necessary. Then there was no problem for the employees to see what happened." (SME Owner 02)

"At one point, I had to improve the morale of the employees. As soon as the economy fell, there was an opinion that it would be difficult to stay in the country due to the high living costs. I also could not increase their salaries according to the economic situation in the country. Then I encouraged them to work to open another branch and increase the work." (SME Owner 07)

The SME Owner 07 was trying to motivate the employees by encouraging them to work hard to open another shop and increase the business. When we asked whether he cut the salaries of the employees, he said

"No, I haven't cut anyone's salary yet. First, when the economy fell, it was difficult to live. After increasing the salary by Rs.2000, I could not afford that either. But no one's salary was reduced. I usually raise the Salaries of employees once a year. But the salary has not been increased yet; I keep paying the same amount. The salary has been paid on time. On the business side, I am carrying out losses and balancing myself with additional income." (SME Owner 07)

The SME Owner 09, who reduced the facilities of the employees without cutting down the salaries, said that,

"Well, we have not gone into pay cuts so whatever, as most other companies suggest, but we have cut down on certain facilities, like air conditioning. We have taken decisions to cut down on all air conditioners like that. There were some other costs we have cut down. But with those we were managing, there are salaries and other things." (SME Owner 09)

SME Owner 06 is using a different kind of business model; he is not maintaining a permanent staff.

"It's always a temporary arrangement. It's work on a requirement basis. So, what I've done is, whenever I do production, I try to roster. They are not working full-time. So, I give them the opportunity to work on a roster basis as much as possible." (SME Owner 06)

Surviving in the resource management industry for SMEs requires a keen focus on efficiency, adaptability, and innovation. Since SMEs frequently have constrained resources, efficient allocation and optimization are essential for success.

SME Owner 05 mentioned that every business had to face challenges to find out new experiences.

> *"I'm trying to develop a business in India to run the full capacity of the business. I started in June and now after nine months, I'm into those projects, so that's how I'm trying to overcome that."* (SME Owner 05)

SME Owner 04 said that she survived during the crisis since she was doing business in the local markets as well as in the international market.

> *"Now we have a range of products for all problems, most of them health problems, and also for beauty, and so currently we are doing business in the local market as well as in the overseas market."* (SME Owner 04)

Effect of External Parties to the Business

Relationship between bank loans and business

SME owners expressed their opinions about obtaining bank loans for business purposes during the crisis period. Most SME owners spoke about their difficulty to paying back the loan after obtaining bank loans due to the high interest rate.

> *"There was a loan. 4% interest rate. We have difficulty paying back the loans. So, they gave a grant. Extending the period of the loan. However, it became a major trouble. But when we were going to pay the loans, there was huge interest for the period that we did not pay the loan. I am talking about the COVID days. Then we got a grant. However, for the interest alone, I had to pay 10 Lakhs. So now I pay around 30000s monthly for the interest, and they again introduced a new scheme for the interest payment, saying it was interest-free. However, I think for that scheme too, there was an interest rate. So, what they did was, even though they extended the loan period, there was another interest rate charged by us. So then what they did was let them pay the interest amount over four years. So, we were able to do some work with that money."* (SME Owner 08)

SME Owner 08 said that with previous experience in obtaining bank loans during the COVID-19 period, it is not feasible to obtain loans. As a relief to pay back the loans, the grace period with no interest rate was given; however, there was a hidden interest rate.

Some SME owners have mentioned that they did not obtain loans during the crisis period.

"*We did not take any bank loans to continue the production.*" (SME Owner 01)

"*Loans were not taken. We used to pay salaries from the business itself.*" (SME Owner 03)

According to SME Owner 05, there is no difficulty in obtaining loans if there is a strong financial ability to pay back the loans. Banks are willing to provide bank loans.

"Actually, I was running the business for around 15 years, so by my standards, it's not difficult to obtain the loan from the banks. yes. So, they would pull up to get bank loans during this time? Actually, I can still get bank loans even if I have some facilities. That depends on your financial control and the financial disciplines. If banks see that your discipline is high and concerned about finance, then they are monitoring our expenses and our earning patterns." (SME Owner 05)

Relationship between customer retention and business continuation

Without a customer, there is no business. Customer retention has led to profit maximization and business continuation. The business can be developed because the retention of customers gives new customers confidence in the business. SME Owner 01 stated that consumers' cost of living has increased.

"*And now our main customers are school teachers. Ok. School teachers and women working in government offices if that happens, their salary will be between 50,000 and 70,000, and then their cost of living will double.*" (SME Owner 01)

The consumer's and workers cost of living has increased more in the crisis period than before, and due to that increase, it has affected the business activities of SMEs in several ways. SME Owner 04 mentioned that the increase in living costs has affected their workers, and they are requesting a salary increment.

"How I see this is mainly impacting the raw material expenses and transport expenses, and overall, the many expenses have increased for small and medium-scale businesses. So, the increase in living costs especially because people are demanding salary

increments, is a rough time for small and medium scale businesses and prices." (SME Owner 04)

SME Owner 07 mentioned that the jobs done by consumers were reduced, so their purchasing power also decreased, which affected SMEs.

"Person who still lives by three-wheel hires can't continue that job today. He has to pay the lease installment, repair service, and the cost of living. The hire price has decreased. That man's income has dropped a lot. That man has no money to repair it. Many people drive their vehicles without repairs. The 3000 km-4000 km service is done by changing only the oil in 7000 km." (SME Owner 07)

SME Owner 05 mentioned that as purchasing power decreased, new product development was carried out according to their income, therefore he could decrease losses.

"For my business, I'm doing some new product developments. Do you know that the entire country's purchasing power has decreased? I am selling mattresses; people are buying mattresses, but I have a sofa factory as well. So, their purchasing power is now really low. So, for sofas, we don't have solutions, but for mattresses, I'm looking for solutions and adjusting according to their income." (SME Owner 05)

SME Owner 02 mentioned that Sri Lanka was unable to export any goods due to the loss of dollars; therefore, many customers decreased and had to shut down some of their business during the crisis period.

"The dollars were completely lost. After that, we could not import anything without dollars. I couldn't bring anything. Then many factories here were closed. Two or three customers were lost." (SME Owner 02)

SME Owner 09 revealed that due to the increase in the product price, some of the customers were looking for cheaper alternatives.

"I have to pay almost double what I used to import a year ago. So, then I have to add equability to the cost of the product. So then some of the customers are unable to buy because they were looking for cheaper alternatives." (SME Owner 09)

Relationship between suppliers and the business

In Sri Lanka, suppliers play a key role in ensuring a steady supply of goods and services, influencing the SMEs' operational efficiency and competitiveness in the market.

SME Owner 05 mentioned that due to lack of money to pay the suppliers, the suppliers were lost during the crisis.

> *"When the crisis begins, what people do is put all the stock into an urban account. Then there is no probability of us paying our supplier. But it happened because the supplier doesn't have patience and wants money. So, then what we are doing is indubitably spending the money."* (SME Owner 05)

Government assistance and support and the business survival

SME owners have shared their opinions and ideas on how the government acts and supports them during a crisis period. Accordingly, many participants have mentioned that no support was received. These SME owners were expecting the government to provide some support during the crisis period.

> *"We didn't get anything from the government."* (SME Owner 03)

> *"No, during the crisis, the government didn't give any help at all."* (SME Owner 04)

These SMEs were expecting to get government support for their business survival during the crisis period.

However, some SME owners have mentioned that there were different schemes and offers provided by the government. Interestingly, however, the owners who were aware of the offerings and schemes were not expecting any support from the government.

> *"During the pandemic and crisis, the government has offered delayed payment plans for loans to SMEs. But I had not obtained loans, so it was not applicable to my company."* (SME Owner 09)

> *"I knew that there were many offerings, but of course, having taken a loan, I was not interested."* (SME Owner 06)

For these SMEs, depending on the previous loans, capital reserves, and savings within the business, they do not require financial or any other form of assistance from the government. Hence, for the continuity of their business, they do not expect government support.

> *"How can the government provide an assistant without money?"* (SME Owner 05)

On the contrary, SME Owner 05 has mentioned a different opinion: during the crisis period, since the country was in a very crucial situation, the government was also not in a good position to provide favorable assistance to SMEs. Adding further to this, it is important that certain schemes are provided for SMEs to face such situations.

With the import restrictions and the dollar crisis, SMEs, which import certain raw materials, machinery and equipment, and other products, were in a critical condition. The survival of the business was impacted by these restrictions. SME Owner 02 said that;

> *"Our business has been zero since January, February 2022. When we don't have dollars, we can't import anything. Banks do not give dollars."* (SME Owner 02)

This indicates that this business didn't have any sales in the first two months of 2022, with the beginning of the financial crisis. Since the dollar has appreciated, Sri Lanka doesn't have enough foreign reserves. SME Owner 3 said the same situation affected their business sales.

> *"In our case, the business decreased a lot. That means we could not import parts, and business decreased with them. With the dollar problem, we could not import parts. That affected us greatly."* (SME Owner 03)

Accordingly, for that business, importing parts was essential to making sales. This situation had primarily affected the business. SME Owner 9 shares the same opinion.

> *"Then, with this financial crisis, all our budgets and everything went heavier because our estimated costs were low; we could not import those items."* (SME Owner 09)

He says that, with the previous estimations made, it was harder to import items. SME Owner 8 shares a similar opinion about the dollar shortage and import restrictions.

> *"Then, with the dollar crisis, materials could not be purchased. The price today is not the price tomorrow. Imports stopped. It became harder to purchase material."* (SME Owner 08)

He mentioned the uncertainty of prices when purchasing imported materials. So, all these lead to the general idea that the financial crisis, the dollar shortage, and the reason for imposing trade restrictions in the country all led to the determination of the survival of the business.

CONCLUSION

In conclusion, SMEs hold a critical role in Sri Lanka's economy, contributing significantly to its development, employment, and social stability. As the current financial crisis continues to escalate, its negative effects are increasingly felt across the country. Among the various sectors impacted, SMEs have emerged as one of the most vulnerable, facing substantial challenges due to the crisis. Despite this, limited research has been conducted specifically on the 2022 financial crisis, with most studies focusing on previous global financial crises and the COVID-19 pandemic.

To analyze the objective, the study employed a qualitative approach, conducting interviews with twelve SMEs in Sri Lanka. The findings revealed a significant impact on business operations, such as increased raw material prices, reduced customer bases, and the necessity of downsizing workforces. Additionally, SMEs faced challenges in loan repayments, leading to financial constraints and even the consideration of business closure.

The primary objective of this study was to investigate how the financial crisis affects the going concern of SMEs. Through a comprehensive literature review, we have highlighted key findings from existing research, including decreased capacity utilization rates, increased costs, and difficulties accessing finance during periods of crisis. Previous findings indicate that lack of infrastructure and funding, as well as economic constraints and managerial concerns had affected SME performance. The failure of entrepreneurial SMEs is positively and significantly correlated with these difficulties (Khan, 2022).

The crisis has worsened liquidity issues for SMEs, further hindering their operations. Previous research revealed that government support has significantly improved SME performance and favourably moderated the association between innovation capability and SME performance (Otache & Usang, 2022). Research carried out on the survival of SMEs during an economic downturn has found that the SMEs should develop and employ specific dynamic capabilities when facing an economic crisis (Weaven et al., 2021).

RECOMMENDATIONS

SME owners can tackle financial crisis challenges by using lower-quality raw materials to offer products that align with customer preferences. Expanding into international markets presents a strategic growth opportunity for Sri Lankan SMEs, allowing access to new consumer segments,

increasing revenue, and reducing dependency on a single market. This approach will help maintain market presence and cater to target audience needs.

Sri Lankan SMEs are focusing on improving organizational performance, especially during financial crises, through innovative and adaptable strategies. These strategies aim to fortify businesses against adverse impacts, ensuring ongoing growth despite economic uncertainties. The adaptability and proactive measures reflect the determination of SMEs to maintain resilience and prosperity in the evolving economic landscape.

SMEs often implement cost-cutting strategies, such as reducing unnecessary costs, adjusting workdays, and maximizing labor resources, to streamline operations and adapt to market conditions. They may focus on developing new products, digital marketing, and alternative energy sources.

SMEs in Sri Lanka can adapt and innovate during the financial crisis by adjusting production processes, exploring new markets, implementing cost-cutting measures, developing new products, optimizing resources, and seeking government support. These techniques will help sustain operations and position SMEs for future growth.

LIMITATIONS OF THE STUDY

This research study was limited since the interviews were conducted only with twelve SME owners. These twelve SMEs represent only a few percentages of the total SMEs all around Sri Lanka. Some owners did not understand the questions due to their lack of knowledge about some areas. The conduct of unstructured interviews was time-consuming since they should be analyzed to generate codes. The qualitative interviews rely on the details provided by the SME owners; therefore, the information should be accurate.

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Impact of Resilience and Conservation in Sri Lanka's Tourist Hotspots on Sustainability in a Dynamic and Uncertain Global Landscape

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ABSTRACT

Sri Lanka's socioeconomic environment, particularly in its well-known tourist destinations, is heavily influenced by tourism. This research did a thorough examination as the country attempts to reconcile the increasing tourist industry's expansion with environmental preservation and long-term viability. This research focuses into the complex interaction between resilience, conservation, and sustainability in the lively setting of Sri Lanka's popular tourist attractions. Resilience and conservation were considered as predictors of the study and their impact on sustainability was evaluated. Literature review data was supported to build the theoretical foundation for the study and primary data was collected through a questionnaire survey. The population was recognized as individuals who traveled to the popular tourist attractions in Sri Lanka. A total number of 384 questionnaires were distributed among these individuals and 380 completed responses were received which was recognized as the sample. Data was analyzed using SPSS which included descriptive statistics, reliability tests, correlation, and multiple regression. The findings revealed that the resilience and conservation in tourist hotspots in Sri Lanka is in an average level which is not sufficient. Further, there is a significant negative impact of resilience on sustainability. This surprising outcome highlights the crucial role resilience plays in tourism destinations and suggests that sustainability initiatives may be compromised by a lack of resilience. Conversely, conservation has a positive impact on sustainability. The conservation of the natural environments, biodiversity, and cultural legacy inside these hotspots has come to depend heavily on conservation programs. This positive impact emphasizes how important environmental protection and resource sustainability are to sustaining Sri Lanka's tourist sector. It was recommended that Sri Lankan tourism areas should prioritize and increase conservation activities while building resilience mechanisms to deal with unanticipated obstacles. These findings have significant relevance for politicians, tourism sector stakeholders, and local people trying to balance environmental conservation and tourism expansion in Sri Lanka's well-known tourist sites. It is necessary to do more research to examine potential confounding factors and the wider implications of these complex interactions. Further, it can be suggested that the future researchers may do a comparative study among different tourist destinations in Sri Lanka as a longitudinal study to evaluate more complex changes in conservation practices, resilience and sustainability.

Keywords: Conservation, Resilience, Sustainability, Tourist hotspots

INTRODUCTION

The tourism sector is a complex and dynamic sector with significant sway on economic, social, and environmental landscapes in any country (Karunarathne et al., 2021). Tourism has evolved

as a significant source of economic growth and development in Sri Lanka, a country known for its rich cultural legacy, pristine natural beauty, and historical attraction. In recent years, Sri Lanka's tourist industry has grown dramatically, attracting visitors from all over the world (Sivesan, 2019). The island nation's numerous attractions have enticed visitors and contributed greatly to the nation's economic viability, ranging from cultural heritage sites to beautiful coastlines and bio-diverse animal reserves. Sri Lanka's tourist industry has emerged as a critical economic engine, ranking third in terms of export earnings. It generated around 5% of the country's GDP in 2018 and saw significant growth in foreign exchange profits, nearly tripling over four years to reach US$4.3 billion. This increase is mirrored in the increasing number of tourists, which increased from 1.5 million to 2.3 million during the same period. This industry directly employs around 250,000 people and indirectly employs up to 2 million more. Notably, over 80% of tourist services are provided by the informal sector, which is often helped by the internet and online booking platforms. According to their policy objectives defined in 'Vistas of Prosperity and Splendor,' Sri Lanka intends to grow tourism as an ecologically and culturally friendly business with active community engagement (UNDP, 2021)The attractiveness of Sri Lanka as a tourism destination is centered on conservation. Its biodiversity-rich national parks, including Yala and Wilpattu, have gained international acclaim, drawing environment lovers and animal enthusiasts. Furthermore, the nation's dedication to maintaining its cultural history, as seen by UNESCO World History Sites like Sigiriya and Polonnaruwa, demonstrates the priority put on cultural conservation. The delicate balance between tourism development and conservation initiatives, on the other hand, provides a difficulty (Prakash et al., 2019).

However, both worldwide and in Sri Lanka, the tourist sector has faced a slew of significant problems, which are frequently worsened by the uncertainties inherent in the volatile global landscape (Rana & Paul, 2017). These difficulties have highlighted the crucial necessity of three related concepts: conservation, resilience, and sustainability. The advent of the COVID-19 pandemic, on the other hand, highlighted weaknesses in the industry, which were founded on an overreliance on mass tourism and a lack of resilience mechanisms (Karunarathne et al., 2021). As the industry dealt with the aftermath of the pandemic, the necessity of conservation initiatives, resilience methods, and sustainability principles became clear.

Sustainability is a guiding element for Sri Lanka's tourist industry's future. As the industry attempts to recover from the epidemic, the interaction between conservation, resilience, and sustainability becomes more obvious (UNDP,2020.). The tourism industry in Sri Lanka faces serious concerns of resilience and sustainability. As seen by the significant impact of the

COVID-19 pandemic, the industry has proved vulnerable to global crises, demonstrating its overreliance on mass travel. This susceptibility highlights the critical importance of establishing resilience techniques to better survive external shocks (Karunarathne et al., 2021). At the same time, issues about sustainability is becoming more important, with problems relating to responsible resource use, environmental protection, and community participation. These dual challenges highlight the need for a comprehensive approach that not only improves the sector's ability to recover from crises but also promotes long-term sustainability, making it a critical area of study for researchers and policymakers working to secure Sri Lanka's tourism industry's future. As the sector dealt with the devastation caused by the epidemic, the importance of conservation, resilience techniques, and sustainability principles became clear.

This paper provides a methodology that analyses the impact of resilience and conservation on the sustainability of tourist hotspots in Sri Lanka which is based on the deductive approach. The major question that drives the data analysis is; What is the impact of resilience and conservation on the sustainability of tourist hotspots in Sri Lanka?. Further, the variables are measured through the indicators identified through the literature review. Data analysis is then focused on analyzing the acceptance or rejection of hypotheses developed in the methodology. The purpose of this study is to investigate the intricate impact of these key factors, resilience, and conservation, in the context of Sri Lanka's tourism destinations' sustainability, offering insight into how they interact and adapt in the ever-changing global prospect.

LITERATURE REVIEW

Resilience

The capacity of a system, organization, or individual to tolerate, adapt to, and recover from adversity, shocks, or disruptions is referred to as resilience. It is the ability to recover and continue working successfully, or even to become stronger, in the face of adversity, such as natural catastrophes, economic crises, health problems, or other types of disturbance (Francis & Bekera, 2014). Resilience entails not only the ability to survive immediate shocks, but also the ability to learn from and adapt to these events, so making the system or individual more resilient and ready for future challenges (Jiang et al., 2019). Resilience may be applied to natural systems, communities, enterprises, and even personal well-being in a variety of circumstances, highlighting the necessity of adaptation and flexibility in negotiating the complexity of life and the environment (Duit, 2016).

Without a doubt, the tourist sector is vulnerable to crises and disasters, which can offer considerable problems, leading to economic downturns and employment losses. These crises, whether natural or man-made, have far-reaching consequences for the tourist industry's resilience and capacity to endure and recover from disturbances (Bui et al., 2020). Natural catastrophes such as earthquakes, hurricanes, and tsunamis, as well as man-made calamities such as financial crises, terrorism, health crises, etc. are acknowledged as severe hazards to the tourist sector. These accidents have the potential to significantly reduce visitor demand, resulting in economic and job losses (Rosselló et al., 2020).

Resilience in tourist destinations

In the tourist environment, resilience takes several forms, including economic resilience, social resilience, and organizational (or company) resilience. The capacity of a location to recover economically after a catastrophe is referred to as economic resilience. According to Filimonau & De Coteau, (2020) Tourism resilience is measured using a variety of metrics, each of which reflects a distinct facet of resilience. To be a resilient tourism destination, it should consider its social, economic, institutional, physical, and community capacity to absorb unexpected shocks (Wang et al., 2020). Sharifi, (2016) advocated for multidimensional metrics that take into consideration communities' temporal dynamism and risk management capacity. Kristjánsdóttir et al., (2018) stressed the indicators' interdependence and dynamic character. The capacity of a system to remain within specified limits even after a disruption, whether operational, functional, or performance-related, is a common thread throughout these definitions. Infrastructure readiness, emergency response plans, community participation, adaptive capability, and effective risk management are typically variables that impact these characteristics.

Tourism destination resilience, as discussed in the literature, is a notion that has gained popularity in recent years as more people become aware of the different problems and disruptions that tourism destinations confront. Ketter, (2022) adds to the literature by developing the Change and Resilience (SCR) Model. This model acknowledges that the rate of change in tourism can vary greatly over time and across different social and geographic regions. As a result, it advocates for individualized solutions based on the magnitude and timing of disruptions, highlighting the dynamic character of resilience in tourism.

Empirical research in this field has concentrated on the practical elements of increasing the resilience of tourism destinations. Capacity building, adaptive management, and adaptive

governance have emerged as essential components in improving tourist system resilience. Researchers have also investigated adaptation capability and destination vulnerability, particularly in light of climate change-related disturbances. These studies emphasize the necessity of long-term sustainability concerns and coordinated efforts among stakeholders to strengthen tourist destination resilience. However, the literature does not capture more specific frameworks to assess the resilience of tourist destinations which is a major limitation in the previous literature identified above. Further, no studies have been done to evaluate the resilience in Sri Lankan tourist hotspots which indicates a clear theoretical and contextual gap.

Conservation

The purposeful and responsible management, preservation, and protection of natural resources, biodiversity, cultural heritage, and other vital parts of the environment is referred to as conservation (Khoury et al., 2019; Xiao et al., 2018). It entails sustainably using resources to assure their availability for future generations while limiting negative consequences on ecosystems and cultural heritage. Conservation refers to purposeful attempts to maintain, preserve, and manage both the built and natural environments.

Conservation has developed over time, encompassing both environmental (natural) and cultural conservation (Runa et al., 2020). Environmental conservation aims to save certain places while being adaptable to change. Cultural conservation, on the other hand, is concerned with the preservation of physical items as well as social components. Both these dimensions have identical goals and are frequently pursued in tandem, with social conservation having primacy as it directs physical conservation efforts (Mondino & Beery, 2019). The preservation of ecosystem services has been a fundamental motivator and tactic throughout the history of conservation. Ecosystem services are the vital advantages provided by ecosystems to humans, such as clean water, rich soil, crop pollination, and climate management. Conservationists have strived to study, protect, and perpetuate these services, recognizing their value (Sannigrahi et al., 2019).

Every location has distinct socio-cultural features, and research on socio-cultural space frequently focuses on specific research locations during the time of study. However, many socio-cultural assumptions may be removed from one context and applied to others, although with modifications. When researchers go from one environment to another, they must explain and evaluate the distinct outcomes that arise, which leads to natural generalization, a hypothesis rather than a conclusion (Pourfaraj et al., 2020). In general, development seeks to protect a

country's cultural values, increase human dignity, to build identity, and to improve quality of life.

Conservation of tourist destinations

Cultural heritages are known to be popular destinations for tourists. Conservation of these cultural heritages is essential for preserving cultural identity, and development and conservation work in tandem. In practice, conservation must take into account technological, regulatory, and institutional factors (Fern´andez-Llamazares & Cabeza, 2018). Cultural legacy refers to a diverse spectrum of things, buildings, and constructions with a significant historical and cultural significance to human progress. Cultural heritage buildings are built to satisfy a variety of spatial requirements, whereas cultural heritage structures are developed for activity areas that are interwoven with nature. Locations and geographical spatial units having cultural heritage artifacts, buildings, or constructions are referred to as cultural heritage sites and areas (Latip et al., 2018). By involving the local community in heritage conservation, indigenous knowledge, customs, and histories can be preserved as revealed by Xiao et al., (2018). Indigenous groups frequently have unique insights into their past, such as previously unseen recordings or histories that may not be documented elsewhere. Heritage conservation programs can tap into this great source of knowledge by incorporating these groups, improving our understanding of cultural legacies.

Eco-tourism is an important dimension of tourism in the current era and Protected Areas (PAs) play a pivotal role in promoting eco-tourism hence the long-term conservation of these areas is important (Birendra, 2022). PA management systems are carried out to conserve these areas. The primary goal of PA management systems is to safeguard and conserve natural resources. However, there is rising fear about the harmful effects of tourism on these pristine landscapes. The protection of endangered species is one acknowledged conservation advantage of ecotourism. Early ecotourism articles focused on the effects on individual species, which were frequently the major draw in certain locales (Valverde Sanchez, 2018). Research on the conservation advantages of ecotourism includes effects not just on species but also on wider geographic areas. Researchers have documented ecotourism's (mainly) beneficial consequences in Tanzania's Ngorongoro Crater Conservation Area, Peru's Tambopata National Reserve, and Ecuador's Galapagos Islands National Park while investigating landscape-level conservation across protected areas (Stronza et al., 2022). Although these studies illustrate the institutional problems associated with implementing conservation across landscape sizes, they

also demonstrate the importance of ecotourism for the conservation of other competing uses of natural resources, as well as the contributions to local communities.

While this is a particular concern for UNESCO World Heritage Sites (WHSs) that lack proper management plans to handle growing visitor numbers and the associated strain on infrastructure, other PAs are expected to encounter similar problems (Job et al., 2017). A more regulatory-oriented strategy is required to guarantee that PAs are appropriately prepared to handle the consequences of tourism to solve these concerns and create resilience. Leung et al., (2018) developed recommendations for regulating recreational activities within PAs, providing important insights into how to combine conservation and tourism. However, the effectiveness of these principles is dependent on the availability of enough resources inside PAs. This underlines a major issue which is many PAs experience resource limits that impede their ability to handle tourism-related activities efficiently. This evidence highlights the need for infrastructure, biodiversity protection, and management of PAs which can be considered as indicators of conservation of tourist destinations.

Sustainability

Sustainability is a concept and method that attempts to fulfill current demands without threatening future generations' capacity to meet their own. It includes economic, social, and environmental factors in different facets of human existence and the environment (Verma & Raghubanshi, 2018). Sustainability attempts to find a balance between economic development, social justice, and environmental conservation in order to guarantee that resources are managed wisely and responsibly for both current and future generations' long-term well-being (Purvis, 2018).

Economic sustainability is an important component of sustainable development, emphasizing the need to preserve and improve economic well-being while reducing negative environmental and societal repercussions. The study done by Akadiri et al., (2019) examines the link between renewable energy consumption, economic sustainability, and pollution reduction in the context of 28 European Union (EU-28) countries. It emphasizes the positive and strong long-term links between these aspects and proposes that using renewable energy sources may help achieve environmental sustainability as well as economic progress. As revealed by Barbier & Burgess, (2020) several developing countries have faced challenges in achieving sustainability due to the COVID-19 economic crisis.

The study done by Ali et al., (2019) investigates the link between urban form and social sustainability in the context of research undertaken in Jordan, especially in the city of Irbid. The research examines the influence of five fundamental features of urban design, namely density, land-use distribution, building height, housing kinds, and accessibility, on social equity and community sustainability. Social sustainability is a complicated term with several aspects and consequences that overlap with wider concepts of sustainable development (Ma et al., 2020). Social fairness is one crucial component underlined in this review. It is noted that the architecture and layout of urban areas may have a substantial impact on citizens' living circumstances and possibilities (Ali et al., 2019). Interestingly local governance has resulted in sustainability according to Armstrong & Li, (2022).

Environmental sustainability refers to the responsible and equitable use of natural resources, as well as the conservation and preservation of the natural environment, to satisfy the requirements of the current generation without jeopardizing future generations' capacity to meet their own needs (Han, 2021). It entails methods and tactics aimed at reducing the negative environmental effects of human activities while maintaining long-term ecological stability and health. Industrialization has caused several environmental issues due to environmentally unfavorable production processes Oláh et al., (2020). However, the same study proves that the integration of Industry 4.0 can facilitate sustainable development through better ecological support and environmental performance.

Within the global tourism industry, the issue of tourism sustainability is receiving more attention and discussion. Tourism must be closely monitored for its effects to be sustainable, and when required, corrective or preventative action must be taken. Instead of being thought of as a special type of tourism, sustainable tourism should be seen as an industry-wide objective. However, the feasibility of accomplishing this objective has been hotly debated, with some believing it to be impossible. A common belief is that tourism may never fully attain sustainability. Despite these difficulties, there is a strong argument in favor of continuing to assess the performance and effects of tourism. In earlier studies on tourism sustainability, one of the conventional elements, such as the economic one, or a combination of the economic, sociocultural, and environmental dimensions, received the majority of the attention. Even the framework's inclusion of institutional sustainability has been enhanced in several research (Asmelash & Kumar, 2019).

Resilience and sustainability

There are numerous connections between the ideas of sustainability and resilience, and they are frequently used interchangeably for a range of purposes. It is also worth noting that the application of these notions necessitates that sustainability and resilience be descriptors of something else rather than unique things in and of themselves (Marchese et al., 2018). Both the terms sustainability and resilience are used to describe a system. Sustainability and resilience share common study approaches, such as life-cycle analysis, structural analysis, and socioeconomic analysis, as a result of their shared focus on system survival (Jiménez-Medina et al., 2021). Resilience and sustainability are also related to global political developments, such as the development of global frameworks and multilateral agendas that promote sustainability and resilience in urbanization.

Organizational resilience is an important dimension of resilience. The study Souza et al., (2017) emphasizes the need for organizational resilience in accomplishing sustainability goals. The study demonstrates that encouraging resilience toward sustainability needs long-term planning, frequent communication, benchmarking, collaborations, and eco-efficient activities through a qualitative multi-case analysis of Brazilian firms. Furthermore, human factors, notably leadership behavior and shared company culture, are critical in ensuring organizational sustainability. This study stresses how resilience improves organizational, human, and technical sustainability capacities, implying that resilience-building initiatives are essential to sustainability strategies.

PAs as conservation and economic development drivers is a generally accepted technique, particularly in developing nations. This strategy is based on the assumption that the success of conservation initiatives is inextricably linked to long-term economic prosperity (Brandt & Buckley, 2018). In the sphere of tourism, the idea of resilience in the context of sustainability is a varied and critical subject of research. While resilience and sustainability have comparable goals in terms of maintaining social, economic, and environmental well-being in destination communities, their relationship has not gotten the scholarly attention it deserves (Espiner et al., 2017). The sustainability of the tourist system is particularly sensitive to external disturbances emerging from the larger socio-political, economic, and environmental systems when resilience is inadequate or in its early stages (Jones & Wynn, 2019). However, well-developed resilience mechanisms in destinations or enterprises operate as crucial buffers against sustainability risks (Wieczorek-Kosmala, 2022). The ultimate objective is for the relationship

to reach a "mature" state in which all aspects of resilience and sustainability effortlessly overlap. In this ideal condition, tourism not only sustains its continuity but also greatly helps community resilience, particularly in the face of globalization, integration, and other restrictions. This conceptual analysis highlights the need for a more in-depth knowledge of how resilience might improve tourist sustainability (Espiner et al., 2017). This critical examination sets the path for future research and practical solutions targeted at enhancing the important link between sustainability and resilience in the tourist industry.

The study done by Elmqvist et al., (2019) emphasizes the need for resilience in the goal of urban sustainability, especially as people reach the urban century. Cities confront a slew of environmental issues, including greenhouse gas emissions and sensitivity to climate change. Resilience is required to properly confront these difficulties. Confusion and ambiguous notions of 'urban sustainability' and 'urban resilience', on the other hand, might stymie transformational solutions. It is critical to acknowledge that resilience and sustainability might have opposing purposes at times, and a thorough understanding of their interplay is critical for moving transformational initiatives toward urban sustainability forward.

Conservation and sustainability

The late 1980s saw the birth of the idea of sustainable development, which sought to strike a balance between protecting natural resources and supporting economic and social advancement (Kurniawan & Managi, 2018). Ecotourism is one significant project that has arisen from this paradigm. It is a type of tourism that is firmly anchored in natural regions and is intended to benefit local people while also providing tourists with educational opportunities (Latip et al., 2018). Productive community interaction is seen vital in the context of indigenous tourism. Participation of the local population in conservation and tourist development activities is critical to the long-term viability of such programs (Rasoolimanesh et al., 2017). Effective conservation efforts may lay the groundwork for long-term development, particularly when local communities are actively involved in decision-making and benefit from development projects (Latip et al., 2018).

The study done by Kowarik et al., (2020) emphasizes the complex interplay between conservation and sustainability in the context of biodiversity and urbanization. Urbanization, which is frequently connected with environmental difficulties, may also play a critical role in defining biodiversity's future. Surprisingly, cities may serve as havens for varied plant and animal species, providing a rich urban biodiversity that, in turn, provides a wide range of

ecosystem services such as control, resource availability, and cultural advantages. This viewpoint emphasizes the crucial necessity to turn cities into biodiversity-friendly habitats, in accordance with the concepts of sustainable urban development and human well-being enhancement. The concept advocates for a holistic strategy that incorporates conservation techniques into urban planning and development by recognizing the possibility for cohabitation between urban areas and biodiversity.

Cities that value biodiversity have a close connection to sustainable urban growth and human well-being. Urban nature creates and supports a wide range of regulating, provisioning, and cultural ecosystem services, enhances physical and mental health, and keeps people connected to nature (Ives et al., 2017). Importantly, there is mounting evidence that bio-diverse urban environments outperform just 'green' ones. Biodiversity is frequently, but not always, associated with the provision of ecological services that benefit urban populations (Ives et al., 2017). As a result, both the amount and quality of urban nature matter to people and contribute to their well-being. Enhancing biodiversity in urban contexts is a crucial step toward making cities more habitable.

The study done by Kariyawasam et al., (2020) examines the conservation and its contribution to socio-economic sustainability with special reference to the Udawalawa National Park, Sri Lanka. The findings emphasize that the conservation of the national park has not taken the initiative to share the benefits of conservation practices with the residents which does not create socio-economic sustainability. Therefore, Kariyawasam et al., (2020) analyses the relationship between environmental sustainability and the socio-economic sustainability of the local residents and it does not capture the impact of conservation practices and its impact on the sustainability of the park specifically. Forest-based conservation outcomes in Sri Lanka were examined by Zoysa, (2022) and it does not contribute to the analysis of the impact of these conservation outcomes on the sustainability of these destinations. These findings highlight the lack of research on the impact of conservation on the sustainability of tourist destinations in Sri Lanka.

METHODOLOGY

Research Approach: The deductive approach is used for this study. A deductive approach is a logical and systematic research strategy that begins with a broad idea or hypothesis and then gathers and analyzes evidence to test, confirm, or deny these theories. You have already developed precise hypotheses on the connections between conservation, resilience, and

sustainability in Sri Lanka's tourism destinations. Deductive research begins with existing hypotheses or notions and aims to put them to the test through actual data (Al-Ababneh, 2020). Current research is based on theoretical concepts it seeks to determine how- conservation and resilience, which are well-established concepts in environmental and tourist studies, impact sustainability.

Research Strategy: Questionnaire surveys is the strategy used to collect data from the respondents. This is based on a 5 point likert scale (1 – Strongly Disagree to 5 – Strongly Agree). The questionnaire was developed based on the indicators relevant to each variable according to the findings of the previous scholars (Table 1).

Conceptual Framework

Figure 1: Conceptual Framework
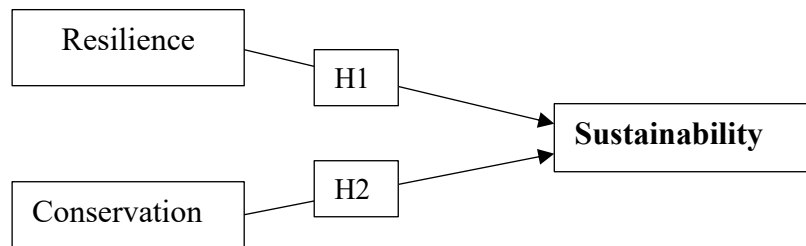
Source: Adapted from Rasoolimanesh et al., (2017); Espiner et al., (2017)

Operationalization

Table 1: Operationalization

Variable	Indicators	Source	Measurement
Resilience	Infrastructure readiness	(Filimonau & De Coteau, 2020; Sharma et al., 2021)	5 Point Likert scale
	Emergency response plans		1- Strongly Disagree
	Community engagement		
	Adaptive capacity		2- Disagree
	Risk management		3- Neutral
			4- Agree

Conservation	Protected areas and their management		5- Strongly Agree
	Resource usage	(Birendra, 2022; Runa et al., 2020; Xiao et al., 2018)	
	Biodiversity monitoring and protection		
	Community involvement in conservation efforts		
	Tourism practices.		
Sustainability	Economic Sustainability	(Asmelash & Kumar, 2019; Purvis, 2018; Verma & Raghubanshi, 2018)	
	Environmental Sustainability		
	Social Sustainability		

Source: Developed by Author

Hypotheses Development

When resilience mechanisms are well-developed, they operate as critical buffers against threats to sustainability, enabling tourist continuity and boosting community resilience, all while fitting with sustainability goals (Wieczorek-Kosmala, 2022). This emphasizes the importance of additional study to investigate and develop the relationship between resilience and sustainability in the tourist sector (Espiner et al., 2017).

> H1- There is a significant impact of resilience in Sri Lanka's Tourist Hotspots on sustainability.

Sustainable development seeks to strike a balance between natural resource conservation and economic and social growth (Kurniawan & Managi, 2018). Ecotourism supports local communities while also educating tourists (Latip et al., 2018). Community engagement in conservation and tourist development is critical for long-term viability and sustainability in the context of indigenous tourism (Rasoolimanesh et al., 2017). Effective conservation activities can pave the way for long-term development, especially when local communities are actively involved (Latip et al., 2018).

> H2- There is a significant impact of conservation in Sri Lanka's Tourist Hotspots on sustainability.

Data Collection and analysis

Secondary data was collected through the literature review. The terms of resilience, conservation and sustainability were analyzed and there connections have been derived from literature. Questionnaire survey was used to collect primary data. This questionnaire was distributed among 384 tourists in Sri Lanka and collected 380 usable responses which was considered as the sample size of the study based on the random sampling method. Data analysis was done using SPSS. Reliability test, correlation and multiple regression analysis were used to deliver a reliable and meaningful outcome.

RESULTS AND DISCUSSION

Table 2: Demographics

Demographics	Categories	N	Percentage %
Gender	Male	91	23.9
	Female	289	76.1
	Total	380	100.0
Age	21 - 30 Years	162	42.6
	31 - 40 Years	218	57.4
	Total	380	100.0
Frequency of Travel to tourist hotspots	Weekly	7	1.8
	Monthly	146	38.4
	Few Times a Year	205	53.9
	Rarely	22	5.8
	Total	380	100.0

Source: Survey Data, 2023

Table 2 shows the demographics of the study's participants. In terms of gender, the data reveals that 23.9% of the 380 respondents were male, while the majority, 76.1%, were female. When it comes to age distribution, the data shows that 42.6% of participants were between the ages of 21 and 30, while 57.4% were between the ages of 31 and 40. These demographics give insight into the study's sample composition, indicating a primarily female and middle-aged participant group. Further 53.9% of the respondents, majority, travels few times a year whereas

2% travels weekly which demonstrates their interest and ability to travel the popular tourist destinations in Sri Lanka.

Table 3: Descriptive Statistics

Variable	Items	Mean	Overall Mean	Std. Deviation
Resilience	R1	2.400		0.852
	R2	2.690		0.583
	R3	2.410		0.850
	R4	2.420		0.854
	R5	3.110	2.7863	1.022
	R6	2.940		1.109
	R7	3.100		0.909
	R8	2.830		0.866
	R9	3.120		1.017
	R10	2.840		0.931
Conservation	C1	2.820		1.069
	C2	2.520		1.231
	C3	2.610		1.223
	C4	2.860		1.287
	C5	2.830	2.9189	1.290
	C6	2.830		1.126
	C7	2.870		1.070
	C8	3.280		0.970
	C9	3.270		0.909
	C10	3.290		0.956
Sustainability	S1	4.000		0.509
	S2	3.700		0.586
	S3	3.520		0.800
	S4	3.260	3.3947	0.757
	S5	2.760		0.832
	S6	2.970		0.832
	S7	3.340		0.677
	S8	3.590		0.783
	S9	3.340		0.691

Source: Survey Data, 2023

Table 3 provides descriptive statistics for the variables of Resilience, Conservation and Sustainability. This provides the mean and standard deviation values for each of the indicators under all the variables which helps to understand the respondents' stance for each factor considered. There are 10 items under the resilience variable. The mean values are in the range

of 2.4 to 3.12. Further, the overall mean value of the variable is 2.79 which is less than 3 and this indicates that the respondents are more in to disagree stance according to the 5-point Likert scale. The conservation variable also has 10 items and the mean values are from 2.52 to 3.29. The overall mean value for Conservation is 2.92 and hence it can be argued that there is a neutral stance from the respondents since it is less than 4. Further, there are 9 items under Sustainability and the mean values are in the range of 2.76 to 3.59. The overall mean value is 3.39 and therefore, it can be argued that the respondents have an agreed stance since it is higher than 3 and closer to 4. The lower level of standard deviation for all the variables proves that there is less fluctuation or dispersion among the data points, implying that the data has a lower degree of consistency or precision.

Table 4: Reliability

Reliability Statistics

	Cronbach's Alpha	N of Items
Resilience	0.919	10
Conservation	0.942	10
Sustainability	0.812	9

Source: Survey Data, 2023

Table 4 summarizes the study's core components, including resilience, conservation, and sustainability. Cronbach's Alpha values are provided in the table, which assess the internal consistency or dependability of each construct. The Cronbach's Alpha rating for resilience is 0.919, indicating a good level of internal consistency among the 10 items assessing resilience. Similarly, the conservation construct has a Cronbach's Alpha of 0.942, suggesting that its 10 elements have a high level of internal consistency. The sustainability construct, on the other hand, has a somewhat lower internal consistency across its nine elements, with a Cronbach's Alpha of 0.812, although this is still regarded adequate. These results indicate that the survey tools employed in the study to measure resilience, conservation, and sustainability are reliable and consistent in evaluating the desired dimensions.

Table 5: Correlation

Correlations

	Resilience	Conservation	Sustainability

Resilience	Pearson Correlation	1	.821**	.723**
	Sig. (2-tailed)		.000	.000
	N	380	380	380
Conservation	Pearson Correlation	.821**	1	.927**
	Sig. (2-tailed)	.000		.000
	N	380	380	380
Sustainability	Pearson Correlation	.723**	.927**	1
	Sig. (2-tailed)	.000	.000	
	N	380	380	380

**. Correlation is significant at the 0.01 level (2-tailed).

Source: Survey Data, 2023

The table shows the coefficients of connection between the variables of resilience, conservation, and sustainability. The Pearson connection between resilience and sustainability is given as .723, showing a positive and high connection between these two domains at the 0.01 level (two-tailed). Similarly, conservation and sustainability have a very significant positive association, with a Pearson association of .927 at the 0.01 level (two-tailed). These correlation data imply that in the setting of the study, there is a strong positive association between resilience and sustainability, as well as conservation and sustainability, emphasizing the association of these constructs.

Table 6: Model Summary

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.930ᵃ	.864	.864	.16860

a. Predictors: (Constant), Conservation, Resilience

Source: Survey Data, 2023

Table 6 summarizes the model utilized in the study. The model comprises two predictors, Conservation and Resilience, as well as a constant factor. The table provides some essential data for evaluating the model's performance. The multiple correlation coefficient R value is 0.93, showing a significant positive association between the predictors and the outcome variable. The R Square value of 0.864 indicates that the predictors in the model can explain

86.4% of the variability in the dependent variable (Sustainability). The Adjusted R Square, a slightly modified version of R Square that takes into consideration the number of predictors, stays high at 0.864.

Table 7: ANOVA

	ANOVA[a]					
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	68.246	2	34.123	1200.429	.000[b]
	Residual	10.716	377	.028		
	Total	78.962	379			

a. Dependent Variable: Sustainability
b. Predictors: (Constant), Conservation, Resilience
Source: Survey Data, 2023

Table 7 shows the results of an ANOVA performed on the model, with Sustainability as the dependent variable. The ANOVA test is used to determine the statistical significance of the regression model. The regression model is extremely significant in this situation (F = 1200.429, p 0.000), showing that the independent variables, Conservation and Resilience, have a considerable influence on explaining the variability in Sustainability scores. The model explains a significant percentage of the variance in Sustainability, as evidenced by the high R-squared value of 0.864.

Table 8: Coefficients

	Coefficients[a]					
		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	2.093	.036		58.263	.000
	Resilience	-.077	.022	-.117	-3.526	.001
	Conservation	.520	.017	1.023	30.823	.000

a. Dependent Variable: Sustainability
Source: Survey Data, 2023

Table 8 demonstrates the coefficients derived from multiple regression analysis. Resilience has a negative significant impact on the dependent variable of Sustainability (B=-.117, p = 0.001). Therefore, the $H1_0$ is rejected. This impact is weak however since the Beta value is lower. On the other hand Conservation, the predictor variable, has a significant positive impact on the sustainability (B = 1.023, p = .000) and hence $H2_0$ is rejected.

DISCUSSION

The discovery of a considerable negative impact of resilience on sustainability in tourist destinations in Sri Lanka appears to contradict the usually favorable connections between resilience and sustainability identified in the literature. While the connection between resilience and sustainability in tourism has gotten less attention, it is recognized as a crucial and emerging topic of research. As complex systems, tourism destinations can benefit from resilience techniques to sustain their social, economic, and environmental well-being. These destinations' resilience mechanisms operate as buffers against threats to sustainability, especially when dealing with external shocks from sociopolitical, economic, and environmental systems (Espiner et al., 2017). The study by Elmqvist et al., (2019) underlines the critical significance of resilience in attaining urban sustainability, especially as the globe gets more urbanized. Within urban settings, resilience is viewed as critical in managing environmental concerns such as greenhouse gas emissions and climate change susceptibility. These literature findings are in contrary to the findings of the current study therefore.

The current analysis demonstrates that conservation has a considerable beneficial influence on sustainability in the context of Sri Lanka's tourism attractions. This discovery is consistent with the larger conservation and sustainability literature, offering insight on the varied advantages of conservation initiatives. Conservation initiatives that actively involve local populations in decision-making processes and ensure they benefit from development projects can provide the groundwork for long-term sustainable development (Latip et al., 2018). Furthermore, Kowarik et al. (2020) underline the complex relationship between conservation and sustainability, particularly in the context of urbanization and biodiversity.

CONCLUSION

The overall findings from the respondents in Sri Lanka's tourist hotspot resilience reveal a sense of neutrality on several factors relating to tourism infrastructure, disaster preparedness, community involvement, flexibility, and risk management according to descriptive statistics. This neutrality reflects a balanced viewpoint with no strong positive or negative feeling, indicating that these areas have room for growth. Hence it can conclude that, the respondents are not confident enough of the readiness of the tourist hotspots in Sri Lanka in an emergency situation or in a crisis. The neutral approach implies that chances to improve adaptation and resilience in tourism infrastructure, crisis management, and community participation may exist. While there may be existing infrastructure and strategies in place, the findings suggest that

more steps may be done to improve preparedness for unanticipated occurrences such as natural catastrophes or swings in visitor demand. During an emergency, efficient and effective communication and coordination among essential authorities and stakeholders are required to promote smooth collaboration.

The findings suggest that the respondents are neutral with the conservation in tourism hotspots in Sri Lanka as revealed in the descriptive statistics, suggesting a balanced approach on these key problems. The neutral approach implies that, while there are continuous attempts to efficiently manage protected areas and maintain natural ecosystems and species, there is still potential for improvement in these activities. Similarly, while respondents do not strongly agree or disagree, it is clear that resource allocation and financing for preserving and improving protected areas may require further care and study. While there are continuing projects and good elements, there is need for development and a continuous focus to maintain the long-term preservation of natural ecosystems, wildlife, and sustainable tourism practices in these key sites.

The overall findings demonstrate the tourist industry's good economic and community development benefits in Sri Lanka's hotspots. The overwhelming agreement on these points emphasizes the industry's importance in the region. However, more efforts and attention are needed to guarantee that cultural preservation, community well-being, and sustainable practices are successfully incorporated into the tourist sector in order to increase its overall impact.

The main objective of this study was to analyze the impact of reliance and conservation in Sri Lankan tourist hotspots on the Sustainability of tourism. Based on the findings, it was revealed that resilience has a negative impact on sustainability in tourism. This does not mean that the resilience in the tourist hotspots reduces the sustainability but it can argue that the insufficient level of resilience in the Sri Lankan tourist hotspots can reduce the sustainability. The selected predictors explains 87.4% of the variability of the dependent variable. This means that there are confounding variables that can explain the variability of the dependent variable, sustainability, which is not covered in this study. As revealed in the literature, economic crisis and local governance can determine the sustainability of a country which could have been impacted on the sustainability. Moreover, the conservation of Sri Lankan tourist hotspots has positively impacted on the sustainability.

Based on the study's results, many significant recommendations for improving the sustainability and resilience of Sri Lanka's tourism attractions emerge. To begin, it is critical to use an integrated planning strategy that takes both sustainability and resilience into account, while also encouraging collaboration among local governments, tourist stakeholders, and environmental agencies. To encourage sustainable practices, adequate investment in tourism-related infrastructure, such as waste management and energy-efficient facilities, is required. Furthermore, community engagement should be stressed, with local inhabitants actively participating in decision-making processes to ensure their perspectives are recognized. Efforts to maintain biodiversity must continue and increase, with an emphasis on the preservation of native flora and wildlife, especially endangered species. Sri Lanka may improve the long-term viability and resilience of its beloved tourism attractions by following these ideas.

The current study is limited to two predictors and there can be different factors that may affect the tourism destination sustainability which were not captured in the current study. Therefore, future researchers can identify more factors that can impact on sustainability in the tourism destinations in Sri Lanka. There are several tourist attraction in the country and future researchers can examine the sustainability in a different tourist destination in Sri Lanka and carry out a comparative study to gain more novel insights. Further, it can be suggested that the future researchers may conduct a longitudinal study to evaluate the resilience, conservation and sustainability in tourist hotspots in Sri Lanka to obtain more insightful outcomes.

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Analyse the Coir Substrate Industry in Sri Lanka through a SWOT Exploration

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ABSTRACT

Sri Lankan coir substrate industry is a significant source of foreign exchange earnings and employment. There is a significant gap between demand and supply for these products in the global market. This SWOT study was conducted to identify barriers to improving production and develop and prioritize strategies to overcome them. To develop a questionnaire, a list of strengths, weaknesses, opportunities, and threats were identified through library studies and personal interviews with industry familiars. The reliability of the Likert scale questionnaire was tested through the Cronbach alpha reliability test. Data were collected through a questionnaire by holding in-depth telephone call interviews with managers and owners of 30 registered companies under the Coconut Development Authority. The main three phases included in the research framework were the input phase, the comparison and correspondence phase, and the decision-making phase. Descriptive analysis evaluated sociodemographic factors, industry-related factors, company future trends, and reasons for the lower availability of raw materials. Ultimately, required strategies were determined based on the Internal Factor Evaluation Matrix (IFEM)-External Factor Evaluation Matrix(EFEM), and developed strategies were prioritized using the Quantitative Strategic Planning Matrix(QSPM). Less coconut production and inefficient husk collection mechanisms were identified as the major reasons for the scarcity of raw materials. Mostly prioritized strength was large market share for Sri Lankan coir substrate products in world market and the labor-intensive industry was identified as the major weakness. The prioritized opportunity was the growing world demand for washed and buffered products. Because of this major threat was few low-quality products damage the well reputation of all the other high-quality products produced and export from Sri Lanka. According to the result of the IFE - EFE matrix, Sri Lankan coir substrate industry belongs to the quadrant that requires more competitive strategies to achieve and maintain success of the industry.

Keywords: Coir Substrate, Matrix, QSPM, Strategies, SWOT

INTRODUCTION

The usage of coconut coir dust as an organic component of soilless substrate mixtures has significantly increased over the past decade (Munroe *et al.*, 2018). Sri Lanka is one of the leading coir substrate product producers and exporters to the world market. Exports of coconut

and coconut-based products have earned foreign exchange US$664.58 million to Sri Lanka in 2020 (Exporters Association of Coir-Based Substrates, 2022). Sri Lanka has a competitive advantage in this field because of its history, geographic position, and native processing techniques.

The coir substrate industry was able to report export revenue of 135 million USD in 2019, which was 22% of the total export revenue of coconut-based industries (Exporters Association of Coir-Based Substrates, 2022). Sri Lanka holds a leading position in world market because of the demand for Sri Lankan coir substrate products (Rosairo *et al.*, 2004). However, substrate manufacturers are still unable to produce enough to meet that demand (Industrial Development Board of Sri Lanka and Industrial Services Bureau, 2007).

SWOT analysis is a popular tool used to evaluate the strengths, weaknesses, opportunities, and threats of a company or industry. Through a SWOT study we can address the major problem and suggests strategies to overcome them. Rather than other qualitative studies, SWOT study is the most suitable method to address the problem of this research as a qualitative study.

Research Problem: The fortuitous revelation of coco peat's potential as a growth medium a few decades ago (Cosmic coir, 2022) has fundamentally reshaped the landscape of the coconut industry. What was once regarded as a hazardous industrial byproduct in the 1980s has evolved into the primary source of export revenue for the coconut sector. The coir substrate industry exhibits a discernible upward trajectory in exportation. However, the escalating rates have demonstrated fluctuations in recent years. Despite a twofold increase in the volume of exported substrates since 2009, the percentage growth between 2015 and 2019 stands at a modest 20%, with a mere 1% increment observed between 2018 and 2019 (Exporters Association of Coir-Based Substrates, 2022). The diminishing percentage growth in exports poses a critical issue as it contributes less to the overall revenue percentage of the country. Motivated by this concern, this study is designed to address the research gap by identifying challenges and opportunities encountered by manufacturers in expanding production capacities. The objective is to formulate and prioritize strategic interventions that can effectively mitigate weaknesses and threats faced by the coir substrate industry. The successful achievement of this goal hinges on the development of sustainable, long-term solutions to the prevailing challenges confronting the industry (Exporters Association of Coir-Based Substrates, 2022).

Objectives: The primary objective of this study is to conduct a rigorous SWOT analysis of the Sri Lankan coir substrate industry. Specifically, the research aims to identify and assess major challenges and opportunities within the coir substrate sector, with a particular emphasis on augmenting manufacturing volumes. Furthermore, the study endeavors to develop and prioritize strategic initiatives through the application of the Quantitative Strategic Planning Matrix (QSPM). By pursuing these objectives, this research aspires to contribute valuable insights to the scholarly discourse on the coir substrate industry, offering evidence-based recommendations for fostering sustainable growth and resilience in the face of evolving market dynamics and challenges.

Justification: There is a significant and rather unprecedented growth seen in the export of coir pith widely used in horticultural applications, which has turned out to be an eco-friendly foreign exchange earner. Therefore, Sri Lanka is in a unique position to take advantage of this situation (Rosairo *et al*., 2004). However, there is no research has conducted to identify the potential of the coir substrate industry in Sri Lanka. This study will fill the research gap which is a need of this industry. It is essential to identify the problems and challenges manufacturers face in the industry (Exporters Association of Coir-Based Substrates, 2022).

Accordingly, this will be useful in creating proper strategies to rectify problems and compete with national and international brands.

LITERATURE REVIEW

Horticultural substrates, encompassing the well-established category of 'horticultural soils' predominantly composed of natural organic matter, serve as the foundation for plant growth. While soil remains the universal substrate, contemporary horticultural practices increasingly seek specialized mediums tailored to specific plant needs. Currently favored substrates in horticulture include sphagnum peat moss, bark, coir, perlite, vermiculite, and mineral wools (Olle et al., 2012). The surge in the use of coir substrates is attributed to factors such as ready availability, reduced environmental concerns in disposal, competitive pricing, and ease of installation (Prabhu and Thomas, 2002).

In the Sri Lankan context, the coir and substrate industries have encountered challenges in recent years. A study by Sathana (2018) in the Jaffna area highlighted the significant hurdles faced by coconut producers in value addition. Another investigation by Rosairo et al. (2004) sought to unravel the causes behind the collapse of the Sri Lankan coir fiber industry,

identifying multifaceted issues ranging from environmental concerns to trade barriers and inadequate research and development. Turnaround strategies were proposed in response to these challenges. In the Northwestern Province, a key region for coir production, Small and Medium Enterprises (SMEs) have been observed to lack innovation, focusing on producing coir fiber as raw material (Industrial Development Board of Sri Lanka and Industrial Services Bureau, 2007; Wedathanthrige, 2014).

The coir industry in Sri Lanka has attracted academic attention, with studies like "The Coir Industry in the Southern Province of Sri Lanka" (Nanayakkara et al., 2006) offering strategies to ensure equitable benefits for workers as the industry expands globally. Drawing inspiration from an Indian context, a SWOT analysis of the coir industry in India (Sitrarasu, 2020) provides valuable insights applicable to enhancing production capacities in Sri Lanka.

The SWOT analysis is employed as a strategic tool to leverage insights into internal and external factors influencing the industry, guiding strategic formulation (Lupu et al., 2016). Recognizing and emphasizing pertinent attributes, both internal and external, the SWOT analysis aims to align industry goals with favorable attributes. Furthermore, the Quantitative Strategic Planning Matrix (QSPM), situated in the final stage of strategy formulation, facilitates decision-making by evaluating and ranking alternative strategies based on identified indicators derived from internal and external factors (Leliga et al., 2019; Ommani, 2010). Integrating these analytical frameworks, this study aims to contribute scientifically rigorous insights to the challenges and opportunities faced by the Sri Lankan coir substrate industry, offering a strategic roadmap for sustainable growth and development."

METHODOLOGY

This research employed a combination of primary and secondary data sources to conduct a thorough investigation. Specifically, primary data, about the SWOT analysis, was gathered from a targeted selection of manufacturing companies engaged in the production of Coir substrate products within Sri Lanka. A sample size of 30 companies was strategically chosen from the 138 manufacturing entities registered with the Coconut Development Authority (CDA), employing purposive sampling methods to ensure representative data collection (Boddy, 2015; Creswell, 1998; Onwuegbuzie and Leech, 2005). The data collection process involved a mix of personal interviews and telephone call interviews, chosen for their efficacy in acquiring insightful and comprehensive information.

Method: Firstly, the SWOT factors were identified by using library studies and personal interviews with those who are familiarized with the coir substrate industry.

Table 1 and 2 shows the identified internal factors (strengths and weaknesses) and external factors (opportunities and threats).

Table 01: Internal factors

Internal Factors
Strengths
S1: Coir substrate industry produces value-added products using husks and byproducts of fiber-based industries
S2: It has a large market share for Sri Lankan coir and coir substrate products in the world market
S3: It manufactures products according to different requirements of customer
S4: Produce diversified products in vast range
S5: Export-oriented development of coir substrate industry
S6: Adaptations to minimize wastage in production factories
S7: Adherence to GMP and other internationally accepted quality requirements
S8. Sri Lankan manufacturers have made a good reputation as a suppliers of quality coir substrate products to the international market
S9: Skilled labor force
S10: Utilization of natural resources for drying purposes
S11: Industry experience in coir substrate products manufacturing
S12: It only utilizes locally available materials for productions
Weaknesses:
W1: Difficulties of achieving green environmental goals with buffering and washing
W2: Less availability of own laboratory facilities
W3: Poor market intelligence about world market trends
W4: Insufficient drying facilities
W5: Less orientation towards own energy-supplying sources
Ex: Solar systems
W6: Insufficient promotional efforts in international markets
W7: Labor intensive industry

Table 02: External factors

External Factors
Opportunities
O1: Growing world demand for washed and buffered products
O2: Growing consumer trends towards eco-friendly natural hydroponic systems
O3: Increasing exchange rate
O4: Government scope of minimizing husk wastage through "Kapruka" Programme
O5: Government guidance for quality maintenance of coir substrate products
O6: Government guidance to find international market opportunities
O7: Support from Associations related to industry
O8: Potential for produce more value-added products from the products which are currently exported in raw form
O9. Potential to expand Sri Lankan coir substrate products for new world markets
Threats
T1: Quality raw materials reduction due to sand addition and contamination with animal manure
T2: Availability of cheap alternative products/ Substitutes
T3: Increasing competition from other coir-based substrate-producing countries in world market
T4: Limitations of raw materials availability for production because of; less coconut production
T5: Limitations of raw materials availability for production because of; husk damages due to pest issues
T6: Limitations of raw materials availability for production because of; inefficient husk collection mechanism
T7: Limitations of raw materials availability for production because of; fresh nut exportation
T8: Increasing cost of production
T9: Few low-quality products damage the well reputation of all the other high-quality Sri Lankan products

Identified AWOT factors were evaluated by five-point Likert scale. Five-point evaluation (Likert-scale) questionnaire was developed to convert the qualitative data into a quantitative

data format. A pilot test was conducted using five companies that manufacture coir substrate products to determine the reliability of the questionnaire. Cronbach's alpha reliability test was used to determine the questionnaire reliability.

The data were then gathered from selected company owners and production managers. Data analysis was conducted under two categories as; descriptive and matrix analysis. Socio demographic factors, industry related factors, company future trends and factors affecting on less availability of raw materials were evaluated under descriptive analysis.

In order to evaluate how companies, likeliness to increase their spending for predetermined factors regarding manufacturing volume increments, six-point evaluation (Likert scale) questions were used. Most possible reasons for less availability of raw materials for production was evaluated according to manufactures' opinions for Likert scale questions for predetermined factors.

Under matrix analysis in this study, four matrices were used under three phases, as the Internal Factor Evaluation (IFE) and External Factor Evaluation (EFE) matrixes (the input phase), the SWOT matrix (the comparison and correspondence phase), and the QSPM matrices (the decision-making phase). The final decision was made using QSPM. Lately, an action plan was developed based on prioritized strategies.

IFE matrix analysis: The weight, rank, and final scores of all internal factors (strengths and weaknesses) were calculated using this matrix. Experience of experts' knowledge used to evaluations. The weights and ratings of the relevant qualitative variables have been allocated to prevent bias, and the importance of each aspect has been discussed so that an unbiased quantification based on their knowledge and experience of the corrugation business can be performed. The following formula was used to calculate the weight for each factor in the IFE matrix (Wardhani and Dini, 2020).

$$ai = \frac{Xi}{\sum_{(i)}^{n} Xi}$$

ai- Weight of iᵗʰ variable   *Xi- iᵗʰ variable value*

i-1,2,3..., n   n- Number of variables

Finally, the total weight become 1 (100%).

Rating each factor is the most challenging step because it involves subjectivity. For allocating rank, the opinions of three experts in the industry were considered. The average of the responses was allocated as the final rank (Zhang and Zhang, 2014).

The rating is between 1 and 4 for each internal factor, which shows how effectively the industry's current strategy responds to these factors. According to their importance, ranks of 4 and 3 are allocated to strength, while ranks of 2 and 1 are for weakness (Leliga *et.al.*, 2019).

If the calculated strength is high, this factor will gain rank 4; otherwise, when an organization gains weak strength, the average rank of the factor is 3. If an organization is challenged with a common weakness, the corresponding factor gains 2. However, fatal weakness gained a rank of 1. Therefore, in order to calculate the score of each factor, the weight of each row of internal factors was multiplied by the rank and inserted in the score column.

$$Score = Weight \times Rank$$

So, the total of scores were calculated. The minimum of this total could be 1 and maximum of it could be 4.

EFE matrix analysis: The current status of each factor is determined by ranks from 1 to 4, according to their importance. Ranks of 4 and 3 were allocated to opportunities while ranks of 2 and 1 for threats. If calculated opportunity is excellent, this factor gains a rank of 4. Otherwise, when an organization gains limited opportunity, the average rank of the factor is 3. If an organization is challenged with ideal threats corresponding factor gains 2. However terrible threat gain rank 1 (Leliga *et.al.*, 2019). Therefore, in order to calculate the score of each factor, the weight of each row of external factors were multiplied by the rank and inserted into the score column. Weight for each factor in EFE matrix were determined according to the same formula used in internal factor analysis. So, the total scores were calculated. The minimum of this total could be 1, and the maximum could be 4.

Then the Probability of Strategy Success (PSS) was tested. IFE- EFE matrixes were applied for below formulas to calculate Probability of Strategy Success (PSS).

$$PSS = \frac{(SP + AS)}{2}$$

$$SP = \frac{\sum s}{\sum (s + w)}$$

$$AS = \frac{\sum O}{\sum(O + T)}$$

PSS – coefficient of the probability of a strategic success

SP – coir Substrate industry internal strength

AS – the attractiveness of the environment

SWOT matrix analysis: Using IFE- EFE matrix, Sri Lankan Coir Substrate industry belonging strategy quadrant was determined. In the comparison and correspondent phase, different strategies were developed considering current strengths, weaknesses, opportunities, and threats in the industry as a SWOT matrix the organization's strengths and weaknesses were represented on one side of this matrix, and opportunities and threats were located on the other side, where they meet to form four quadrants.

QSPM analysis: Through QSPM analysis strategies developed in the above phase could be prioritized. Strategic factor, weight, attractiveness score, and total score were the QSPM components in this analysis. A numerical value showing the relative appeal of each approach in a group of developed strategies is known as the attractiveness score.

In QSPM the determination of Total Attractiveness Scores (TAS) is also carried out with the following conditions.

(1) Value 1 = not attractive

(2) Value 2 = rather interesting

(3) Value 3 = quite interesting

(4) Value 4 = very interesting TAS is obtained by multiplying weights by attractiveness (Sumiarsih *et al*., 2018).

$$TAS = Weight \times AS$$

Here also average of three experts' opinions (Sumiarsih *et al*., 2018; Banka *et al*., 2022) were considered in allocating attractive score. The strategies that have been obtained by SWOT analysis were prioritized using QSPM Analysis.

Data Analysis: To analyze data, Matrix, Stata 16 and MS. Excel software were used.

RESULTS AND DISCUSSION

Under the descriptive analysis, socio-demographic factors and industry-related factors have been described. The socio-demographic factors, respondents' education level, and respondents' experience in the coir substrate manufacturing industry have all been explained. Experience of the company in the coir substrate manufacturing industry, the scale of the company, manufacturing product types, products exporting countries, international trade fair participation, membership of related industry associations, achieved quality certifications for products, and buffering and washing of products have been described under industry-related factors. In addition, future trends of companies were also evaluated through descriptive analysis.

Summary of socio-demographic factors

Education level of respondents: It was revealed that most of the respondents hold a diploma-level of education, representing a percentage of around 43.33%. This was followed by education up to the degree holder (30%), passed A/L level (23.3%), and postgraduate (3.33%) level of education. The findings indicate that most of the respondents have a relatively high educational level and all of the respondents have learned up to A/L or higher education.

Experience of the respondent: Considering the experience of the responders, 53.33%, the highest percentage of manufacturers have experience between 10 and 20 years of experience, and a 10% minor percentage have experience in the industry less than 10 years. 36.67% of manufacturers have experience in the industry for more than 20 years.

Summary of industry-related factors

Industry Scale: The national policy framework for Small and Medium Enterprise Development (SME) under the Ministry of Industry and Commerce classifies scales of the industries based on the number of employees of the institute. According to their categorization method, current coir substrate industries can be classified into four categories micro, small, medium, and large scale (Ministry of Industry and Commerce, 2015).

In the selected sample, small-scale companies account for 50% of the majority. The lowest 6.67% represented micro-scale companies 33.33% of manufacturing companies belong to medium-sized companies, while the third highest number of companies represents large-scale companies by 10%.

Experience of the company: According to the respondents' data, most manufacturing companies have experience of between 10 and 20 years. As a percentage value, it is around 46.47%. 20% of companies have experience in the field for more than 20 years, and 33.33% of manufacturers have less than 10 years of experience in the coir substrate field.

Types of manufacturing products: Among different product types manufactured by companies, more than 93% of companies out of 30 produce grow bags. The second highest production type is 5kg blocks (66.67%) and the third place is taken by two products, coco disks and coco bricks. Loose husk chips and 25 kg blocks also show the same percentage share as 20%. Grow cubes and husk chip blocks also show the same percentages of 6.67%, and loose coco peat and coir pots revealed 16.67% equal percentages. Propagation cubes are the least produced products by the manufacturing companies, which are represented by 3.33% in the above table. In the other products category (43%), products that are manufactured by companies which are not included in the substrate category have been included (Ex: coco poles, geo textiles, coco lawns, fiber bales, mulch mats, etc.)

Products exporting regions: According to the products exporting regions, the highest percentage (90%) of manufacturing products are exported to Asian countries like Japan and China. The second highest tendency for exporting substrate products is for European countries, particularly the United Kingdom and the Netherlands. Africa is shown as the lowest importing region, with only a 20% export rate. As explained by the manufacturers, it is somewhat difficult to export Sri Lankan products to Oceanic countries like Australia and New Zealand due to sanitary and phytosanitary quality certification issues because these island regions have been subject to strict regulations on importing horticultural products. So, the second lowest exporting region is Oceanic countries (30%). Among all the manufacturers in the sample, only one manufacturer produces for the local market and the overall percentage for that is 3.33%. Around 43% of the manufacturers of the sample export their substrate products to American countries and for the Middle East it is around 56.67%.

Participation in international trade fairs: Considering the factor of international trade fair participation, the highest percentage, represented as 63.33%, in the above table of manufacturers who have not participated in international level trade fairs. Only a minor percentage (36.67%) of the population have participated in international trade fairs.

Membership of related industry association: In the coir substrate industry, only one association (The Exporters Association of Coir Based Substrate) is currently active in supporting

manufacturers and exporters of the industry. A relatively higher percentage (73.33%) have taken membership in a related industry association. The 26.67% minority of manufacturers in the sample have not taken membership of this association or any other related industry association.

Achieved certifications by companies for productions: Considering the achieved certifications by the coir substrate manufacturing companies, it explains that 100% of manufacturers have achieved Good Manufacturing Practices (GMP) certification for their products. The second highest achieved certification is ISO 9001(16.67%). The lowest percentage of achieved certifications are ISO 140001, ISO 2015, Leaf, and Ecocert certifications, with an equal percentage of around 3.33%. OMRI and SLS certifications have been achieved by an equal percentage of around 10%, and RHP certification (European countries highly approve RHP-certified products) has been obtained by 6.67% among manufacturing companies for their products.

Buffering and Washing: 60% of the majority of companies produce coir substrate products, which are manufactured and exported as unwashed products. 20% second highest represents the companies that do both buffering and washing for their products. Equally minor percentages (10%) of manufacturing companies produce both washed and unwashed products or only washed products.

Future Trends of companies (% Likeliness):

Figure 01: Future trends of companies (% Likeliness)
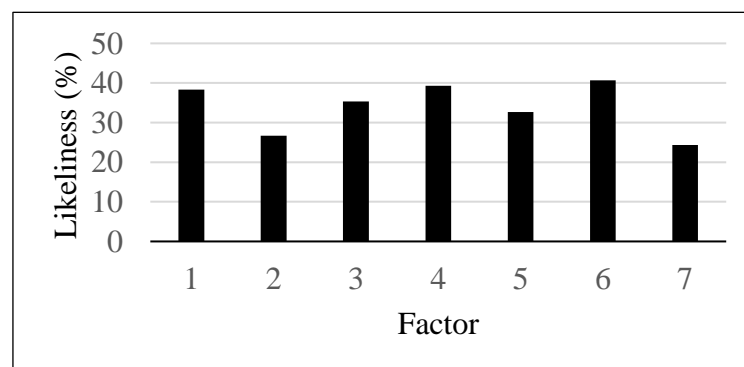
Factor 1- Increase spending for new innovations and value-added productions

Factor 2- Increase spending on product promotion

Factor 3- Increase spending on establishing own energy sources

Factor 4- Increase spending on waste treatment

Factor 5-Increase spending on drying yards

Factor 6- Increasing spending for new machineries and technologies

Factor 7- Increase spending for new market researches

As the survey results revealed that, exporters are more likely to increase their spending for production of new machines and technologies. In addition, they are also willing to spend more on waste treatment and new innovations and to produce value-added products.

Figure 02: Factors effect on less availability of raw materials
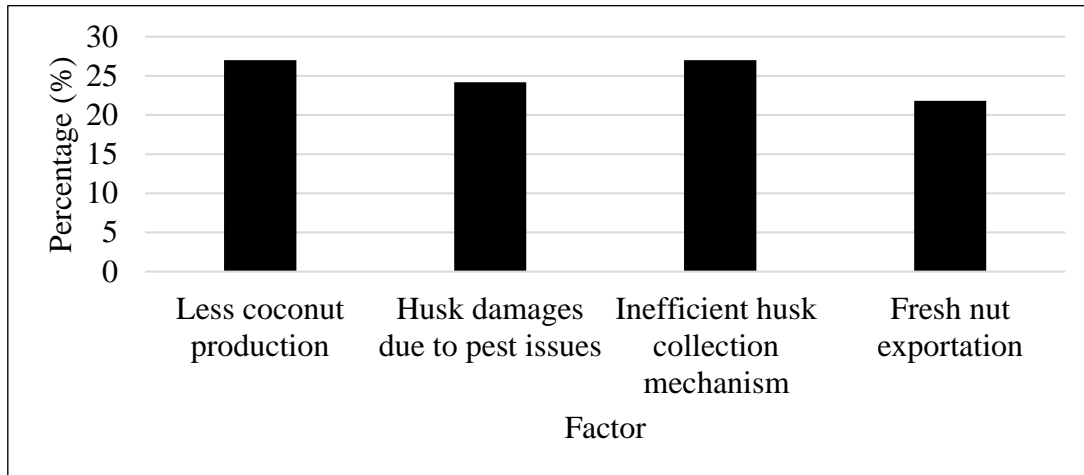
According to the primary survey data; four basic factors are affecting the scarcity of raw materials for production. They are, less coconut production, coconut husk damage due to pest issues (mite damage), inefficient husk collection mechanism, and fresh nut exportation.

According to the graphical illustration of manufacturers' opinions, less coconut production and inefficient husk collection mechanisms were the major reasons for the scarcity of raw materials. According to respondents' opinions, fresh nut exportation shows lower impact while mite damage to husk shows more impact than fresh nut exportation.

Matrix analysis: This article offers guidelines to demonstrate how various strategic management tools aid in decision-making.

After conducting a pilot test to determine the reliability of the questionnaire, the received results of were Strengths- 0.8240, Weaknesses- 0.7073, Opportunities- 0.7818 and Threats- 0.7270 which were all four variable categories exceeded the acceptable level (0.7) in the Cronbach's alpha value scale. So, the questionnaire was reliable.

After considering all the collected data of the sample, the final matrix analysis was done as below.

i. Input phase:

Table 03: Internal Factor Evaluation Matrix (IFE)				Table 04: External Factor Evaluation Matrix (EEE)			
Strengths	**Weight**	**Rank**	**Score**				
				Opportunities	**Weight**	**Rank**	**Score**
1	0.054	4	0.216				
2	0.058	4	0.232	1	0.068	4	0.272
3	0.055	4	0.22	2	0.059	4	0.236
4	0.053	4	0.212	3	0.044	3	0.132
5	0.058	4	0.232	4	0.04	4	0.16
6	0.051	4	0.204	5	0.044	3	0.132
7	0.057	3	0.171	6	0.045	4	0.18
8	0.057	4	0.228	7	0.049	4	0.196
9	0.045	3	0.135	8	0.067	4	0.268
10	0.056	4	0.224	9	0.066	4	0.264
11	0.057	4	0.228	**Threats**			
12	0.058	4	0.232	1	0.064	1	0.064
Weaknesses				2	0.056	1	0.056
1	0.039	2	0.078	3	0.058	1	0.058
2	0.049	1	0.049	4	0.056	1	0.056
3	0.047	2	0.094	5	0.05	1	0.05
4	0.053	1	0.053	6	0.056	1	0.056
5	0.051	2	0.102	7	0.045	2	0.09
6	0.047	2	0.094	8	0.066	1	0.066
7	0.054	2	0.108	9	0.064	2	0.128
Total			3.112	**Total**			2.464

Table 3, shows the summary of the internal factor evaluation. According to the matrix, obtained total score for IFE matrix was 3.112 which exceeds the average 2.5 level (David, 2011). The assumption behind choosing 2.5 as the average score is that it serves as a baseline or neutral value (David, 2011). Table 4, shows the summary of the external factors. From this

matrix all the external factors (opportunities and threats) weights, rank and final scores were summarized. According to the matrix, obtained total score for EFE Matrix was 2.464.

Figure 03: IFE- EFE matrix
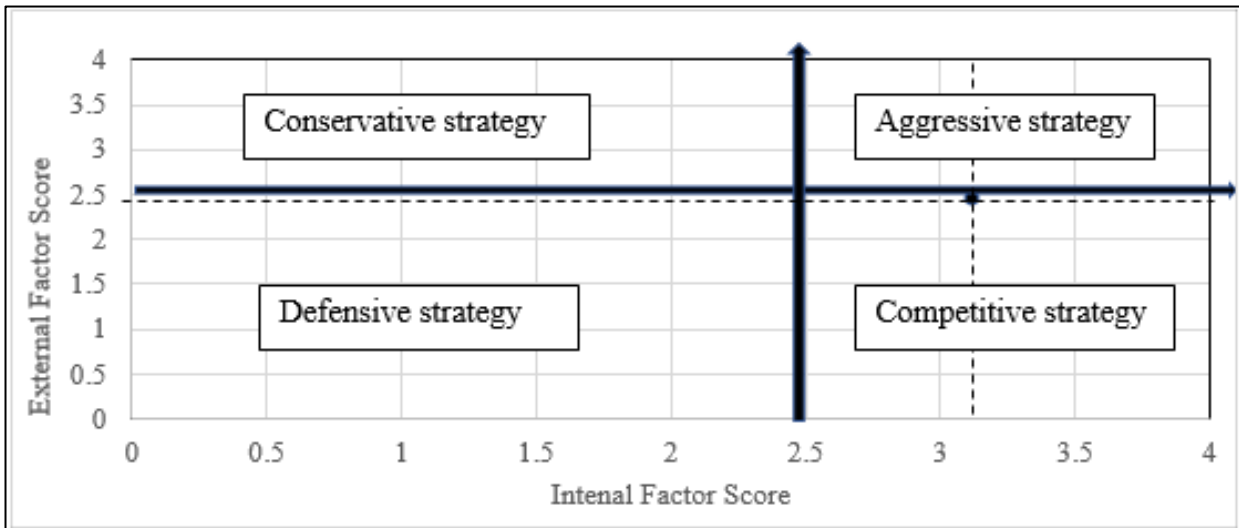
This matrix shows that Sri Lankan coir substrate industry belongs to the competitive strategy quadrant. For determine the position IFE and EFE matrix values were used. It means that internal strengths are more than weaknesses and external threats are more major than opportunities.

This analytical tool utilizes internal and external factors to generate strategies. It comprises of following 4 strategic groups;

1. How strengths are utilized to exploit opportunities.

2. How weaknesses can be reduced by using opportunities.

3. How strengths are utilized to minimize the impact of threats.

4. How weaknesses can be handled that will make these threats a reality.

Assessment of the probability of strategic success (PSS): Observed results of IFE- EFE matrixes were applied for the formulas to calculate PSS. According to the results in IFE and EFE Matrixes, $\sum$S is 2.53, $\sum$the (S+W) value is 3.11, and the calculated SP value is 0.81.

$\sum$O is 1.84, $\sum$ (O+T) is 2.46 hence calculated AS value is 0.75 according to the probability of strategic success formula; The final PSS value is 0.78. According to the decision rule (for strategic success, PSS> 0.5), the calculated PSS value is greater than 0.5. In this research, the strategy's success probability is acceptable (Bhatta *et.al*., 2020). If the coefficient exceeds 0.5, then the industry is successful.

Table 05: SWOT matrix aggressive and competitive strategies

	Opportunities O1, O2, O3, O4, O5, O6, O7, O8, O9	Threats T1, T2, T3, T4, T5,T6 ,T7,T8,T9
Strengths S1, S2, S3, S4, S5, S6, S7, S8, S9, S10 , S11, S12	**S-O Strategy** **(Aggressive Strategies)** 01. Introducing standard logo for international reorganization as a branded product from Sri Lanka 02. Conducting research to estimate utilizable coconut husks in domestically 03.Focus on product and market diversification	**S-T Strategy** **(Competitive Strategies)** 04. Develop a domestic awareness campaign to promote awareness of the local community regarding "Kapruka Programme" and the importance of coconut husk for manufacturing industries 05. Promoting manufacturers to produce more value-added products which are currently exported in raw form without any value addition 06. Extension about the importance of gaining internationally accepted quality standards/Guidelines with a certificate for Sri Lankan products 07. Maximizing the productivity of existing coconut plantations 08. Establishing a processing zone out of the coconut triangle 09. Sustainable land development and management

ii. Comparisons and correspondence phase: Developed Aggressive (SO Strategies), Competitive (ST Strategies), Conservative (WO Strategies) and Defensive strategies (WT Strategies) considering current strengths, weaknesses, opportunities and threats in the industry are as below.

Aggressive strategies are referring to an organization in which the internal strengths are dominant and opportunities are dominating in external environment and Competitive strategies exist in an industry when it is confronted with negative external conditions

despite having significant internal potential. Threats must be overcome by utilizing strong sides.

Table 06: SWOT matrix conservative and defensive strategies

	Opportunities O1, O2, O3, O4, O5, O6, O7, O8, O9	Threats T1, T2, T3, T4, T5,T6 ,T7,T8,T9
Weaknesses W1, W2 ,W3,W4, W5,W6, W7	W-O Strategy (Conservative Strategies) 10.Introducing environmentally friendly level of chemicals use for buffering 11.Organization of international level trade fairs within country 12. Establishing e- Platform to access world market information 13.Establishment of promotional stoles at all Sri Lankan Airports and ports	W-T Strategy (Defensive Strategies) 14.Introducing low cost machineries 15.Introducing low interest loan schemes for solar systems 16.Understand the gaps in Sri Lankan coir substrate industry and develop strategic plan with collaboration of CDA and Related Industry Association 17. Establish a center to maintain required laboratory testing for quality maintenance

Conservative strategies are referring to an organization which is dominated by weaknesses, but operates in a favorable environment. It should focus on taking advantage of its opportunities. Defensive strategies are internally major in weaknesses and externally major in threats.

iii. Decision making phase: In this phase each developed strategy has been evaluated according to QSPM analysis. Then considering external and internal factors separately, overall Total Attractive Score values were calculated.

Through QSPM Analysis strategies developed in above phase could be prioritized. In QSPM the determination of Total Attractiveness Scores (TAS) is also carried out with the following conditions.

(1) Value 1 = not attractive

(2) Value 2 = rather interesting

(3) Value 3 = quite interesting

(4) Value 4 = very interesting TAS is obtained by multiplying weights by attractiveness (Sumiarsih *et al.*, 2018).

Here also average of three experts opinions (Sumiarsih *et al.*, 2018; Banka *et al.*, 2022) were considered in allocating attractive score. The strategies that have been obtained by SWOT analysis were prioritized using QSPM Analysis. The Total Attractive Score (TAS) is obtained by multiplying AS and weight (Sumiarsih *et al.*, 2018). After gathering the information from the Quantitative strategic planning matrix (external factors - internal factors).

Table 07: Quantitative Strategic Planning Matrix (Internal Factors)

Internal factors		Strategy 1		Strategy 2		Strategy 3	
Strengths	Weight	AS	TAS	AS	TAS	AS	TAS
S1	0.054	1	0.054	4	0.216	4	0.216
S2	0.058	4	0.232	1	0.058	2	0.116
S3	0.055	1	0.055	1	0.055	2	0.11
S4	0.053	3	0.159	2	0.106	4	0.212
S5	0.058	4	0.232	1	0.058	1	0.058
S6	0.051	1	0.051	1	0.051	1	0.051
S7	0.057	2	0.114	1	0.057	1	0.057
S8	0.057	4	0.228	1	0.057	1	0.057
S9	0.045	1	0.045	1	0.045	1	0.045
S10	0.056	1	0.056	1	0.056	1	0.056
S11	0.057	3	0.171	1	0.057	2	0.114
S12	0.058	1	0.058	4	0.232	1	0.058
Weaknesses							
W1	0.039	1	0.039	1	0.039	1	0.039
W2	0.049	1	0.049	1	0.049	1	0.049
W3	0.047	1	0.047	1	0.047	2	0.094
W4	0.053	1	0.053	1	0.053	4	0.212
5W5	0.051	1	0.051	1	0.051	1	0.051

W6	0.047	4	0.188	1	0.047	1	0.047
W7	0.054	1	0.054	1	0.054	3	0.162
Total	1		1.936		1.388		1.804

Table 08: Quantitative Strategic Planning Matrix (Internal Factors)

Internal factors		Strategy 4		Strategy 5		Strategy 6	
Strengths	Weight	AS	TAS	AS	TAS	AS	TAS
S1	0.054	4	0.216	4	0.216	1	0.054
S2	0.058	2	0.116	3	0.174	1	0.058
S3	0.055	1	0.055	3	0.165	2	0.11
S4	0.053	1	0.053	3	0.159	1	0.053
S5	0.058	1	0.058	3	0.174	4	0.232
S6	0.051	1	0.051	2	0.102	1	0.051
S7	0.057	1	0.057	1	0.057	4	0.228
S8	0.057	1	0.057	1	0.057	4	0.228
S9	0.045	1	0.045	1	0.045	1	0.045
S10	0.056	1	0.056	1	0.056	1	0.056
S11	0.057	1	0.057	1	0.057	1	0.057
S12	0.058	4	0.232	2	0.116	1	0.058
Weaknesses							
W1	0.039	1	0.039	2	0.078	1	0.039
W2	0.049	1	0.049	1	0.049	2	0.098
W3	0.047	1	0.047	3	0.141	2	0.094
W4	0.053	1	0.053	1	0.053	2	0.106
W5	0.051	1	0.051	1	0.051	1	0.051
W6	0.047	1	0.047	1	0.047	1	0.047
W7	0.054	1	0.054	1	0.054	1	0.054
Total	**1**		**1.393**		**1.851**		**1.719**

Table 09: Quantitative Strategic Planning Matrix (Internal Factors)

Internal factors		Strategy 7		Strategy 8		Strategy 9	
Strengths	Weight	AS	TAS	AS	TAS	AS	TAS
S1	0.054	3	0.162	2	0.108	1	0.054
S2	0.058	1	0.058	1	0.058	1	0.058
S3	0.055	1	0.055	1	0.055	1	0.055
S4	0.053	1	0.053	1	0.053	1	0.053
S5	0.058	1	0.058	3	0.174	1	0.058
S6	0.051	1	0.051	4	0.204	1	0.051
S7	0.057	1	0.057	2	0.114	1	0.057
S8	0.057	1	0.057	1	0.057	1	0.057
S9	0.045	1	0.045	1	0.045	1	0.045
S10	0.056	1	0.056	1	0.056	1	0.056
S11	0.057	1	0.057	3	0.171	1	0.057
S12	0.058	4	0.232	4	0.232	2	0.116
Weaknesses							
W1	0.039	1	0.039	4	0.156	1	0.039
W2	0.049	1	0.049	3	0.147	1	0.049
W3	0.047	1	0.047	1	0.047	1	0.047
W4	0.053	1	0.053	2	0.106	1	0.053
W5	0.051	1	0.051	2	0.102	1	0.051
W6	0.047	1	0.047	1	0.047	1	0.047
W7	0.054	1	0.054	1	0.054	1	0.054
Total	**1**		**1.281**		**1.986**		**1.057**

Table 10: Quantitative Strategic Planning Matrix (Internal Factors)

Internal factors		Strategy 10		Strategy 11		Strategy 12	
Strengths	Weight	AS	TAS	AS	TAS	AS	TAS
S1	0.054	1	0.054	2	0.108	1	0.054

S2	0.058	2	0.116	3	0.174	2	0.116
S3	0.055	4	0.22	2	0.11	3	0.165
S4	0.053	3	0.159	4	0.212	2	0.106
S5	0.058	1	0.058	3	0.174	4	0.232
S6	0.051	1	0.051	1	0.051	1	0.051
S7	0.057	1	0.057	2	0.114	3	0.171
S8	0.057	1	0.057	2	0.114	1	0.057
S9	0.045	1	0.045	1	0.045	1	0.045
S10	0.056	1	0.056	1	0.056	1	0.056
S11	0.057	1	0.057	3	0.171	1	0.057
S12	0.058	1	0.058	1	0.058	1	0.058
Weaknesses							
W1	0.039	4	0.156	1	0.039	1	0.039
W2	0.049	1	0.049	1	0.049	1	0.049
W3	0.047	1	0.047	4	0.188	4	0.188
W4	0.053	1	0.053	1	0.053	1	0.053
W5	0.051	1	0.051	1	0.051	1	0.051
W6	0.047	1	0.047	4	0.188	3	0.141
W7	0.054	1	0.054	1	0.054	1	0.054
Total	**1**		**1.445**		**2.009**		**1.743**

Table 11: Quantitative Strategic Planning Matrix (Internal Factors)

Internal factors		**Strategy 13**		**Strategy 14**		**Strategy 15**	
Strengths	Weight	AS	TAS	AS	TAS	AS	TAS
S1	0.054	1	0.054	1	0.054	1	0.054
S2	0.058	1	0.058	1	0.058	1	0.058
S3	0.055	2	0.11	1	0.055	1	0.055
S4	0.053	3	0.159	2	0.106	1	0.053
S5	0.058	2	0.116	1	0.058	1	0.058
S6	0.051	1	0.051	2	0.102	1	0.051
S7	0.057	1	0.057	1	0.057	1	0.057
S8	0.057	3	0.171	1	0.057	1	0.057

S9	0.045	1	0.045	3	0.135	1	0.045
S10	0.056	1	0.056	2	0.112	2	0.112
S11	0.057	1	0.057	2	0.114	1	0.057
S12	0.058	1	0.058	1	0.058	3	0.174
Weaknesses						
W1	0.039	1	0.039	1	0.039	1	0.039
W2	0.049	1	0.049	1	0.049	1	0.049
W3	0.047	1	0.047	1	0.047	1	0.047
W4	0.053	1	0.053	4	0.212	2	0.106
W5	0.051	1	0.051	1	0.051	4	0.204
W6	0.047	4	0.188	1	0.047	1	0.047
W7	0.054	1	0.054	4	0.216	1	0.054
	1		**1.627**		**1.627**		**1.377**

Table 12: Quantitative Strategic Planning Matrix (Internal Factors)

Internal factors		**Strategy 16**		**Strategy 17**	
Strengths	Weight	AS	TAS	AS	TAS
S1	0.054	1	0.054	1	0.054
S2	0.058	2	0.116	1	0.058
S3	0.055	1	0.055	2	0.11
S4	0.053	1	0.053	1	0.053
S5	0.058	2	0.116	1	0.058
S6	0.051	1	0.051	1	0.051
S7	0.057	2	0.114	4	0.228
S8	0.057	1	0.057	4	0.228
S9	0.045	1	0.045	1	0.045
S10	0.056	1	0.056	1	0.056
S11	0.057	1	0.057	1	0.057
S12	0.058	1	0.058	1	0.058
Weaknesses					
W1	0.039	4	0.156	3	0.117

W2	0.049	3	0.147	4	0.196
W3	0.047	3	0.141	1	0.047
W4	0.053	3	0.159	1	0.053
W5	0.051	4	0.204	1	0.051
W6	0.047	3	0.141	1	0.047
W7	0.054	3	0.162	1	0.054
	1		**1.942**		**1.621**

Table 13: Quantitative Strategic Planning Matrix (External Factors)

External factors		**Strategy 1**		**Strategy 2**		**Strategy 3**	
Opportunities	Weight	AS	TAS	AS	TAS	AS	TAS
O1	0.068	3	0.204	1	0.068	4	0.272
O2	0.059	3	0.177	1	0.059	4	0.236
O3	0.044	1	0.044	1	0.044	2	0.088
O4	0.04	1	0.04	4	0.16	1	0.04
O5	0.044	4	0.176	1	0.044	1	0.044
O6	0.045	3	0.135	1	0.045	2	0.09
O7	0.049	1	0.049	2	0.098	2	0.098
O8	0.067	3	0.201	2	0.134	4	0.268
O9	0.066	4	0.264	2	0.132	3	0.198
Threats							
T1	0.064	1	0.064	1	0.064	1	0.064
T2	0.056	3	0.168	1	0.056	1	0.056
T3	0.058	3	0.174	1	0.058	3	0.174
T4	0.056	1	0.056	4	0.224	1	0.056
T5	0.05	1	0.05	2	0.1	1	0.05
T6	0.056	1	0.056	4	0.224	1	0.056
T7	0.045	1	0.045	3	0.135	1	0.045
T8	0.066	1	0.066	1	0.066	2	0.132
T9	0.064	4	0.256	1	0.064	1	0.064
Total	**1**		**2.225**		**1.775**		**2.031**

Table 14: Quantitative Strategic Planning Matrix (External Factors)

External factors		Strategy 4		Strategy 5		Strategy 6	
Opportunities	Weight	AS	TAS	AS	TAS	AS	TAS
O1	0.068	1	0.068	3	0.204	3	0.204
O2	0.059	2	0.118	3	0.177	2	0.118
O3	0.044	1	0.044	3	0.132	1	0.044
O4	0.04	4	0.16	1	0.04	1	0.04
O5	0.044	1	0.044	2	0.088	4	0.176
O6	0.045	1	0.045	1	0.045	1	0.045
O7	0.049	2	0.098	3	0.147	2	0.098
O8	0.067	3	0.201	4	0.268	1	0.067
O9	0.066	1	0.066	2	0.132	3	0.198
Threats							
T1	0.064	1	0.064	1	0.064	4	0.256
T2	0.056	2	0.112	2	0.112	1	0.056
T3	0.058	1	0.058	4	0.232	4	0.232
T4	0.056	4	0.224	1	0.056	1	0.056
T5	0.05	2	0.1	1	0.05	1	0.05
T6	0.056	4	0.224	1	0.056	1	0.056
T7	0.045	1	0.045	4	0.18	1	0.045
T8	0.066	1	0.066	4	0.264	1	0.066
T9	0.064	1	0.064	1	0.064	4	0.256
Total	1		1.801		2.311		2.063

Table 15: Quantitative Strategic Planning Matrix (External Factors)

External factors		Strategy 7		Strategy 8		Strategy 9	
Opportunities	Weight	AS	TAS	AS	TAS	AS	TAS
O1	0.068	1	0.068	1	0.068	1	0.068

O2	0.059	1	0.059	1	0.059	1	0.059
O3	0.044	1	0.044	2	0.088	1	0.044
O4	0.04	1	0.04	2	0.08	1	0.04
O5	0.044	1	0.044	3	0.132	1	0.044
O6	0.045	1	0.045	1	0.045	1	0.045
O7	0.049	4	0.196	2	0.098	3	0.147
O8	0.067	1	0.067	1	0.067	1	0.067
O9	0.066	1	0.066	1	0.066	1	0.066
Threats							
T1	0.064	1	0.064	3	0.192	1	0.064
T2	0.056	1	0.056	1	0.056	1	0.056
T3	0.058	2	0.116	3	0.174	3	0.174
T4	0.056	4	0.224	1	0.056	4	0.224
T5	0.05	4	0.2	1	0.05	2	0.1
T6	0.056	1	0.056	3	0.168	1	0.056
T7	0.045	1	0.045	1	0.045	1	0.045
T8	0.066	1	0.066	4	0.264	1	0.066
T9	0.064	1	0.064	2	0.128	1	0.064
Total	**1**		**1.52**		**1.836**		**1.429**

Table16: Quantitative Strategic Planning Matrix (External Factors)

External factors		Strategy 10		Strategy 11		Strategy 12	
Opportunities	Weight	AS	TAS	AS	TAS	AS	TAS
O1	0.068	3	0.204	4	0.272	3	0.204
O2	0.059	2	0.118	4	0.236	2	0.118
O3	0.044	1	0.044	2	0.088	1	0.044
O4	0.04	1	0.04	1	0.04	1	0.04
O5	0.044	2	0.088	1	0.044	1	0.044
O6	0.045	1	0.045	4	0.18	4	0.18
O7	0.049	1	0.049	4	0.196	3	0.147
O8	0.067	3	0.201	3	0.201	1	0.067
O9	0.066	1	0.066	4	0.264	4	0.264

Threats						
T1	0.064	1	0.064	1	0.064	1	0.064
T2	0.056	1	0.056	2	0.112	1	0.056
T3	0.058	2	0.116	4	0.232	3	0.174
T4	0.056	1	0.056	1	0.056	1	0.056
T5	0.05	1	0.05	1	0.05	1	0.05
T6	0.056	1	0.056	1	0.056	1	0.056
T7	0.045	1	0.045	1	0.045	1	0.045
T8	0.066	2	0.132	1	0.066	1	0.066
T9	0.064	1	0.064	1	0.064	1	0.064
Total	**1**		**1.494**		**2.266**		**1.739**

Table 17: Quantitative Strategic Planning Matrix (External Factors)

External factors		Strategy 13		Strategy 14		Strategy 15	
Opportunities	Weight	AS	TAS	AS	TAS	AS	TAS
O1	0.068	3	0.204	1	0.068	1	0.068
O2	0.059	3	0.177	1	0.059	1	0.059
O3	0.044	2	0.088	2	0.088	1	0.044
O4	0.04	1	0.04	1	0.04	1	0.04
O5	0.044	1	0.044	1	0.044	1	0.044
O6	0.045	4	0.18	1	0.045	1	0.045
O7	0.049	2	0.098	3	0.147	2	0.098
O8	0.067	1	0.067	1	0.067	1	0.067
O9	0.066	4	0.264	1	0.066	1	0.066
Threats							
T1	0.064	1	0.064	1	0.064	1	0.064
T2	0.056	1	0.056	1	0.056	1	0.056
T3	0.058	3	0.174	4	0.232	3	0.174
T4	0.056	1	0.056	1	0.056	1	0.056
T5	0.05	1	0.05	1	0.05	1	0.05
T6	0.056	1	0.056	1	0.056	1	0.056

T7	0.045	1	0.045	1	0.045	1	0.045
T8	0.066	1	0.066	4	0.264	4	0.264
T9	0.064	1	0.064	1	0.064	1	0.064
Total	**1**		**1.793**		**1.511**		**1.36**

Table 18: Quantitative Strategic Planning Matrix (External Factors)

External factors		**Strategy 16**		**Strategy 17**	
Opportunities	Weight	AS	TAS	AS	TAS
O1	0.068	2	0.136	1	0.068
O2	0.059	1	0.059	1	0.059
O3	0.044	1	0.044	1	0.044
O4	0.04	4	0.16	1	0.04
O5	0.044	3	0.132	4	0.176
O6	0.045	3	0.135	1	0.045
O7	0.049	4	0.196	2	0.098
O8	0.067	3	0.201	1	0.067
O9	0.066	3	0.198	1	0.066
Threats					
T1	0.064	4	0.256	4	0.256
T2	0.056	2	0.112	1	0.056
T3	0.058	3	0.174	3	0.174
T4	0.056	3	0.168	1	0.056
T5	0.05	3	0.15	1	0.05
T6	0.056	4	0.224	1	0.056
T7	0.045	4	0.18	1	0.045
T8	0.066	3	0.198	1	0.066
T9	0.064	3	0.192	4	0.256
Total	**1**		**2.915**		**1.678**

Each strategy was prioritized according to the highest average value to lowest value as shown in table 19.

Table 19: QSPM Summery

Strategy Number	IFE	EFE	Average
1	2.225	1.936	2.08
2	1.775	1.388	1.58
3	2.031	1.804	1.92
4	1.801	1.393	1.6
5	2.311	1.851	2.08
6	2.063	1.719	1.89
7	1.52	1.281	1.4
8	1.836	1.986	1.91
9	1.429	1.057	1.24
10	1.494	1.445	1.47
11	2.266	2.009	2.14
12	1.739	1.743	1.74
13	1.793	1.627	1.71
14	1.511	1.627	1.57
15	1.36	1.377	1.37
16	2.915	1.942	2.43
17	1.678	1.621	1.65

(Source: QSPM Matrix analysis data)

According to the summary,

1. Understand the gaps in the Sri Lankan coir substrate industry and develop a strategic plan with the collaboration of CDA and related industry association
2. Organization of international-level trade fairs within the country
3. Introducing a standard logo for international reorganization as a branded product from Sri Lanka was the most prioritized strategy.

An action plan was suggested for each strategy for future implementation as below.

Table 20: Prioritized strategies and developed action plan

Prioritized order	Prioritized strategy	Action plan
1	Develop and implement on strategic plan to fill gaps in industry by collaborative work of CDA and related industry associations	• Developing action plans to mitigate immediate and long-term challenges of the industry by CDA and related industry associations
2	Organization of international level trade fairs within country	• Organizing international level coir-based substrate trade fair within country with clear time schedule
3	Introducing standard logo for international recognition as a branded product from Sri Lanka	• Introducing a logo for quality coir substrate products from CDA
4	Promoting manufactures to produce more value-added products which currently export in raw form without value addition	• Impose regulations and increase tax/ cess for the materials which are export in raw form without value addition • Conducting sessions for extentioning manufactures regarding the importance of value addition for the raw materials they export
5	Focus on product and market diversification	• Organize a competition among researchers, manufacturers and other related parties for new ideas and suggestions to promote new innovations in the coir substrate industry. • Developing innovative prototypes related to coir substrates by CRI
6	Establishing a processing zone out of the coconut triangle	• Establishing a coir substrate processing zone related to coconut mintriangle.le • Development of infrastructure facilities related to coconut mini triangle

7	Extension about the importance of gaining internationally accepted quality standards/ guidelines with a certificate for Sri Lankan products	• Conducting extension programmes for manufacturers regarding different quality certifications and issuing institutes and maintaining proper quality of substrate products by the involvement of CDA and other related industry associations
8	Establishing a Platform to access world market information	• Launch a website with all available data related to exportations from Sri Lanka and over years, demanding countries and world production of coir substrates. Update the website with current data in a frequent manner • Launch a mobile App that is accessible to all stakeholders with the above information and current information • Introduce a monthly e-newsletter and circulate it among the fraternity wide
9	Establish a center to maintain required laboratory testing for quality maintenance	• Establishing a laboratory with all facilities required for proper testing of samples for coir substrate products in coconut triangle
10	Establishment of promotional stoles at all Sri Lankan airports and ports	• Establish retail outlets for coconut-based productions in Sri Lankan ports and air ports
11	Develop a domestic awareness campaign to promote awareness of the local community about "Kapruka Programme" and the importance of coconut husk for manufacturing industries	• Television and other social media advertisements for convey information to society regarding the importance of coconut husks and their product values for national income. • Properly implement on Kapruka programme and inspect the programme through CDA regional officers

12	Conducting research to estimate utilizable coconut husks in domestically	• Conducting national level market researches related to coir substrate industry to determine resource availability and to determine coconut husk utilizing patterns on industrial and household scale
13	Introducing low-cost machinery	• Reduce tariff for machinery imports and induce a tax refund mechanism for machinery investment to promote new machinery imports • Developing stage for introducing innovative machinery for local producers
14	Introducing environmentally friendly levels of chemicals used for buffering	• With the involvement of the Central Environmental Authority (CEA) and CDA it needs to determine a suitable chemical range for chemical buffering and inform manufacturers regarding the social and economic impacts of buffering and the maximum chemical ranges that could be included in wastewater • Introducing other chemically buffering methods which has minimum impact on the environment other than Calcium Nitrate. (Ex: Calcium sulfate, calcium carbonate, calcium bicarbonate, Calcium Oxalate, etc.)

15	Maximizing the productivity of existing coconut plantations	• Increasing the number of new trees per hectare and introduce different varieties
		   • Hybrid varieties
		   • Draught resistance varieties
		   • Less space utilizing varieties

		• Conducting researches for identify pest and disease controlling to minimize their impacts on the husk
16	Introducing low interest loan schemes for solar systems	• Develop a procedure to provide a Solar panel subsidy or introduce a low interest loan scheme for manufactures with collaboration of government and privet banks
17	Sustainable land development and management	• Rollout an awareness campaign with an incentive to encourage residential coconut growing with a proper timeline and target number of trees by region • Come up with a detailed plan for releasing unutilized government lands to the private sector on lease with an annual release target with special attention to the industry stakeholders • Introduce a standard milestone plan for private sector growers who receive lands from the government on lease and monitor the progress

Limitations of the study

Rating each factor was the challenging step of IFE and EFE matrixes because it inevitably involves subjectivity. Expert judgments and results from comparisons of past successful and failed projects are relied on to improve the creditability of the model.

CONCLUSION

In conclusion, the survey data underscores the critical factors contributing to the raw material scarcity in the Sri Lankan coir substrate industry, notably the inadequacy of coconut production and an inefficient husk collection mechanism. Leveraging qualitative research, this study

successfully identified key SWOT factors and formulated prioritized strategies through the application of QSPM analysis.

The study revealed that the primary strength lies in the substantial market share enjoyed by Sri Lankan coir substrate products on the global stage, while the industry's labor-intensive nature emerged as a major weakness. The prioritized opportunity identified was the escalating global demand for washed and buffered products. However, a notable threat emanates from the increasing production of low-quality items by some manufacturers, leading to customer rejections as reported by the Coconut Development Authority (CDA). This threat is particularly concerning as it has the potential to tarnish the reputation of all high-quality products originating from Sri Lanka.

The IFE - EFE matrix analysis categorizes the Sri Lankan coir substrate industry into a quadrant necessitating more competitive strategies for sustained success. Among the 17 strategies evaluated through QSPM analysis, the strategic plan's development, in collaboration with the CDA and relevant industry associations, emerged as the top priority. This strategic initiative aims to address critical gaps in the industry, paving the way for improvements and policy implementations.

As the inaugural SWOT study for the Sri Lankan coir substrate industry, the findings presented herein hold significant implications for investors, the Coconut Development Authority, industry associations, and policymakers. The insights garnered from this research not only contribute to informed decision-making within the sector but also serve as a foundation for future policy formulations, industry enhancements, and targeted actions.

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The Impact of Strategic Management Practices on Business Performance of SMEs in Western Province, Sri Lanka.

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ABSTRACT

Small and Medium-Sized Enterprises (SMEs) play a significant role in fostering inclusive growth in Sri Lankan contemporary economy. Despite their importance, SMEs are frequently confronted with a variety of challenges that impede their growth and optimal performance. Admittedly, when these challenges are not addressed, SMEs have an enormous likelihood of failure. Hence, embracing strategic management practices conceptually enables companies to deal with difficulties, comprehend their strategic position, and discover the ways to make strategic choices for the foreseeable future, while overseeing strategy in action. Even though numerous amounts of study available to use in a foreign context, such contents are insufficiently relevant for Sri Lankan contexts. Hence, there is a gap in the knowledge of strategic management practices among SMEs. Accordingly, the purpose of this study is to investigate the impact of strategic management practices on the business performance of SMEs in the Western province of Sri Lanka.

A positivist research philosophy led the study, while a quantitative method and a cross-sectional survey design were put in place. The unit of analysis is SMEs, while the owners, directors, and managers of SMEs are the respondents. Structured questionnaires are employed to collect data using the Google form-based method under simple random sampling techniques. A sample size of 380 SMEs covering all sectors that exist in the study area was drawn from a population of 37,264 SMEs. Descriptive and Inferential statistics are used to empirically and statistically analyze the data collected for the study with the aid of SPSS version 25. Pearson correlation is used to examine the relationship between constructs, whilst Multiple regression analyses is used to test the hypotheses. The findings reveal that environmental scanning had the highest positive impact on SME's performance followed by strategy implementation, strategy formulation, and strategy evaluation showed a significant positive impact on performance. Therefore, this study concludes that SME owners/managers must embrace proper strategic management practices as a holistic process in order to achieve the expected performance in SMEs. It is consequently recommended that top management for all the SMEs strive to make the strategic management process as inclusive as possible from the lower-level employees to senior management.

Keywords: Strategic management practices, Environmental scanning, Strategy formulation, Strategy implementation, Strategy evaluation, SME performance

INTRODUCTION

Today's global competitive climate has compelled SMEs in both developed and emerging economies to act strategically. This is mainly because strategy is a powerful management tool that allows SMEs to become more powerful, competitive and successful. In reality, small-scale enterprise is the real fabric of both emerging and developed countries' economic progress (Fatoki, 2019). Further, SMEs also could be acknowledged as the country's lifeblood and driving force towards economic growth and sustainability (Mumbe & Njuguna, 2019). From the standpoint of globalization, researchers explored the significance of SMEs in development and their contribution in terms of GDP growth, poverty alleviation and rural development, enhancing employment prospects, impartial distribution of scarce resources, embarking on innovation, income distribution stabilization, regional development, an increase in domestic savings, the contribution of export earnings and fostering entrepreneurship (Bandara et al., 2020; Beck et al., 2005; Cravo & Piza, 2019; Keskin et al., 2010).

In developed countries, SMEs account for more than 99% of all businesses. For Instance: the USA, European countries, and Japan. Thus, they provide almost two-thirds of employment prospects to the private sector (Fatoki, 2019). In contrast, SMEs in emerging nations provide more than half of the gross domestic product (GDP) and account for nearly 70% of total employment (World Bank, 2021). When considering about Sri Lankan context, 80% of businesses are recognized as SMEs, while these firms generate up to 52% of the gross domestic output (EDB, 2021; Ministry of Industry and Commerce, 2015).

Despite the fact that SMEs from all over the world including Sri Lanka have made significant contributions, the failure rate of SMEs is very high. Approximately 85% of SMEs face survival challenges, and more than 75% of SMEs have closed down in the first five years (Bandara et al., 2020). According to the Sri Lankan enterprise survey, the growth rate of Sri Lankan SMEs was 2.9%, which is much lower compared to the global rate of 5.2 (Amaradiwakara & Gunatilake, 2016). Therefore, it suggests that these firms were either unable to sustain or never reached their position within their context. Concisely, even when business owners establish their firms with positive intentions and hard effort, some businesses succeed as expected while others fail. Accordingly, lack of proper business planning, insufficient accounting, and financial processing systems, lack of well-trained employees, insufficient managerial capabilities, limited operating budget and start-up funds, and most notably, a lack of innovative strategy usage and a dearth of understanding of a company's growth strategies directly

influences the failure of SMEs (Ekanayake et al., 2020; Koech & Were, 2016; Majama & Magang, 2017). Jayasundara et al. (2019) elaborated that low level of management practices and other managerial mistakes (including inadequate business vision along with expertise, poor goal setting, inability to create a strategic plan of action, unfavorable organizational structure as well as culture, reluctance to change, uncontrollable environmental factors, significant challenges during execution which were not anticipated, strategic decision makers abandoning the company during implementation, top management is lacking in enthusiasm, intermediate managers are not participating in formulating strategies, and most importantly, there is an inadequate level of information dissemination within the firms) have been recognized as the primary causes of SME failure in the Sri Lankan context. These difficulties pose a substantially greater danger to small and medium-sized organizations (SMEs) due to their smaller size, economies of scale, and limitations on resources, in comparison to large firms (Warusavitarana et al., 2020).

Under the above situation, proper practice of strategic management could be introduced as one of the prominent and vital determinants of maintaining SME development and survival in the contemporary market (Ali & Qun, 2019). Because today's business environment is continually changing and market circumstances are becoming more ambiguous. These market conditions are determined by turbulence, uncertainty, chaos, complexity, ambiguity, and fierce competition. Instead of applying traditional procedures, modern researchers, experts, and even entrepreneurs recognized strategic management practices as radical approaches and distinctive choices for reaching relevant markets (I. Wilson, 1994).

Aside from the aforementioned discussion, strategic management practices lead to enhancements in SMEs' performance. As stated by Wheelen & Hunger (2012), strategic management is a collection of managerial actions and choices that influence a business's long-term performance. In simple terms, a company's performance can be characterized as the capacity to meet consumer demand while being effective and achieving the intended results at a low cost (Kirigo, 2008; Mumbe & Njuguna, 2019). In fact, in the modern SME business climate, the entire performance and long-term success of businesses are significantly reliant on strategic management methods (Farrukh et al., 2021; Javed & Husain, 2021). Accordingly, the necessity of strategic management concepts and practices in small and medium-sized businesses can be connected to the shifting business conditions. Undoubtedly, strategic management can be thought of as a lighthouse since it gives broad guidance to the business as to where the enterprise is heading.

Research problem of the study

Companies must continually seek out novel and dynamic approaches to conducting their operations in today's competitive marketplace (Kotler & Keller, 2012). Accordingly, small and medium-sized firms can only maintain effective operations and sustain their business if they have proper strategical approaches in place. Besides, Olannye & Edward (2016) and Stephen et al. (2019), also clarified that strategy is a crucial aspect in order to survive in the current business environment and resilience in the face of fierce competition. Furthermore, strategy literature asserted that businesses "must actively plan for the future" in order to compete effectively and thrive (Ennis, 1998, p. 54).

Despite the fact that the need for strategic management practices is constantly developing, usability in strategic practices has been recognized as inadequate in SMEs. This is because of the insights and considerable operational gaps associated with the practices of strategy among SMEs. Further consideration of gaps related to strategic management the main deficiencies are that there is a dearth of quantitative studies on strategic management practices, and large businesses frequently deploy strategic management practices and reap the benefits, but SMEs do not frequently embrace strategic management practices, and previous research findings appear mixed, owing to disparities in conceptualizations and measurements of both strategic management dimensions and business performance (Pearce et al., 1987; Veliyath & Shortell, 2007).

Accordingly, these limited scopes of strategic management practices among SMEs and scant attention to further studies could be a devastating effect on the business processes, performances and company wellbeing. Therefore, developing a more nuanced understanding of the strategic management practices of SMEs could identify collective strategical issues and develop solutions to further enhance long-term sustainability and growth through the findings of this research. Furthermore, the inconsistent findings and lack of relevant updated studies suggest that the impact of strategic management practices on SME performance in Sri Lanka still needs to be investigated (Pushpakumari & Wijetunge, 2014). Thus, this study will construct an adequate conclusion of strategic management practices (SMP) related dimensions to address these identified theoretical, contextual, and empirical gaps, which can ultimately conclude as the "Knowledge gap on the strategic management practices in the Sri Lankan context". Consequently, this study is intended to address the research problem is, "What is the impact of strategic management practices on the business performance of SMEs in Western Province, Sri Lanka?"

Research questions

To address the gap of the study and based on the research problem, the following research questions will be answered.

o   What is the impact of strategic management practices on the business performance among SMEs in Western Province, Sri Lanka?

o   What is the impact of environmental scanning on the business performance among SMEs in Western Province, Sri Lanka?

o   What is the impact of strategy formulation on the business performance among SMEs in Western Province, Sri Lanka?

o   What is the impact of strategy implementation on the business performance among SMEs in Western Province, Sri Lanka?

o   What is the impact of strategy evaluation on the business performance among SMEs in Western Province, Sri Lanka?

Objectives of the research study

The main objective of the study is to investigate the impact of strategic management practices on business performance of SMEs in western province, Sri Lanka. The specific objectives are:

o   To investigate the impact of environmental scanning on the business performance of SMEs in Western Province, Sri Lanka.

o   To investigate the impact of strategy formulation on the business performance of SMEs in Western Province, Sri Lanka.

o   To investigate the impact of strategy implementation on the business performance of SMEs in Western Province, Sri Lanka.

o   To investigate the impact of strategy evaluation on the business performance of SMEs in Western Province, Sri Lanka.

LITERATURE REVIEW

Small and medium scale enterprises in Sri Lanka

In the Sri Lankan context, also SME sector is recognized as a foundation for economic development and lubricator for the development of entrepreneurial skills and innovation

(Ranatunga, 2022). SMEs include businesses in agriculture, mining, manufacturing, construction, and infrastructure development, as well as all other service sectors (Gunatilake, 2017). However, its relative significance in the national economy cannot be estimated due to a lack of information. Therefore, it may be considered that the accessible database is more reliable in providing some indicator of the sector's size on a comparative basis (Ranatunga, 2022). Accordingly, SMEs in Sri Lanka account for a significant portion of the economy, with over one million entities, indicating that more than 80% of businesses are SMEs. During the recent decade, these SMEs providing employment to around a 2.25million people approximately 75% of the overall workforce and contributed roughly 52% to GDP (ADB, 2021; Ministry of Industry and Commerce, 2015). Therefore it can be clarified that the Sri Lankan SMEs sector has dominated industrialization during last past decades, but in comparison to other countries, the number of Sri Lankan SMEs is low (Gamage, 2003). Particularly, around 90% of available organizations are micro-scale enterprises, 8% are small and medium-scale businesses, and 2% are large-scale businesses (Ministry of Industry and Commerce, 2015). Despite the fact that the country has a large number of Micro-scale enterprises, small and medium-sized businesses are underrepresented.

Conversely, like the world definition of SMEs, Sri Lanka also fail to develop a commonly accepted definition for SMEs. Various Government and Semi-government organizations describe SMEs according to their own perspectives and parameters. The Industrial Development Board (IDB) categorizes local SMEs depending on the number of employees and the firm's level of capital, such as organizations with a capital investment of less than Rs. 10 million and a total workforce of fewer than 50 individuals (Gamage, 2003). On the other hand, the Department of Small Industries (DSI) stated that in order to be recognized as an SME, personnel must be maintained below 100 and capital investment must be less than Rs. 25 million (Ponnamperuma, 2000; Sinnathurai, 2013). Upon reviewing many strands of literature, institutions, and contributors on the topic of SMEs, this study adapted a definition introduced in the national policy framework by the Ministry of Industry and Commerce in 2015. This definition describes SMEs based on the number of employees and an annual turnover (Table 1). According to the National Policy Framework, SMEs should have 11 to 300 employees and annual sales of Rs.16 million to Rs.750 million. Microscale firms, on the other hand, have fewer than 11 employees and yearly revenue of less than Rs. 15 million. This survey does not include micro-scale enterprises.

Table 1: Small and medium enterprises 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	51-300	LKR 251-750	51-300	LKR 251-750

Source: National Policy Framework for SME development/ Ministry of Industry and commerce (2015)

Definition of strategic management

There is no agreement on a single, commonly acknowledged definition of strategic management (Eren & Birinci, 2013). Over the years, Strategic management concept has given several meanings, and often somewhat loosely by various thinkers, philosophers and practitioners due to their variety of backgrounds, diverse conceptualizations and context of studies. According to Nag et al. (2007), strategic management is complex to describe since it is a relatively young field rooted in several disciplines.

Under that circumstance, strategic management can be characterized as the formal process of establishing the company vision and mission, assessing the internal and external environment, developing strategies within limited resources, executing strategies, and reviewing the strategies (David, 2011). Moreover, Strategic management is the art and science of developing, executing, and evaluating cross-functional decisions that enable a company to accomplish its goals (Branislav, 2014). According to Ramachandran et al. (2006), strategic management expresses how enterprises develop long-term competitive advantages through value creation. Furthermore, Wright et al. (1998) asserted that "Strategic management is an ongoing process that evaluates and controls the business and the industries in which the company is involved, assesses its competitors and set goals and strategies to meet all existing and potential competitors, and then reassess each strategy annually or quarterly, to determine how it has been implemented and whether it has succeeded or needs replacement by a new strategy to meet the potential goals" (p. 18). Admittedly, all strategic management definitions have something in common; they all consist of setting goals and objectives, managing resources, analyzing

internal and external forces, developing strategies, execution of strategies, evaluation the effectiveness of implemented strategies and development of competitive advantage.

Dimensions of strategic management practices for the study

This study was intended to investigate the impact of strategic management practices on business performance in the Western province of Sri Lanka, based on the four-dimension framework introduced by Wheelen & Hunger (2012).

Figure 1: Dimensions of strategic management practices
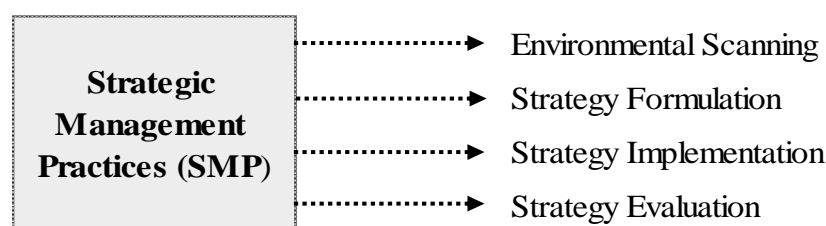
Source: Wheelen & Hunger (2012)

Environmental scanning: Environmental scanning is also commonly referred to as environmental analysis. Environmental scanning is defined by Wheelen & Hunger (2012) as "the monitoring, assessing, and distributing of information from the external and internal environment to important personnel inside the firm".

This is frequently the initial phase in the strategic management process, and it entails examining both the internal and external environments of the company. While internal analysis is utilized to discover different distinct competencies, external analysis supports the organization in recognizing opportunities and threats within its operational environment (Kraja & Osmani, 2013). Accordingly, the first phase in environment scanning is an internal study of the environment, which includes examining the internal capabilities (strengths and weaknesses (SWOT) of the organization's resources, such as personnel, procedures, and systems (De wit & Meyer, 2010). Another important aspect of environmental scanning is the assessment of changing customer preferences. In general, advancements in technology, changing habits, and novel products on the market all have an impact on shifting customer preferences. Therefore, the environmental scanning method assists in identifying variations in customer preferences and anticipating such changes, which is critical in dealing with the company's long-term development. Apart from PESTEL and SWOT analysis, there are various additional methods that businesses can use to scan their environment. Such as the extrapolation procedure (the

procedure of recording and analyzing previous data in order to predict the future); Intuitive reasoning (the manager makes future forecasts based on his convictions and logic. It is a type of intellectual forecasting in which management makes an impartial assumption about the future); Expert opinion (someone with specialized knowledge and expertise on certain subjects from outside the company are requested to measure changing environmental forces and anticipate the future); Brainstorming (a group problem-solving technique in which a group of individuals congregate, exchange opinions, and reach a consensus through collective discussion).

Strategic formulation: This entails developing a vision, converting the vision into a mission, defining long-term objectives, devising alternative strategies, and implementing policy guidelines and norms that strengthen the business's competitive edge (Branislav, 2014). Furthermore, as Burugo & Owour (2017) explain, strategy formulation is the process of establishing goals and determining the most effective plan of action for accomplishing those goals. Consequently, a company employs strategy formulation to plan for accomplishment and update workplace strategies as required. According to Thompson & Strickland (2003), strategy formulation is the phase or sub-process of strategic management that includes developing future direction, articulating objectives, and setting a route for the business to adhere to. Particularly, strategy formulation involves analyzing the outcomes of environmental scanning and then generating a set of strategic decisions on how the firm will compete (Abosede et al., 2016). Therefore, strategy creation is critical for measuring and accomplishing the attainability of goals. Once developing strategies, a business often educates its personnel so that they understand the company mission, organizational objectives, and goals (Elbanna et al., 2018).

In particular, the strategy formulation process is mostly carried out at three levels in firms, and these levels of strategies may aid in aligning company activities and optimizing operations (Wheelen & Hunger, 2008). Accordingly, three levels of strategies are **1).** Corporate level (strategy is developed for the company as a whole. Further, corporate strategy is concerned with decisions pertaining to the numerous business sectors in which the business operates and competes); **2).** Business level (strategy is developed to turn the company vision into reality); and **3).** Functional level (strategy develop to accomplish the business unit level goals and objectives by using the organization's strengths and competencies).

Strategic implementation: Strategy implementation is frequently referred to as the "action stage" of strategic management. Despite the fact that developing a consistent strategy is

challenging work for any management team, however making the strategic plan a success and implementing it throughout the whole business is even more difficult. Therefore, an appropriate implementation process necessitates personal discipline, dedication, and sacrifice (David, 2011, p.7). As stated by David (2011), successful strategy execution is dependent on managers' capacity to inspire staff, which is known as more of an art than a science. However, strategies that are formulated but not implemented serve no useful purpose. Therefore, strategy implementation is critical since it involves action rather than simply contemplating ideas. According to Wheelen & Hunger (2001), strategy implementation is the totality of the actions and decisions necessary for the execution of a strategic plan in order to accomplish the objectives of the organization. Similarly, Wheelen & Hunger (2012) defined "Strategy implementation as the task of putting strategies into action, which includes designing, delivering, and supporting products; improving the efficiency and effectiveness of operations; and designing a company's organizational structure, control systems, and culture to improve performance" (p.21). Added to that, Thompson & Strickland (2003) stated that the final outcomes of strategy implementation have to guarantee that the company's vision, mission, strategy, and strategic objectives are accomplished effectively according to plan. In addition, (Rinaldo & Solimun, 2017) characterized "strategy implementation as a series of primarily administrative sub-activities aimed at determining how the organization's resources should be mobilized to achieve its strategy in a cohesive manner" (P.15).

Strategic evaluation: Strategy evaluation entails establishing control mechanisms to regularly analyze, evaluate, and convey feedback on implemented strategies in order to determine if the expected objectives are being achieved so that corrective steps may be applied if necessary (Wheelen & Hunger, 2012). According to Rao & Kushwaha (2015), "strategy assessment companies put up adequate oversight and control mechanisms, as well as establishing standards and targets to measure performance" (p.11). Hence, strategy evaluation could be described as the process of assessing the actual overall performance of a firm in order to assure effective strategy implementation and the final accomplishment of intended performance goals (Wheelen & Hunger, 2012). In other words, an organization analyses the difference between anticipated and actual outcomes while attempting to implement a problem-solving mechanism in order to maintain the system under control. Accordingly, the proper evaluation process is crucial to any company's well-being, especially if timely as it can caution management to potential problems before they become critically substantial (Ahmed & Mukhongo, 2017). Consequently, owners or managers have to comprehend when certain strategies are not

performing as expected, and strategy evaluation is a critical technique for obtaining this understanding. In addition, strategic evaluation is important because it generates inputs to future strategic planning, the desire for feedback, judging the validity of strategic choices, and highlighting potential risks connected to the present or proposed strategies (Koech & Were, 2016).

Business performance in small and medium scale enterprises

Business performance is described as a firm's strength and ability to accomplish pre-established goals and objectives by utilizing available resources most effectively and efficiently (Daft, 1997, 2009), and as stated by Alpkan et al. (2005), "Business performance is also known as "the evaluation of efforts made toward accomplishing business objectives" (p.17). Performance is the ultimate outcome of operations carried out, and it is concerned with overall efficiency or productivity in any firm. In accordance with Nuvriasari et al. (2020), business performance measurements are essential for determining the level of success and how well firms achieve their specified goals and objectives for long-term wellbeing. Based on Venkatraman & Camillus (1984), company performance assists management in ascertaining if the organization is growing, declining, or stagnant. Particularly, one of the key objectives of the firm is to maximize profits, hence the notion of business performance is critical to businesses (Gure & Karugu, 2018). It is apparent that SMEs are not employing sophisticated and extensive accounting procedures to determine their performance, but instead rely on basic profitability measurements (Mutemi et al., 2014). In addition, organizational performance comprises of an organization's actual output assessed against its expected outputs (Katua et al., 2014). Business performance, on the other hand, is a chain that connects company vision, missions, values, and strategic objectives to divisional, departmental, and personal goals, objectives, and duties/targets (Armstrong, 2006; Hughes & Morgan, 2007).

Particularly, Business performance is a concept with multiple meanings in the literature. Most academicians consider SME performance to be noteworthy in terms of growth in revenue, investment efficiency, customer acquisition possibilities, expansion of market share, cash flow, return on assets, and return on equity. Thus, it may be perceived as a "complex series of actions incorporating capabilities and knowledge" (Haber & Reichel, 2005; Hoque et al., 2019).

However, it is evident that measuring business performance with a single financial parameter is problematic and is capable to generate biased outcomes (Aggarwal & Gupta, 2006; Clark, 1999; Murphy et al., 1996). Further, Lumpkin & Dess (1996) argued that business performance

is a multidimensional aspect that does not merely include financial performances. In addition, Kawira (2020) argued that non-financial indicators are deemed to be more reliable and easily available than account-based indicators and so preferable to financial measures. It is also recognized as an important measure of entrepreneurial activity in small businesses. Furthermore, financial measurements are considered unstable and susceptible to shifting industry-related circumstances (Bandara et al., 2020). Financial measurements can also be easily manipulated and hence do not accurately reflect real performance (Kawira, 2020). Moreover, an overreliance on financial measures may limit future competitive edge since they may not adequately reflect future performance drivers (Kawira, 2020). Therefore, financial performance is overly broad and typically looks backward rather than onward. According to previously published studies, most SMEs in Sri Lanka neglect to maintain accurate financial records and are hesitant to divulge information even when it is accessible (Wijewardena et al., 2004). As a consequence, using financial factors as a single criterion is inadequate.

After carefully investigating extant literature, this study also used both financial and non-financial parameters (objective and subjective measurement) as metrics to evaluate business performance. The financial parameters include sales growth, profit growth, and market share growth, while non-financial parameters are the level of employee growth and level of customer growth and satisfaction (Hughes & Morgan, 2007; Li et al., 2009; Murphy et al., 1996).

Strategic management practices and business performance

The relationship between strategic management practices and SME business performance has been established throughout time. Evidence in the literature, including Koech & Were (2016), Vitkauskaitė (2017), and Agwu (2018), demonstrated that a well-developed strategy, paired with effective and efficient execution, is required for organizations to remain competitive, improve performance, and assure continuous growth. Furthermore, Strategic management practices improve performance by generating relevant information, improving knowledge of the environment, and minimizing uncertainty. According to Porter (2004), organizational success is defined by the business's capacity to discover its distinctive position, and strategic management practice is the instrument that allows the firm to obtain that strategic position.

However, observing existing research articles in the literature, we can observe that researchers have become various conclusions on this domain. But, a limited number of studies have been done related to the impact of strategic management practices and their dimension on SME performance and growth in the Sri Lanka context. More importantly, Wheelen & Hunger

(2012) have developed a four-dimension framework of strategic management practices, and that study was thoroughly focused on whole aspects of the strategic management development. Therefore, this invaluable study is widely used by many scholars for their research. Accordingly, various studies utilizing the strategic management practices four-dimension model, as well as other important studies relevant to SMP and BP, are critically described below,

According to the extant literature, stimulating the strategic management process improves both the company performance and well-being of small-scale businesses (Dauda et al., 2010). Therefore, strategic management practices enable SMEs to confront issues by understanding their operational environment, developing strategies to counteract risks in the environment, and seizing opportunities in the environment, which leads to performance and growth (Sopha & Kwasira, 2016). Since it has not adequately examined quantitative research related to the strategic management practices in the Sri Lankan context, this study tends to fill that gap and contribute new knowledge to strategic management and business performances for further development of the Sri Lankan SMEs ecosystem. Accordingly, these arguments lead to finding the answer to the research question of "What is the impact of strategic management practices on the business performance among SMEs in Western province, Sri Lanka".

Independent Variables (IV)		Dependent Variable (DV)
Strategic Management Practices (SMP)	**Ha** →	**Business Performance (BP)**
Environmental scanning (**ES**)	**Ha₁** →	**Financial Performances**
Strategy formulation (**SF**)	**Ha₂** →	Sales growth (**BPSG**) Profit growth (**BPPG**) Market share growth (**BPMG**)
Strategy implementation (**SI**)	**Ha₃** →	**Non-Finance Performances**
Strategy evaluation (**SE**)	**Ha₄** →	Employee growth and satisfaction (**BPEG**) Customer growth and satisfaction (**BPCG**)
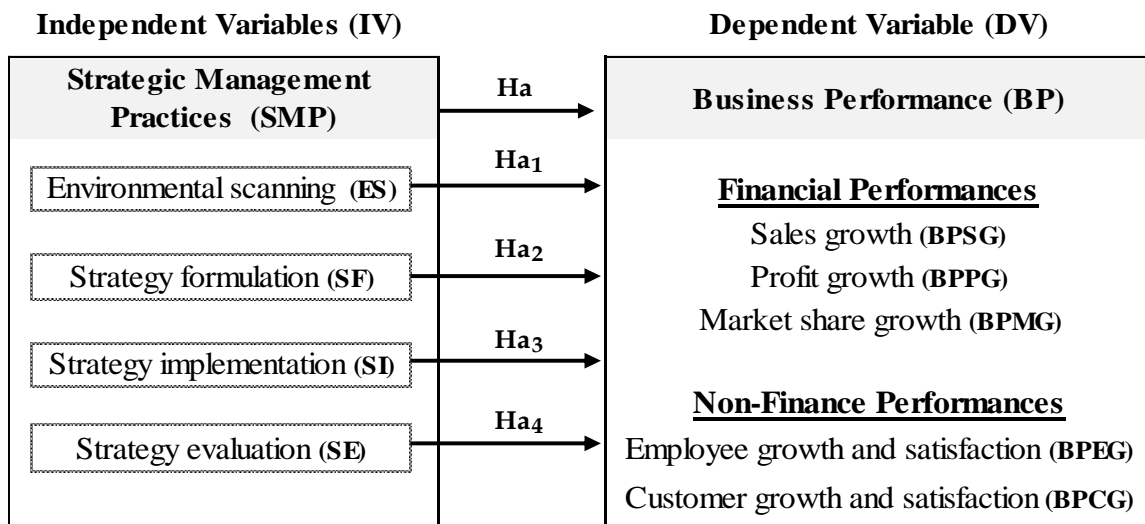
Conceptual framework of the study

Linking Strategic management dimensions and Business performance

Hypothesis 01 (Ha): There is a significant positive impact of strategic management practices on business performance in SMEs.

Hypothesis 02 (Ha1): There is a significant positive impact of environmental scanning on business performance in SMEs.

Hypothesis 03 (Ha2): There is a significant positive impact of strategy formulation on business performance in SMEs.

Hypothesis 04 (Ha3): There is a significant positive impact of strategy implementation on business performance in SMEs.

Hypothesis 05 (Ha4): There is a significant positive impact of strategy implementation on business performance in SMEs.

RESEARCH METHODOLOGY

Research design and Rationale

In this study to achieve the objectives, the quantitative research method was used because it concentrates on collecting numerical data and generalizing its findings across groups of individuals and describing a specific phenomenon.

The rationale behind the selection of the quantitative method for this study is that it is beneficial for obtaining useful data from a larger sample size with a diverse range of respondents, as well as for reducing research time and effort by employing statistical data for study description and analysis (Bryman & Bell, 2003, p. 45). In fact, using unbiased statistics, a researcher can effectively describe and communicate quantitative results. In addition, a well-completed quantitative analysis helps researchers to generalize the findings to a larger or selected entire population (Williams, 2021). Therefore, probability sampling is a viable technique for the way this research seeks to generate an adequate representative sample in order to fulfill the generalization expectations.

Additionally, the descriptive research design was used since it aids in understanding what is occurring in a specific context with a known population or phenomenon. According to Malhotra & Birks (2007), the descriptive research method is also important to apply when there are particular problems, explicit assumptions, and a detailed set of knowledge. Therefore, this research design method is most suitable for this study as it aids in answering the research

problem, *"What is the impact of strategic management practices on the business performance among SMEs in Western Province, Sri Lanka?"*. Particularly, the descriptive research design is in accordance with the quantitative research method chosen to achieve the study's overall aim (Hempenius, 2012). Further, taking into account the practicality of performing the research, this study was undertaken as a theory-testing (Deductive) study to evaluate the notion of strategic management by validating hypotheses. The deductive manner is generally highlighted as a highly structured methodology that moves from theory to data and emphasizes the importance of selecting sufficiently large samples in order to generalize conclusions (Saunders et al., 2019). As a result of these generalizations, the researcher expects to forecast, explain, and comprehend important subject results (Kangasmäki, 2014). Admittedly, the deductive approach is most likely to be based on the positivist research philosophy (Saunders et al., 2019). In addition, the descriptive survey design was selected as the research strategy since it consists of a cross-sectional design in which data is obtained by questionnaire. Hair et al., (2018) emphasized that quantitative research immensely focuses on standardized questions and predetermined response alternatives in surveys delivered to large groups of people. Indeed, surveys are frequently used in descriptive research to collect information about individuals, events, or situations (Dewasiri, 2022). Besides, this study used a cross-sectional research design because the data was collected at a single point in time (Sekaran & Bougie, 2016; Zikmund et al., 2013). Particularly, the cross-sectional design was applied because it reduces time, which is significant in this study (Sekaran & Bougie, 2016; Wilson, 2014).

Study population

The population of interest for this study comprised of the registered small and medium-scale enterprises in the Western province of Sri Lanka. The Western province specially selected as a geographical location because of the high number of SMEs are established and operating within this province (DCS Sri Lanka, 2016). Considering the availability of real time updated SMEs population, reliability of data, and the number of years of establishment of the database, the researcher intends to select the database belonging to (SED) the Small Enterprises Development Division. This government entity is crucial in the development of SMEs capabilities and provides the maximum possible contribution to National development through SMEs development. Accordingly, the population of this study is 37,264 (as of 25th April 2022) based on the database of SED. SMEs in each district of Colombo, Gampaha, and Kalutara were

identified independently, and the number of SMEs in each district was proportionately selected for the study sample.

Unit of analysis

The main purpose of the research is to investigate the impact of strategic management practices on business performance in SMEs. In fact, the strategic management attempts of the SMEs are clearly visible in the decisions of owners (Entrepreneurs), directors, and managers of the company (Wheelen & Hunger, 2001). Furthermore, because of their in-depth knowledge of the company, these individuals are considered the primary source of business information (Aziz & Omar, 2013). Hence, the findings of this research can be directly embedded into the managerial decision-making process as well as strategy implementation process. Therefore, this research focused on identifying these participants as a Unit of Analysis to conduct the survey.

Sampling frame, sampling design procedures and sample size

The sampling frame of this research consists of all the registered small and medium scaled enterprises in the western province under the database of the Small Enterprises Development Division (SED).

Table 2: Sampling frame (District wise)

Province	District	Population
Western	Colombo	8,503
	Gampaha	11,704
	Kalutara	17,057
	Total (Western Province)	**37,264**

Source: Small Enterprises Development Division (SED) – 2022

Moreover, it is impractical to collect data from every person or entity in the population while performing research over a short period of time (Kumar, 2019). In this instance, a subset of the population is required to collect data for the study. Thus, Sampling is a technique that enables researchers to infer information about a population based on the outcomes of that subset (Sekaran & Bougie, 2016). Consequently, a probability sampling method is used in this study because it has been shown to be the most reliable method for selecting a sample that represents an entire population (Bryman & Bell, 2003). Further, this research has used a simple random sampling method under probability sampling. Bryman and Bell (2003) recommend using this strategy when subgroups of a population have no consequence on the survey's results. Because

it assures that each element has the exact same possibility of being chosen as the subject (Sekaran & Bougie, 2016). Since the sampling frame is known, the random sampling method appears to be more viable and appropriate for this study.

The Simple random method is the most direct, and uncomplicated among the probability sampling methods since it simply requires a single random selection and needs only minimal prior understanding of the chosen population (Boohene et al., 2012). In fact, one effective method for avoiding or reducing sampling bias is to select elements for the population randomly, and this random sample method also provides a high likelihood for findings to be generalizable (Sekaran & Bougie, 2016). Bryman and Bell (2003) elaborated that when the population size is large, there is a disadvantage to using simple random sampling. However, this study used an online survey through Google Forms. As a result, the time-intensive nature of surveying a large population can be neglected.

The sample is a scrupulously chosen subset or fraction of the population. The researcher should be able to make conclusions that are generalizable to the population of interest by studying the sample (Sekaran & Bougie, 2016). This study's sample was derived from a population of 37,264 SED-registered small and medium-scaled enterprises in the Western province. The sample size was determined using the published formula by Morgan and Krejcie, (1970). Based on the published formula for selecting the sample size. Hence, the estimated sample size for this study is 380 (Sample includes: 138 SMEs from Gampaha, 113 from Colombo, and 52 from Kaluthara. Besides 33 unusable and 44 Non-responses).

Source of data collection and data collection procedures

The Structured Survey Questionnaire (SSQ) was utilized as the principal source of primary data collection. In general, a questionnaire is a well-structured and well-written instrument that provides respondents with a list of relevant questions or statements to which they respond by writing their own responses or choosing the most appropriate answer from a list of options. The research questionnaire in this study is aimed at business owners (Entrepreneurs), directors, and managers who are responsible for strategic management decisions connected to the operation of SMEs. In particular, the use of multiple respondents in different industries increased the reliability of the data collected and resulted in less bias.

Furthermore, the study sample was drawn from the entire Western province, which includes three districts. Hence, it is impractical to physically visit every organization within this limited

data collection period. Consequently, this study used an electronic approach (Email mode) to deliver surveys questionnaire to a predetermined sample of respondents. The survey questionnaire was created using Google Forms, and the URL link was then attached to emails and forwarded to the relevant participants. In particular, Google Forms can be linked to spreadsheets (MS. Excel) for further data development and management. With the progress of contemporary technology, this form of data collection is more convenient for the research process (Zahra, 2005). In general, most modern SME managers and owners conduct their operations through the internet (Hanmaikyur, 2016). Admittedly, email based structured survey questionnaire (SSQ) consists of outstanding benefits.

Data collection instrument and measurements for main analyses

This study's research instrument was a questionnaire, which was primarily designed to elicit needed information from SME owners. Particularly, the research survey instrument in this study was developed using constructs adapted from previous literature, such as strategic management practices and business performance dimensions. Further, the questionnaire was divided into sections, and the questions were kept simple, precise, and concise to allow for easy comprehension by respondents. Therefore, the questionnaire was comprised of three sections: **Section 01:** which gathered background information of the business and owner (Respondent demographics), and **Section 02:** measured the independent variables which consist of "environmental scanning, strategy formulation, strategy implementation and strategy evaluation" while **Section 03:** measured business performance as a dependent variable, which includes both financial and non-financial dimensions.

DATA PRESENTATION AND ANALYSIS

Reliability and validity of the study

This study conducted the pilot survey in order to establish proper reliability and validity results for the study. Firstly, the Kaiser-Meyer-Olkin measure and the Bartlett test were used to analyze the sample adequacy of the pilot data set before moving on to factor analysis to examine the validity of the strategic management practices and business performance scale. In this pilot study, overall KMO was 0.829, suggesting that the data were eligible for factor analysis. Furthermore, the values of Bartlett's test of sphericity (chi-square with degrees of freedom $X2$ (741) = 9014.08, r= 0.000 (p< 0.001) support statistical significance, indicating that the variables' relationships are at a satisfactory level.

Secondly, exploratory factor analysis (EFA) was performed in accordance with the principal component extraction method and the orthogonal rotation method. Consequently, a five-factor solution was developed that explained 67.25% of the overall variance. The majority of the components loaded extremely well, with communalities of 0.505 or higher. Consequently, the coefficients for the factor loadings ranged from 0.505 to 0.826, which is significantly higher than recommended value by Hair et al. (2010).

Furthermore, the pilot study was conducted followed by the computation of the Cronbach's alpha coefficient for each variable to ensure the reliability of this study. Consequently, the calculated overall reliability value of this study is $\alpha = 0.857$, Further, Cronbach's alpha for each factor: factor 1 (Business performance), factor 2 (Strategy formulation), factor 3 (Strategy implementation), factor 4 (Environmental scanning), and factor 5 (Strategy evaluation) were 0.888, 0.896, 0.883, 0.835 and 0.784 respectively.

In the main study, the overall Cronbach alpha value of 0.889 was found to be suitable for this analysis. Furthermore, the alpha values for individual items used to measure SMP and BP dimensions variables range from 0.784 to 0.899. The next validation step was the further analysis of internal consistency reliability, and convergent validity of the model using AVE and CR. "The AVE value was computed by the mean square of loads of all indicators associated with the construct" (Sarstedt et al., 2014). An acceptable AVE is 0.50 or above; the construct explains at least 50% of the variance in its elements. In this sense, the elements of the strategic management practices and business performance constructs in this study have an AVE between 0.502 to 0.540, thus manifesting convergent validity. Similarly, the composite reliability (CR) was also measured, and it also ranges from 0.856 to 0.902. Admittedly, this was also above the threshold level of 0.70. Thus, the above results of the study reveal that all items for each construct are adequately represented and show sufficient reliability. Further, this confirms the validity of the constructs.

To further ascertain convergent validity, the indicators for each latent construct should have positive factor loadings greater than or equal to 0.50, at which point one-dimensionality will be obtained (Tabachnick & Fidell, 2007). Accordingly, exploratory factor analysis was carried out using the principal component approach with Varimax rotation. According to the results all loadings/communality were higher than 0.50. However, before undertaking Factor analysis, sample adequacy must be assessed. Accordingly, Kaiser-Meyer-Olkin is a sample adequacy measure that was employed in the main study to assess the overall suitability of the data for

factor analysis. The Kaiser-Meyer-Olkin value was 0.838, indicating that the data used are highly suitable for factor analysis. A value greater than 0.80 (KMO ≥ 0.80) is considered Meritorious. The values of Bartlett's Test of Sphericity verified statistical significance (chi-square with degrees of freedom $X^2(1128) = 7071.947$, r= .0000 (p< 0.001), this demonstrated that the variables' associations were satisfactory, suggesting that the data in this study was acceptable for factor analysis, as proven by the results of the Kaiser-Meyer-Olkin and Bartlett's Test of Sphericity. The factor solution generated from this analysis yielded five scale factors, accounting for 67.34% of the overall variation in the data. Accordingly, Factor analysis carried out on business performance (dependent variable) had all the indicators scoring factor loadings ranging from 0.505 – 0.838 and were therefore 13 items retained for further analysis. The sample was also adequate because the individual Kaiser-Meyer-Olkin measure of sampling adequacy (KMO) obtained was 0.915, which was greater than the 0.7 criteria. Similarly, the business performance variable factor constructed was able to explain 78.179 % >70% of the individual variance, indicating that the variables comprehensively accounted for the variation in the factor. Furthermore, the other four factors (environmental scanning, strategy formulation, strategy implementation and strategy evaluation) scored individual factor loadings ranging between 0.524 – 0.906, which was more than 0.5 and were therefore 35 items retained for further analysis. The sample was adequate since individual Kaiser-Meyer-Olkin's measure of sampling adequacy (KMO) attained 0.772, 0.829, 0.782, and 0.877 respectively, which was above the threshold of 0.7. In conclusion, all of the measured values are above the threshold level and within the existing rule of thumbs. Therefore, the above details clarified that the study ensured reliability, construct validity, and convergent validity.

The relationship between strategic management practices (SMP) and business performance (BP) in SMEs

A correlation matrix of all the constructs is provided in Table 3 to show how these constructs are interrelated with one another. Initial inspection of the correlation matrix makes it evident that positive support exists for hypotheses that the four strategic management dimensions contribute to business performance. As a consequence, all of the correlation coefficients between the constructs in this study reveal a weak, moderate, or high positive correlation.

Accordingly, strategy formulation has a weak and positive relationship with environmental scanning, indicating a 0.204 absolute value. Similarly, the results revealed that strategy implementation (0.358) and strategy evaluation (0.220) have a weak but significant positive

correlation with environmental scanning. On the other hand, the correlation coefficient of strategy formulation related to strategy implementation and strategy evaluation indicate a moderate and positive correlation, representing 0.535 and 0.560, respectively. Furthermore, strategy implementation is weakly and positively associated with strategy evaluation, indicating 0.198. More importantly, these absolute correlation coefficient values are significant at the 0.01 or 0.05 level (P=.000<0.01 0 or 0.05).

Particularly concerning the SM dimensions and business performance (Table 3), results reveal an absolute correlation value of 0.616 (p-value 0.000) for environmental scanning, and 0.605 (p-value 0.000) for strategy implementation, which shows a strong and significantly positive relationship with SME business performance. This implies that environmental scanning and strategy implementation practices are highly contributing to increasing the business performance of SMEs in Sri Lanka, especially in the Western province. Conversely, strategy formulation, and strategy evaluation have absolute correlation values of 0.425 (p- value 0.000), and 0.407 (p-value 0.000), respectively. Consequently, it shows moderate significant positive relationships with the business performance of SMEs. Admittedly, the findings demonstrate that the four elements of strategic management practices have a significant beneficial impact on SME business performance. Thus, it was clarified that environmental scanning (r=0.616) had the highest correlation with business performance in SMEs, followed by strategy implementation (r=0.605), both of which had a strong positive correlation. On the other hand, strategy evolution had the lowest but moderate correlation (r=0.407) with SME performance.

Table 3: Correlation analysis for overall model

		01	**02**	**03**	**04**	**05**
01	Environment scanning	1				
02	Strategy formulation	.204**	1			
03	Strategy implementation	.358**	.535**	1		
04	Strategy evaluation	.220**	.560**	.198**	1	
05	Business Performance	.616**	.425**	.605**	.407**	1

** Correlation is significant at the 0.01 level (2-tailed)

Weak Correlation	Moderately Correlation	Strong Correlation
(0.2≤ |r| <0.4	**(0.4≤ |r| <0.6)**	**(0.6 ≤ |r| ≤0.8)**

Note: Color Key determined according to Cohen (1988) and Hair et al. (2007)

Simple linear regression analysis to test the effect of Strategic management practices and business performance.

Hypothesis test 01 of strategic management practices carries a significant positive impact on business performance as a whole. Accordingly, the dependent variable business performance was regressed on predicting variable of overall strategic management practices to test the hypothesis Ha. The (R^2) value was used to understand of variance in the dependent variable that is related to SMP. From the results shown in Table 4, the (R^2) is 0.623, indicating that 62.3% of the variation in business performance can be explained by the changes in overall strategic management practices, leaving 37.7% unexplained (error term).

Further, the calculated correlation coefficient (R) is 0.790. This ascertains that strategic management practices have a strong impact on the business performance of SMEs. Further, the ANOVA regression results on the overall strategic management practices produced an $F_{(1, 301)} = 498.397$, $p < 0.001$. Admittedly, the model of strategic management practices and business performance of SMEs was overall significant at $\alpha=0.05$. Thus, it asserted that the data fits the model. The regression outputs for strategic management practices was positive and significant ($\beta a=1.109$, $t = 22.325$, $p < .001*$). Since $\beta a =1.109$, it can be concluded that one-unit increase in overall strategic management practices increases business performance by 1.109 units. Moreover, strategic management is individually significant since the p-value $=0.000<0.05$. Hence, it concludes that strategic management practices had a significant positive impact on the business performance of SMEs in the Western province of Sri Lanka.

Table 4: Simple regression results on SMP and BP

Hypothesis	Regression Weights	Unstandardized Coefficients: βa	Standardized Coefficients: Beta	R^2	F	t	p-value
Ha	**SMP→ BP**	1.109	0.790	0.623	498.397	22.325	**0.000***

*Note: * p< 0.01; SMP: Strategic management practices; BP: Business performance*

Multiple linear regression analysis to test the combined effect of SM dimensions

Multiple regression analyses were used to assess the predetermined hypotheses accurately. Accordingly, as presented in the result of the R-value (0.815) in the model summary of the regression analysis shows a very strong correlation between the combination of predictors (environment scanning, strategy formulation, strategy implementation, strategy evaluation) and business performance. The SPSS output for coefficient of multiple determination (R2: 0.665) shows that 66.5% of the variations in business performance are influenced by the combined variability of (environment scanning, strategy formulation, strategy implementation, strategy evaluation), while 33.5% can be attributed to unexplained variation captured by the error term.

Table 5: Overall model summary: SM dimensions and BP

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.815[a]	0.665	0.660	0.45377	1.638

a. Predictors: (Constant), Strategy evaluation, Strategy formulation, Strategy implementation, Environment scanning

Source: SPSS computation output based on survey data (2023)

Similarly, a regression analysis of variance (ANOVA) test was considered to determine if the conceptual model was successful in describing the association between variables as hypothesized in the conceptual model at a 5% level of significance. According to the results in Table 6, F-value (4, 298) = 147.633 and is highly statistically significant at p=0.000<0.05 level of significance. This implies that the research model is a good fit for explaining the impact of strategic management practices on the business performance of small and medium-sized enterprises.

Table 6: ANOVA regression results on the overall model

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	121.593	4	30.398	147.633	.001[b]
	Residual	61.359	298	0.206		
	Total	182.953	302			

b. Significant Value p<0.05 or p<0.01

Based on the study hypothesis, the a priori expectation of all β coefficients is expected to be positive β > 0, meaning that all the SM dimensions are anticipated to significantly and positively impact SME businesses' performance. Accordingly, results of regression coefficient weight for overall SM dimension in Table 7 showed significantly positive impact on business performance of SMEs, such as environment scanning (β1 = 0.390, t = 10.241, p= 0.000<0.05), strategy formulation (β2 = 0.210, t = 7.564, p= 0.000<0.05), strategy implementation (β3 = 0.378, t = 10.855, p= 0.000<0.05), and strategy evaluation (β7 = 0.168, t = 5.843, p= 0.000<0.05), which all SM dimensions in line with a prior expectation that β > 0. Further, it can be concluded that one-unit increase in environment scanning, strategy formulation, strategy implementation, and strategy evaluation, will enhance business performance by 0.390, 0.210, 0.378, and 0.168 units, respectively.

Table 7: Regression analysis results on the overall model

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	β	Std. Error	Beta		
1 **(Constant)**	0.528	0.153		3.446	**0.001***
Environment scanning	0.390	0.038	0.377	10.241	**0.000***
Strategy formulation	0.210	0.028	0.262	7.564	**0.000***
Strategy implementation	0.378	0.035	0.394	10.855	**0.000***
Strategy evaluation	0.168	0.029	0.204	5.843	**0.000***

a. Dependent Variable: Business performance

*Note: *p < 0.05; p< 0.01*

Source: SPSS computation output based on survey data (2023)

DISCUSSION OF RESEARCH FINDINGS

Particularly, many scholars in management believed that solid strategic management practices have a major favorable influence on an entrepreneurial firm's success. As a consequence, Lawal et al. (2012) investigated the association between strategic management and company performance and discovered substantial proof indicating there is a strong relationship between

the adoption of strategic practices and company performance. Garad et al. (2007) investigated the association between strategic management and company performance in Mogadishu, Somalia. To determine the nature of the associations, the study used both descriptive and correlation research approaches. The Spearman correlation statistical technique was used to examine the data in order to identify the association among the variables listed. Accordingly, the findings demonstrated a somewhat favorable and statistically significant association between strategic management and company performance. In a similar vein, prominent scholars of Aldehayyat & Twaissi (2011); Alhroob et al. (2017); Ali & Qun (2019); Amurle et al. (2013); Aremu et al. (2015); Bassey & Isayas (2022); Burugo & Owour (2017); Dauda et al. (2010); Hrebiniak & William (2005); Jooste & Fourie (2009); Kaplan & Norton (2004); Kihara et al. (2016); Kraja & Osmani (2013); Lawal et al. (2012); Lynch (2015); Makanga & Paul (2017); Maroa & Muturi (2015); Muriuki et al. (2017); Mutemi et al. (2014); Njeru (2015); Noble (1999); Otieno et al. (2018); Phina (2020); Sial et al. (2013); Sopha & Kwasira (2016); Sorooshian et al. (2010); Teece (2014); and Thompson & Strickland (2003) elaborated that the strategic management practices of environmental scanning, strategy formulation, strategy implementation, and strategy evaluation positively affect the overall performance of SMEs.

Maldeniya et al. (2021) also conducted a quantitative research study on strategic management approaches used by SMEs in Sri Lanka. According to the published literature, this is the sole research on the impact of strategic management practices on SME performance in Sri Lanka. According to the findings, strategic management practices have an enormous influence on the performance of SMEs in terms of market share, revenue, profitability, and return on investment.

However, the finding of this study contradicts the findings of Muogbo (2013), who claimed that strategic management was not yet a mainstream business practice among Anambra State manufacturing enterprises in Nigeria. Similarly, Adeyemi et al. (2017) claim that owners and managers of SMEs in Nigeria are unaware of the significance of strategic management practice to the performance of their firm and how it may be applied. In addition, Sajuyigbe et al. (2015) acknowledged that irrational strategic management adoption among SME operators in Nigeria has not had a beneficial and substantial influence on the growth and prosperity of SMEs. Finally, Abodunde (2020) asserted that the reckless adoption of strategic management

approaches by SMEs in Nigeria has adversely impacted the development and accomplishments of expected performances.

CONCLUSIONS, AND RECOMMENDATIONS

Conclusion drawn from the findings

In the real world, large companies have long employed strategic management practices successfully to handle uncertainty and improve long-term development and profitability. Due to existing and future environmental uncertainties, small and medium-sized enterprises (SMEs) must embrace strategic management to remain in equilibrium with their external environment in order to survive and thrive. It is undeniable that SMEs typically operate in a fragmented industrial structure in which enterprises compete to capture a comparably small part of the entire market. Based on the purpose of the study with an in-depth review of the examined literature and findings on this analysis, it is apparent that strategic management practices are imperative in an SME that intends to achieve its goals and objectives that support the country's economic growth. Accordingly, SMEs that adopt strategic management outperform and have a greater likelihood of achieving success than those that do not (Alimi & Alese, 2014; Ijir & Gbegi, 2015). As a consequence of today's global competitiveness climate, it is highly recommended that every business needs to think and act strategically in order to ensure long-term existence. According to Thompson et al. (2007), the core of the excellent strategy is to develop a market position strong enough and a company capable enough to deliver successful performance in the face of unanticipated events, fierce rivalry, internal challenges, and external impediments. However, the current study concluded that though strategic management practices are not yet a prevalent business practice among SME firms in Sri Lankan context. Even though strategic management practices have been acknowledged as an indispensable tool for enhancing the competitiveness, performance levels, and structural growth of the SMEs, still Sri Lankan SMEs remain unaware, consequently lagging behind the adaptation to the business process. Accordingly, the empirical findings reported in this study shed new light on the strategic management setting, revealing that strategic management practices have a significant positive impact on the business performance of SMEs related to the study setting of the Western province of Sri Lanka. Consequently, the outcomes strongly indicate that all the objectives of the study were duly achieved.

Particularly, all of the SM dimensions are directly correlated with one another. The study also revealed that when these variables are employed collectively as a continuous process, business performance improves tremendously. More importantly, environmental scanning has a greater proportion in explaining business performance both individually and collectively. Following that, strategy implementation, strategy formulation, and strategy evaluation all contribute immensely to the advancement of business performance.

Indeed, every phase of the strategic management process is extremely important. If the business environment has not been critically examined, it appeared that firms will not grasp their own capabilities or business possibilities from where appropriate strategies are crafted to facilitate a fit and success. Therefore, environmental analysis, as the first and most visible strategic management practice, should investigate and analyze the political, economic, social, and technological events and trends that affect a firm, an industry, or even the whole market. Furthermore, this practice aids in observing the environment in order to adapt to a constantly changing and unpredictable atmosphere. Accordingly, environmental scanning in SMEs entails observing both internal environmental factors (strength, weakness, culture, structure, and resources) and external environmental factors (opportunity and threats). It is true that the entire strategic management process determines whether a company flourishes, survives or dies, depending on the way stakeholders approach it. Ultimately, it would be concluded that all components of strategic management practices have a positive and statistically significant impact on improving SME performance. Accordingly, the stated conclusion was exceptionally formed from the study based purely on the research findings. Consequently, all of the study objectives have been satisfied since each research question has been answered in a trustworthy, specific, and comprehensive manner.

Implication of the findings

This study provided empirical evidence that strategic management is a remedy to the precarious situation that SMEs in Sri Lanka confront. Furthermore, research findings indicate numerous prospects and methods for the radical use of the concepts of strategic management to improve business performance and long-term sustainability, thus enhancing the country's existing economic situation. On the other hand, the findings of this study have a significant and positive influence on the generation of new knowledge, and policy formation, reinforcing the underpinning of strategic management theory, aid in content development of future studies, and businesses at large. Accordingly, the findings of the study serve as an eye-opener to SMEs

operators/managers, and policymakers on the need to commit and include members of staff in the strategic management process.

- **Contribution to knowledge and academic literature**

The implications of this research for academic literature and knowledge are extensive. Accordingly, the findings of this research adding to the literature aim to draw attention to and address the apparent invisibility of the usage of strategic management practices. It is obvious that many studies in strategic management have been conducted in the Western context. However, in the Sri Lankan context, there is a scarcity of research on strategic management. Accordingly, the quantitative findings of this study will contribute by extending the body of knowledge and bridging the gap that exists across the study areas in literature, especially by employing SM dimensions in a proportion that other studies have overlooked. In this respect, our research could potentially be used to improve the generalizability and validity of the measuring instrument and the strategy theory created in more "Sri Lankan" contexts. Indeed, adding new knowledge to existing strategic management theory would constitute an expansion of the discipline and a further contribution to academic literature in a different manner.

- **Practical implications on business and practitioners**

To the best of the authors' knowledge, and based on an empirically examined search of peer-reviewed databases, there is no prior quantitative study in the context of Sri Lanka that has assessed the combination of SMP dimensions and financial and non-financial business indicators employed in this study. Therefore, this study provides several unique practical implications for SME owners, directors, and other practitioners that help to enhance SMEs development.

It has been observed that SMEs in Sri Lanka still required to embrace adequate strategic management practices in their operations. Scholars have determined that most SMEs have yet to grasp the significance of strategic management practices as vital success components of their businesses (Ihua, 2009; Kraus, 2007; Kraus & Kauranen, 2009). Hence, it is anticipated that this study will make significant contributions to strengthening strategic management understanding and awareness among Sri Lankan SMEs. Furthermore, this study could also act as a guide for SME owners and managers in successfully implementing strategic management practices, allowing SMEs to play a more significant part in the economy. As a consequence of the findings of strategic management practices in this study, Sri Lankan SMEs could potentially

be able to confront the challenges of a dynamic, highly competitive, and uncertain business environment. Accordingly, it would also direct them toward making superior decisions regarding strategic management that could aid them improve business performance.

The aforementioned strategic management aspects indicate that properly established strategic management practices assist firms to determine direction and growth through a process of formulation, implementation, assessment, and advancement that can assist in identifying new company goals and setting acceptable and realistic short and long-term objectives. Furthermore, the strategic management process establishes a company's vision and mission. Consequently, it establishes a framework and defines clear boundaries for making crucial business decisions that help in attaining the intended level of the firm. Further findings of this study clarified that an adequate strategic management approach enables SMEs to be forward-thinking by allowing top managers and the board to concentrate on the company's future rather than day-to-day activities. In other words, they concentrate their efforts on tasks that will most substantially enhance the company's success in the long term. Ultimately, the aforementioned evidence clarified that the most appropriate empirical and statistical knowledge generated through this research exerts an enormous effect on changing the current business environment in a positive manner.

- **Practical implications on policy makers**

One of the most prevalent issues that most policymakers are concerned about is how to enhance the economy by supporting small and medium-sized businesses in order to sustain economic development. Therefore, identifying successful strategies to assist and expand small and medium-sized firms (SMEs) is a key priority for policymakers in different regions of Sri Lanka. Accordingly, this study enables the policymakers in the SME sector to understand the key drivers of the strategy management process and their influence on performance in small and medium-scale enterprises in Sri Lanka. With this insight, the government could take on a more effective role as a policymaker in supporting and expanding the SME sector by providing support services, such as strategic management workshops and training, strategic awareness programs, strategy process development technologies, and knowledge for SME development to simplify successful strategies. Particularly, the conceptual framework as well as structured questionnaire proposed in this study would serve as a blueprint for the government and other policymakers in determining which significant and relevant aspects should be addressed when

thinking about improving the performance of SMEs. Thus, it would give direction to their policies thereby saving resources, time, and cost more adequately.

Recommendations in relation to the research findings

The findings revealed that adequate practices of strategic management lead to high levels of business performance. Therefore, it is critical for SME owners and managers to grasp effective strategic management practices in order to determine how to implement each practice to improve their business performance for the foreseeable future. Accordingly, a company should execute all four dimensions of strategic management collectively, since each element can assist to improve performance. Based on the findings of this study, the researcher provides the following recommendations on environmental scanning, strategy formulation, strategy implementation, and strategy evaluation.

- The reality is that SME owners, directors, and managers should increase their understanding of strategic management practices in situations when they are not competent enough by attending conferences, training sessions, and workshops.

- Furthermore, it would be recommended that environmental scanning be prioritized throughout the SME process.

- More importantly, instead of being reactive, the environmental scanning process should be proactive. Because business environment changes are unforeseen and unavoidable.

- The information gathered from the environment should be properly communicated to the relevant stakeholders of the business. Consequently, they are aware of the reality of the operation and could act accordingly.

- The present business environment is mostly an amalgamation of high technological advancements.

- Moreover, it is recommended that SMEs should not restrict themselves to environmental scanning techniques like SWOT and PEST analyses.

- Subsequently, the study recommends that all stakeholders of SMEs should involve when formulating and implementing strategies as well as take the necessary precautions through rigorous evaluation.

- Furthermore, it could be stipulated that in order for any company, large or little, to succeed, it must have a valid and strong strategic plan that serves as a compass for the firm. Through this strategic plan, SMEs owners should guarantee that they have a cause for being in the business (mission), what they aim to achieve in a certain time frame (vision), their short and long-term goals and objectives, and the manner in which they intend to accomplish all of them.

- SME managers/owners ought to stop thinking of their company as too small to engage in strategy creation and execution.

- Furthermore, management must take a high level of accountability during the strategy formulation and implementation processes.

- In addition, it could recommend that SME enterprises should seek out novel or radical approaches when formulating and implementing their strategic initiatives.

- Developing an operational plan, often known as an action plan, seems just a crucial factor in constructing a company's strategic plan.

- Every company should evaluate its strategic management processes on an annual basis to determine how well they are consistent with company objectives and goals.

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Impact of Renewable Energy Integration on Technology-Driven Sustainability in Sri Lanka within the Dynamic and Uncertain Global Environment, Marked by VUCA Elements.

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ABSTRACT

This study aims to investigate the impact of renewable energy integration on technology-driven sustainability in Sri Lanka, particularly within the context of a dynamic and uncertain global environment characterized by VUCA elements (Volatility, Uncertainty, Complexity, Ambiguity). The research methodology involves conducting a thorough literature review to establish the empirical background. Primary data was collected through a structured questionnaire distributed to 160 respondents, including renewable energy users in the Anuradhapura and Mannar districts of Sri Lanka. Data analysis was performed using IBM SPSS, incorporating reliability testing, correlation analysis, and regression analysis. This study found that there is a significant positive impact of renewable energy integration on technology-driven sustainability. The study's findings align with existing empirical evidence and emphasize the significance of renewable energy integration in promoting technology-driven sustainability, even in the face of a VUCA global environment. This supports the study's hypothesis and contributes to the body of knowledge in this are by providing adequate evidence to support the fact that renewable energy integration positively and significantly impacts on technology driven sustainability within Sri Lanka. This research underscores the critical role of renewable energy integration in fostering technology-driven sustainability in Sri Lanka. It provides valuable insights for policymakers, business leaders, and stakeholders aiming to navigate the challenges posed by a dynamic and uncertain global environment while promoting sustainable practices. Furthermore, it contributes to bridging gaps in the existing research landscape and lays a solid foundation for future investigations in this domain.

Keywords: Renewable Energy Integration, Technology-Driven Sustainability, Dynamic and Uncertain Global Environment, VUCA Elements

INTRODUCTION

The modern era which is attributed to high levels of volatility and uncertainty has raised the awareness of the concept of "sustainable development" on a global level. According to Manisalidis et al., (2020); Sunlu, (2003) the high level of environmental pollution, depletion of scarce resources, and continuous environmental changes have created a severe challenge to most of the nations around the world. Furthermore, it is visible that optimizing economic growth while increasing sustainability commitment is essential to achieve sustainable

economic development. Several studies have been conducted by different scholars to identify the critical success factors in achieving sustainable economic development whereas it is visible that the concept of "VUCA" has been widely used to describe the modern contemporary environment (Schick et al., 2017). According to Lechner & Schlüter, (2023), VUCA can be identified as an acronym that describes volatility, uncertainty, complexity, and ambiguity. When considering further challenges in the VUCA environment, the prevailing global energy crisis can be recognized as a key issue faced by most countries (Schick et al., 2017). According to Allam et al., (2022); Bagchi & Paul, (2023), economic rebound followed by the cease of the Covid-19 pandemic outbreak and Russia Ukraine war have created a significant impact on energy markets whereas rising energy prices for crude oil have driven the global inflation rate by a considerable amount while creating adverse implications such as economic recessions to third world developing countries. With this context, a major concern has arisen regarding the utilization of alternative energy sources such as solar energy, wind energy, hydro-powered energy, and biomass, which are capable of providing sustainable and efficient solutions for the energy crisis.

When considering the economic context of Sri Lanka, it can be noted that throughout the past decade, the country had to undergo severe changes and uncertainties. For instance, the Covid-19 pandemic outbreak, the economic recession, and political instability followed by civil uprisings created severe economic depletions in terms of national GDP (George et al., 2022). Also, it can be further noted that the rising global energy crisis and the political mismanagement of the country created a catastrophic impact on Sri Lanka which led to a huge fuel crisis followed by power cutoffs and power shortages creating severe adverse implications and disruptions to both civil and corporate operations (Sharma et al., 2022). According to Weerasooriya et al., (2023), the major reason for this energy crisis faced by Sri Lanka was raised due to being highly dependent on fossil fuel products such as diesel and furnace oil for energy and electricity generation. The highly deviating global fuel prices followed by significant financial constraints led to creating constant supply disruptions, which can be identified as the root causes of the crisis accordingly.

Based on these facts, it can be argued that switching to renewable energy sources is the most optimum solution for the country in achieving sustainable development while minimizing the possible negative implications that may arise from the global energy market which is attributed to VUCA elements. In Sri Lanka, there are 9 thermal power stations, 15 hydropower electric stations, and 15 small-scale onshore wind farms whereas Thambapavani wind farm can be

identified as the largest wind energy supplying station with 100-megawatt capacity. Meanwhile, solar energy production also has not been reached and practiced on a national level (George et al., 2022). For instance, according to Sayanthan & Kannan (2017), the inconsistencies and insufficient regulatory frameworks to support renewable energy can be identified as one of the key policy gaps that limit renewable energy integration in Sri Lanka. Hence, it is visible that there is a significant performance and policy gap in renewable energy production in Sri Lanka. Despite all the above facts, it is visible that many challenges are associated with renewable energy production and consumption. According to Eseosa & Ejiroro, (2020), adapting renewable energy sources is hurdled with a number of technical challenges such as issues related to national grid integration and high initial investment costs. A study conducted by Dasanayaka et al., (2022) identified that insufficiencies in the grid infrastructure to accommodate the efficient distribution of energy from renewable sources, shortage in skilled labor and lack of expertise knowledge on renewable energy integration also act as several major challenges that restrict renewable energy integration in Sri Lanka. However, it can be further noted that with continuous technological advancements happening throughout the world, adapting a multifaceted approach which is attributed to high technological integration is capable of providing more innovative solutions to overcome issues associated with renewable energy utilization (Dhanasekar et al., 2021).

Based on these facts, it can be argued that Sri Lanka possesses an unrealized and unattended solution for the existing energy crisis. However, to gain the full potential of renewable energy, it is required to create a viable policy and regulatory framework that facilitates and promotes both government and private sector interventions and initiatives in the renewable energy sector, which will enhance innovation and emergent technology integration accordingly. Through this study, the researcher aims to identify and assess the impact created by renewable energy integration on technology-driven sustainability in Sri Lanka. The study further attempts to provide viable solutions and recommendations based on the findings derived from the research study.

The structure of this research study includes 05 chapters, namely, Introduction, Literature Review, Methodology, Analysis and Findings, and Conclusion. This study will also provide better insights for the policymakers and related authorities of the country. Furthermore, according to Ranathunga, (2023) it can be noted that there is a huge research and an empirical gap in the relevant context. This research study will bridge this empirical and practical gap by providing a solid foundation and insights for future endeavors as well. On the other hand, the

future implications of this research study will provide insights into the energy security, energy independence, and optimized sustainability commitment that could be achieved through renewable energy along with the economic advantages as well.

LITERATURE REVIEW

Renewable Energy

The term "renewable energy" can be defined as energy that is derived from natural resources and possesses the capability of replenishing itself in comparison to high consumption (El-Sayed & Fitzsimmons, 2023; Strielkowski et al., 2021). There are many types of renewable energy sources. Solar energy, wind energy, biomass energy, and geothermal energy can be identified as some key renewable energy sources available and widely utilized in the modern world. The concept of renewable energy has become a major topic of concern within most of the nations around the world. The unpredictable price fluctuations faced by the global energy market have been the key reason for this increasing awareness of renewable energy (Maksimtsev et al., 2022). Furthermore, it is visible that the contemporary global environment marked with VUCA elements has created a severe impact on the global energy industry. The impact created on global energy prices subsequently after the COVID-19 pandemic outbreak and the Russia-Ukraine war can be provided as a couple of classic examples of these unpredictable uncertainties. Apart from that it can be further noted that several sustainability-related factors have driven the rising awareness and preference towards renewable energy. For instance, the most commonly used non-renewable energy sources such as fossil fuel, coal, and crude oil are highly subjected to increasing depletion rates while the production process of pure energy using these sources leads to omitting greenhouse gases such as carbon dioxide which are capable of creating severe negative implications on global temperature levels and ecosystems simultaneously (Nunes, 2023). With this context, it can be noted that a large number of countries are considering and adapting renewable energy to gain more economic and environmental benefits while gaining a higher level of energy independence from non-renewable energy sources.

Renewable Energy Integration

The term "renewable energy integration" can be defined as the process of interconnecting the produced renewable energy into the national energy grid in a manner that achieves the continuity of effective, efficient, cost-beneficial, and cleaner energy production (Alabbasi et al., 2022). Due to being a major concern around the world, many trends have arisen related to

renewable energy integration. For instance, it can be noted that over the last five years, renewable energy utilization and capacity have increased by significant amounts around the world, specifically in the solar energy production and consumption sector (El-Sayed & Fitzsimmons, 2023; Halkos & Gkampoura, 2020). Furthermore, it can be noted that increased adoption of solar energy has facilitated technology-driven innovations within the industry leading to create more cost-effective and efficient energy generation models, which in turn have enhanced the investments accordingly. When elaborating further, the invention of highly advanced energy storage systems and smart grids is emerging within the industry which has led to enhancing and optimizing the reliability of renewable energy integration to the national grid (Salmerón-Manzano et al., 2023). Wide adaptation of Distributed Energy Sources (DERs) can be identified as another emerging trend related to renewable energy integration. DERs can be identified as small-scale energy generation units such as; rooftop solar panels and small-scale wind generation turbines (Facchini, 2017). According to Salmerón-Manzano et al., (2023) the increase in the adaptation of DERs on a global scale has enabled energy consumers to meet their energy requirements by themselves while gaining the capability to feed any excess energy to the national power grid.

Apart from these rising trends, it can be noted that many advantages are associated with renewable energy integration. For instance, Liu, (2014); Žarković et al., (2022) renewable energy integration has a significant positive impact on the environment because solar, wind, and biomass reduce greenhouse gas emissions substantially. Furthermore, according to a study conducted by Nugroho et al., (2017) on renewable energy in Indonesia, it was identified that increased renewable energy integration is capable of enhancing air quality while depleting environmental pollution by significant amounts. Another key advantage associated with renewable energy integration is the capability of attaining a higher level of energy security and independence. According to Belrzaeg & Ahmed, (2023), increasing renewable energy integration enables an economy to diversify the energy mix by enhancing local energy productions through DERs, which on the one hand reduces the dependency on fossil fuel, and on the other hand creates high energy stability by depleting the possible vulnerabilities associated with energy disruptions in a centralized grid. Furthermore, developing the renewable energy industry has a significant impact on the economy as the country gains the capability to get rid of unnecessary price fluctuations associated with crude oil while gaining the capability to support the local community through job creation (Gupta et al., 2023).

Despite having many environmental and economic advantages, it can be noted that the process of renewable energy integration is associated with several challenges and limitations. For instance, according to a study conducted by Ayamolowo et al., (2020), it was identified that effective renewable energy integration processes are constantly hurdled with constant frequency instabilities and deviations in frequency rate of change. A study conducted by Gupta et al., (2023) also provides adequate evidence to support this fact as through this study, it was identified that the process of predicting renewable energy and identifying the frequency rate changes is highly challenging. Apart from these technical challenges, the inadequacy of a proper policy and regulatory framework has been identified as another key challenge associated with renewable energy integration. According to Belrzaeg & Ahmed, (2023), inconsistency and lack of proper regulatory and policy frameworks can be identified as one of the major limitations visible within developing countries in the renewable energy integration process.

Furthermore, according to a study conducted by JANJIC et al., (2015) on the topic of renewable energy integration in smart grids, it was identified that four key factors, namely, customer satisfaction, technology, cost, and environmental impact act as indicators or drivers that influence on the adaptation of the renewable technology integration process. The study was conducted as a multi-criteria assessment using the fuzzy analytical hierarchical process whereas the results indicated that customer satisfaction level has the highest level of impact on renewable energy integration whereas environmental impact reduction, technology, and cost reduction factors have the next influential impact respectively. According to a study conducted by Malik et al., (2020), it was identified that customer satisfaction and environmental impact have a significant impact on renewable energy integration and purchase intentions. The study was conducted as a quantitative cross-sectional study using a sample size of 354 respondents in Maudurai district in India to identify the renewable technology integration selection criteria in the British Colombian region of Canada whereas the results indicated that key indicators in the relevant context can be segregated into 04 categories, namely, technical, environmental, economic, and social. The study further indicated that customer satisfaction, related costs, and impact on the environment were the major factors that created a substantial impact on renewable technology integration accordingly.

Technology Driven Sustainability

Over the last two decades, the concept of sustainability has emerged with higher intensity throughout the world while creating significant influence on corporate and consumer behaviors

(Sumanasiri, 2020). According to Kuhlman & Farrington, (2010), sustainability can be defined as the process of compensating both individual and corporate requirements, needs, and demands without compromising the resource requirements of future generations. Also, it can be noted that sustainability has created a significant impact on consumer behaviors. Meanwhile, Yener & Secer, (2023) revealed that modern customers show a higher awareness and preference towards sustainable products whereas the sustainability commitment of organizations has a significant impact on consumer purchase intentions. Furthermore, according to Imppola, (2020), it is visible that environmental, social, and resource-related issues are increasing at an alarming rate within almost all countries, especially among developing countries, leading to the requirement for sustainability more vital. Based on these data it can be argued that sustainability has become a global phenomenon.

However, when considering further it can be noted that technology has played a critical role in achieving sustainability. When elaborating further, it can be noted that continuous technological advancements that keep occurring on a global scale have caused the emergence of emergent technologies such as Artificial Intelligence (AI), Blockchain, Internet of Things (IoT), Virtual Reality (VR), Robotics, etc. which are attributed with largely unrealized and unidentified potentials at present (Rotolo et al., 2015). Cascio & Montealegre, (2016) highlight that the enhancement of technological initiatives has created several positive implications for both business and human life. For instance, it is visible that increasing technological initiatives are capable of enhancing innovations while creating positive implications for overall productivity and efficiency. Similarly, it is visible that increasing technological advancements have created positive implications on the sustainability aspects as well. For instance, according to Vacchi et al., (2021), new and emerging technological initiatives have provided more innovative and effective solutions to overcome environmental, social, and economic challenges and limitations associated with sustainability. Some of these initiatives can be further explained as follows.

Utilizing Big data and AI for energy management

Big data indicate huge clusters of data that are attributed to very high volumes, velocities, and varieties (Rawat & Yadav, 2021). With the capability to capture these large clusters of data relevant to energy consumption in household and corporate contexts, it is possible to identify the patterns in energy consumption more precisely and accurately. This can be used to reduce unnecessary energy consumption and overutilization of units (Gupta et al., 2023). Furthermore,

narrow AI applications and machine learning can be used to analyze these big data and conduct predictive analysis which enables the policymakers and related authorities to predict the energy demands more accurately and precisely, which in turn optimizes technology-driven sustainability (Hannan et al., 2021).

Emergence of technologically innovative initiatives and appliances

Due to the rapid advancements in technology, new appliances and innovative initiatives keep emerging in the energy industry which are capable of creating significant positive implications on energy utilization. For instance, it can be noted that energy storage devices have achieved transformational modifications with the inventions of supercapacitors and thermal energy storage devices which are capable of storing more energy with enhanced life spans that facilitate renewable energy integration (El-Sayed & Fitzsimmons, 2023). Furthermore, according to Belrzaeg & Ahmed, (2023), the inventions and constant innovative initiatives that keep occurring in smart grids have created more resilience, advanced, and efficient renewable energy integration processes that guide toward technology-driven sustainability.

Many studies have been conducted by different scholars to identify the key indicators related to technology-driven sustainability. According to a study conducted by Alabbasi et al., (2022) on the sustainability indicators in Bahrain's renewable energy integration and power generation context, it was identified that there are 19 key indicators of sustainability which can be categorized into 04 main dimensions, namely, technical, economic, social and environmental aspects. The study was conducted as a systematic approach which analyzed the frequencies of the indicators using a sample of 73 prior research studies.

Similarly, according to a study conducted by Mainali (2012) on Renewable Energy Based Rural Electrification in Nepal, it was identified that factors such as energy availability, efficiency, cost of capital, operations and maintenance cost, employment productions, and emission of CO_2 act as some key indicators related to sustainability through renewable energy integration. Furthermore, a study conducted by Liu, (2014), supports these facts by identifying time, efficiency, associated cost, level of social acceptance, and impact created on the environment (CO_2 emission, carbon footprint, etc.) as the key indicators that can be utilized to assess the sustainability on renewable energy integration context.

Impact of Renewable Energy Integration on Technology-driven sustainability

Several studies have been conducted by different scholars and researchers in different contexts to distinguish the impact created by renewable energy integration on sustainability aspects. Kilinc-Ata & Tanriover, (2017) identified that renewable energy integration is capable of increasing the sustainability index in Turkey. Furthermore, adapting renewable energy is capable of creating a significant impact on sustainability aspects. Similarly, according to a systematic review conducted on 177 filtered articles by Al-Shetwi, (2022), it was identified that renewable energy integration has a significant impact on creating numerous positive economic and environmental implications including the enhanced sustainability commitment. Meanwhile, renewable energy integration has a substantial positive influence on sustainability (Sebestyén, 2021). However, the study further identified that some of the renewable energy sources such as wind turbines can adversely affect natural ecosystems through sound pollution and by hindering the bird immigration processes.

When summarizing all the above literature findings, it can be noted that there is adequate evidence to support the fact that renewable energy integration is highly advantageous, and is capable of creating a number of environmental as well as economic advantages. However, prior studies that have been conducted on the relevant context further suggest that technical challenges such as constant changes in frequency rates along with inadequate policy and regulatory frameworks act as key constraints towards renewable energy integration. Despite these challenges and restraints, it is further visible that technology plays an integral part of renewable energy integration while emergent technology concepts such as AI and Big data are used for effective energy management on a global context. Finally, upon the conclusion of all these facts, it is visible that there is adequate evidence to prove that technology plays a pivotal role in integrating renewable energy to achieve a higher level of sustainability.

RESEARCH METHOD

Conceptual Framework and Variable Operationalization

The conceptual model and the framework of the study, which has been developed based on the key findings derived from the literature review, which indicate that renewable energy integration possesses a positive impact on technology-driven sustainability (Sebestyen, 2021). The model is prepared based on the two variables discussed through literature analysis, namely, renewable energy integration and technology-driven sustainability. Furthermore, the visual

presentation of the conceptual framework depicts that it is assumed that there is a relationship in between these two variables accordingly.

Figure 1: Conceptual Framework
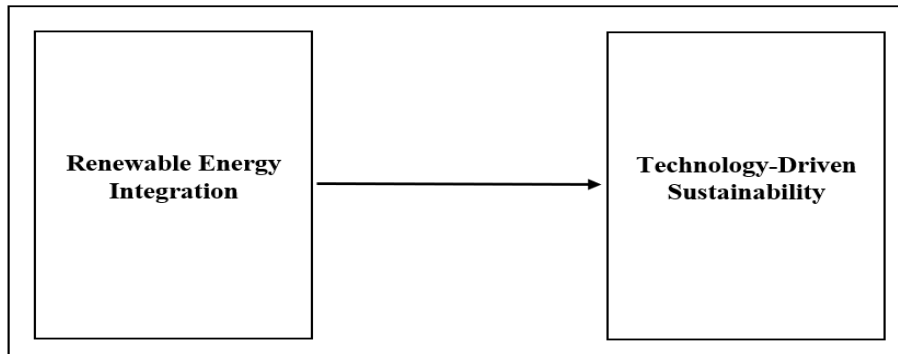
Table 1: Variable Operationalization

Variable	Indicators	Sources	Measurement Scale
Renewable Energy Integration	Customer Satisfaction • Quality and reliability • Social benefits Environmental Impact Reduction • CO2 emission • Environmental impact Cost reduction • Net present value • Social benefits Technology • Voltage deviations • Power losses	(JANJIC et al., 2015; Malik et al., 2020)	1 – 5 Likert Scale
Technology Driven Sustainability	Technical • Deployment time • Efficiency • Expert HR • Installed capacity • Reliability • Potentials of resources • Maturity Economic • Capital cost • Operations and maintenance cost • Electricity cots • Economic contribution • ROI	(Alabbasi et al., 2022; Liu, 2014; Mainali, 2012)	1 – 5 Likert Scale

	• Levelized cost
	Social
	   • Social acceptance
	   • Job creation
	   • Social benefits
	Environmental
	   • CO_2 emission
	   • Compliance with local conditions
	   • Land requirements
	   • Emission and pollution		

The operationalization table illustrates the indicators used to define the key variables that have been identified through the research model. When elaborating further it is visible that the independent variable "renewable energy integration" has been defined using 04 key indicators, namely, customer satisfaction, environmental impact reduction, cost reduction, and technology. Similarly, 04 key indicators have been used to define the dependent variable "technology-driven sustainability", which can be further identified as technical, economic, social, and environmental factors. The selection of these indicators that can be used to define the research variables is done through a comprehensive literature analysis whereas the selection criteria are confirmed upon the verification that there is adequate information to support the identified indicators. Also, the selection process is continued upon the reflection and consideration of the suitability and applicability of these indicators in the Sri Lankan context. It was further verified that the available indicators possess the capability of being assessed and are quantifiable. The questionnaire consists of 03 sections. The first part of the questionnaire addresses the basic demographic factors such as age, gender, and education level. The second part of the questionnaire assessed the independent variable "renewable energy integration" using 9 questions, while 17 questions were used in the third part of the questionnaire to assess the dependent variable "technology-driven sustainability", which are all formulated referring to the key indicators relevant to each research variable. Furthermore, the 5-point Likert scale is adapted to record and measure the responses for the dependent and independent variable criteria.

Hypotheses

Upon the consideration of data derived from the literature review, "renewable energy integration" has been identified as the antecedent or the independent variable whereas

"technology-driven sustainability" has been identified as the dependent variable of the research study. Based on these data, an alternative hypothesis and a null hypothesis are formulated in order to achieve the key objective of the study. The alternative hypothesis developed is named as H1, and the hypothesis is constructed to statistically assess the impact created by the independent variable (renewable energy integration) on the dependent variable (technology-driven sustainability). Furthermore, the conducted null hypothesis suggests that there is no statistically provable significant impact of the independent variable (renewable energy integration) on the dependent variable (technology-driven sustainability).

> *Hypothesis 1 (H1): There is a significant impact of renewable energy integration on technology-driven sustainability.*

> *Hypothesis 0 (H0): There is no significant impact of renewable energy integration on technology-driven sustainability.*

Population and Sample Selection

The population of the study includes renewable energy users, who are residing in Anuradhapura and Mannar districts. The key rationale used to select these two districts is the existence of relatively stable and more suitable weather conditions within these two districts which are much suitable for renewable energy integration, such as solar panels.184 questionnaires were distributed to the selected and identified sample of respondents which were distributed physically meanwhile only 160 valid responses were received.

DATA ANALYSIS

Demographic Factor Analysis

Table 2: Gender Distribution

Gender		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	58	36.3	36.3	36.3
	Female	102	63.7	63.7	100.0
	Total	160	100.0	100.0	

The demographic analysis of gathered data represents that out of 160 respondents, the majority of the respondents are female with a frequency value of 102 and a percentage of 63.7 whereas 58 respondents are males which depicts a percentage value of 36.3%.

Table 3: Age Distribution

	Age				
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	21 - 30 Years	16	10.0	10.0	10.0
	31 - 40 Years	38	23.8	23.8	33.8
	41 - 50 Years	64	40.0	40.0	73.8
	51 - 60 Years	22	13.8	13.8	87.5
	Greater than 60 Years	20	12.5	12.5	100.0
	Total	160	100.0	100.0	

When considering the age distribution of the respondents, it is visible that a majority of 64 respondents with a percentage value of 40% are recorded to be "in between 41-50 years", whereas the age group of "21-30yeras" represents the least number of respondents with a recorded frequency value of 16. The remaining age groups of "31-40 years", "51-60 years" and "Greater than 60 years" have recorded frequency values of 38, 22, and 20 which represent 23.8%, 13.8%, and 12.5% out of the total 160 respondents respectively.

Table 4: Education Level Distribution

	Highest Education Level				
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Ordinary Level	6	3.8	3.8	3.8
	Advanced Level	17	10.6	10.6	14.4
	Diploma	73	45.6	45.6	60.0
	Graduate	50	31.3	31.3	91.3
	Post Graduate	14	8.8	8.8	100.0
	Total	160	100.0	100.0	

The majority of 45.6% of respondents have achieved the diploma level in education whereas 6 respondents have recorded possessing "ordinary level" with a percentage value of 3.8%, which is the least recorded frequency distribution of the current data set. Furthermore, it is visible that 17, 50, and 14 respondents have recorded possessing "advanced level", "graduate" and "postgraduate" educational levels as the highest educational level respectively.

Descriptive Statistics

Table 5: Descriptive Statistics – Renewable Energy Integration

Renewable Energy Integration (RET)	Mean	Standard deviation
RET01	2.98	0.955
RET02	2.99	0.935
RET03	2.83	0.933
RET04	2.99	0.925
RET05	2.89	0.901
RET06	2.86	1.033
RET07	2.81	0.746
RET08	2.98	0.876
RET09	3.13	0.862

For the independent variable "renewable energy integration" it can be noted that the mean values of all the recorded data for the nine questions are between 2.5 and 3.4. This illustrates that the majority of the respondents have shown a neutral attitude toward the questions. Furthermore, it can be noted that the standard deviation values for all 9 statements are in between -2 and +2, hence it can be concluded that the data set is well within the acceptable range.

Table 6: Descriptive Statistics – Technology-driven Sustainability

Technology Driven Sustainability (TDS)	Mean	Standard deviation
TDS01	2.54	0.861
TDS02	2.42	0.865
TDS03	2.6	0.899
TDS04	2.56	0.916
TDS05	2.46	0.831
TDS06	2.56	0.963
TDS07	2.56	0.943
TDS08	2.69	1.127
TDS09	2.54	0.875
TDS10	2.46	0.653
TDS11	2.88	0.819
TDS12	2.62	0.8
TDS13	2.93	0.802
TDS14	2.39	0.817
TDS15	2.99	0.85

| TDS16 | 2.51 | 0.727 |
| TDS17 | 2.37 | 1.114 |

When considering the descriptive statistics of the independent variable. "technology-driven sustainability", it can be noted that out of the 17 statements that are used to assess the dependent variable "technology-driven sustainability", TDS02, TDS05, TDS10, TDS14, and TDS17 have the mean values which are lower than 2.5. Based on these facts it can be concluded that the majority of the respondents have not agreed with these statements. On the other hand, it is visible that the remaining 12 statements have a mean value that lies between 2.5 and 3.4, which indicates that the majority of the respondents have shown a neutral attitude towards these 12 statements. Furthermore, the standard deviation values derived from the analysis are between -2 and +2 for all 17 statements hence it can be concluded that they are well within the acceptable range.

Reliability Test

Table 7: Reliability Statistics

Reliability Statistics		
	Cronbach's Alpha	N of Items
Renewable Energy Integration	.922	9
Technology-Driven Sustainability	.940	17

Cronbach's Alpha test is used to assess the reliability of the instruments. The data derived from the analysis indicate that the Cronbach's Alpha values for the independent and dependent variables are 0.922 and 0.940, which both are above the acceptable range of 0.7. Hence it can be concluded that there is a high level of internal consistency between the gathered data set and the instrument.

Validity Test

Table 8: Validity Test

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.834
Bartlett's Test of Sphericity	Approx. Chi-Square	3433.477
	Df	325
	Sig.	.000

The validity of the data set is tested using KMO and Bartlett's test. The analysis data indicate that the sampling adequacy of the KMO test is at 0.834 which is in between the acceptable range of 0.7 and 1 whereas the significant value derived from Bartlett's test of Sphericity is at 0.000, Hence, it can be concluded that there is a high level of sample adequacy and the data set is valid.

Correlation Analysis

Table 9: Correlation Analysis

Correlations			REI	TDS
REI	Pearson Correlation		1	.534**
	Sig. (2-tailed)			.000
	N		160	160
TDS	Pearson Correlation		.534**	1
	Sig. (2-tailed)		.000	
	N		160	160
**. Correlation is significant at the 0.01 level (2-tailed).				

Pearson correlation is used to identify the correlation of the two variables whereas the data derived from the analysis indicate that renewable energy integration and technology-driven sustainability have a positive correlation value of 0.534. These data further depict that the two variables have a moderate positive inter-relationship of 0.534 or 53.4%.

Multiple Regression Analysis

Table 10: Model Summary – Multiple Regression Analysis

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.534a	.286	.281	.53406
a. Predictors: (Constant), REI				

The R square value depicted through the model summary table is 0.286. Hence it can be argued that 28.6% (R Square – 0.286) variances that occur in the dependent variable "technology-driven sustainability" can be explained using the independent variable "renewable energy integration".

Table 11: ANOVA Table – Multiple Regression Analysis

ANOVAª						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	18.018	1	18.018	63.174	.000ᵇ
	Residual	45.064	158	.285		
	Total	63.082	159			
a. Dependent Variable: TDS						
b. Predictors: (Constant), REI						

The data derived from the ANOVA table indicate that the significant value of the analysis is at 0.000 while the F value is 63.174 which is greater than 1.96. Hence it can be argued that the overall model is significant.

Table 12: Coefficient Table – Multiple Regression Analysis

Coefficientsª						
		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	T	Sig.
1	(Constant)	1.206	.180		6.720	.000
	REI	.472	.059	.534	7.948	.000

a. Dependent Variable: TDS

The data derived from the coefficient table further depicts that the significant value is at 0.000 which is lower than 0.05. Hence, it can be concluded that the independent variable renewable energy integration has a 47.2% significant positive impact on the dependent variable technology-driven sustainability.

Upon the consideration of all these data, a regression equation can be formulated as follows.

$Y = \alpha + \beta + \epsilon$

$= 1.206 + 0.472 + 0.180$.

DISCUSSION

When considering the empirical evidence that was assessed through the literature review, it can be noted that there is adequate evidence to support the fact that there is a positive relationship between renewable energy integration and sustainability. Renewable energy integration has a positive correlation and a significant impact on the Sustainability Index in Turkey (Kilinc-Ata & Tanriover, 2017). The study was conducted using Mean-Median Tests and Study Event methodology which was deployed using the data gathered through 50 organizations in Turkey that were included in the BIST Sustainability Index. The findings of the study confirmed that investors believe the renewable energy integration with corporate enterprises has a significant impact on sustainability and find them to be attractive in terms of investor's perspectives. Meanwhile, renewable energy integration has a positive correlation and a significant impact on environmental sustainability (Al-Shetwi, 2022).

When comparing these results against the data derived from the correlation analysis of the current study, it can be noted that there is a positive correlation of 0.534 or 53.4% between the independent variable (renewable energy integration) and the dependent variable (Technology-driven sustainability). When considering further, it is visible that the data derived from the current statistical analysis align with the empirical findings that were derived from the literature analysis. Hence by considering all these data, it can be concluded that renewable energy integration has a positive correlation with technology-driven sustainability.

When further considering the empirical data derived from the literature analysis, it can be noted that renewable energy integration has a significant positive impact on sustainability (Kilinc-Ata & Tanriover, 2017). According to Al-Shetwi, (2022), renewable energy integration is capable of creating a significant impact on sustainability. The study was conducted as a systematic literature review. The data required for the analysis were gathered from 177 research papers, journal articles, and other studies which were extracted from reliable literature sources. The findings of the study indicated that increasing renewable energy integration into the national electricity grid creates a significant influence on sustainability commitment accordingly. However, according to Sebestyén, (2021), it was identified that some renewable energy sources have a significant impact on the natural environment and ecosystems. The study was conducted using the multi-layer network-based impact assessment technique. The findings of the study indicated that renewable energy sources such as wind turbines have a substantial influence on flying animals and sound pollution. Also, it was identified that hydropower plants

have a considerable impact on the water flow conditions while geothermal power plants create a considerable negative impact on soil and natural plants. The study further emphasizes that regulatory frameworks should be aligned more to positively influence the sustainability commitment using renewable energy integration.

When considering the results derived from the statistical analysis of the current study, it could be noted that the independent variable "renewable energy integration" had a significant positive impact on the dependent variable "technology-driven sustainability". (Sig -0.000). Based on these findings it can be noted that Hypothesis 1 of the study has been accepted, which assumed that "There is a significant impact of renewable energy integration on the technology-driven sustainability". When comparing this data against the empirical findings derived from the literature analysis, it can be noted that the results align with the majority of the findings which elaborates on the existence of a significant impact of renewable energy integration on technology-driven sustainability (Kilinc-Ata & Tanriover, 2017) (Sebestyen, 2021). By considering all these facts it can be finally concluded that renewable energy integration has a substantial impact on technology-driven sustainability.

Overall, it can be noted that this research study provides better insights into renewable energy integration within Sri Lanka. The key limitation of the study includes the limited sample size used to conduct the research analysis. However, it can be noted that this study provides a solid foundation for future researchers by bridging the research and empirical gap that exist within relevant research contexts.

CONCLUSION

When considering the modern contemporary environments, it can be noted that all the nations are compelled to operate under highly dynamic environmental conditions which are constantly attributed to VUCA elements. Increasing regional political instabilities, possible pandemic outbreaks, and constant, extreme weather conditions can be identified as some root causes for this dynamic business environment which are marked with VUCA elements. With this scenario, most of the nations struggle to pursue both economic developments while increasing the sustainability commitment of the economy, as they seem to be mutually exclusive interests at a glance. However, with the rising energy crisis, renewable energy has proven to be a highly beneficial and efficient alternative that is capable of creating numerous positive implications for both economic development as well as the sustainability commitments of the country.

When considering the economic conditions of Sri Lanka, it is visible that the prevailing global energy crisis has created catastrophic implications for the Sri Lankan economy. The dependency on fossil fuel followed up with the sudden price fluctuations in the global energy market created severe energy shortages in terms of diesel and electricity to Sri Lanka, which in turn created long power cuts and transformational disturbances, These effects created severe negative implications on both household and corporate settings of the country. With this context, the significance of energy independence and energy security have become critical success factors for the country's economic development.

This study is conducted to investigate the impact created by renewable energy integration on technology-driven sustainability. The study was carried out as a quantitative analysis which collected data from a sample of 160 respondents to evaluate the impact created by renewable energy integration on technology-driven sustainability. The results indicated that renewable energy integration has a significant impact on technology-driven sustainability (Sig – 0.000) with a positive inter-correlation of 0.534. Based on these derived results it can concluded that there is adequate evidence to support the fact that there is a significant impact of renewable energy integration on technology-driven sustainability within Sri Lanka.

By considering all these facts it can be further concluded that this research study provides valid insights on the importance of enhancing renewable energy integration while elaborating on the unrealized potentials of renewable energy integration on the technology-driven sustainability. This information can be used by policymakers to stabilize the country by achieving a higher level of energy independence. For instance, government interventions and formulation of policies to promote renewable energy integration such as incentives driven up with feed-up tariffs, tax credits and formulation of green building codes can positively influence on technology driven renewable energy integration in Sri Lanka. When considering from the institutional perspectives, increased organizational commitments through increased R&D, establishment of technology incubators and creating public private partnerships to implement renewable energy integration projects will create substantial increase on effective adoption of technology driven renewable energy integration. Furthermore, the study bridges the existing research gap in the relevant context by providing a solid foundation for future researchers accordingly.

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Impact of Insider Trading on Share Returns: Evidence from Sri Lanka

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ABSTRACT

Insider trading is a crucial topic for investors in the stock market. This study investigates whether corporate insiders' trading significantly affects the share returns of listed companies on the Colombo Stock Exchange (CSE). This research further examines the relationship between insiders' purchases/sales and abnormal returns. This study examines the purchases and sales of insiders from randomly selected 37 listed companies from January 2012 to March 2022 using event study methodology, taking the announcement day as Day 0. A total of 97 transactions were used for this study. This study used the market model to calculate the alpha and beta coefficients of the risk-adjusted return for insider transactions. And t-values of Average Abnormal Return (AAR) and Cumulative Average Abnormal Return (CAAR) were calculated to determine the significance of the findings. This study found a positive and significant CAAR from Day 01 after the announcement day for insider purchases. A negative and significant CAAR was only for Day 01 afterward, a positive and not significant CAAR was found for insider sales. The study's findings support that insider trading impacts the share returns at CSE. Further, this study observed positive CAAR for all insider transactions, meaning that the actual return is greater than the expected return for all insider transactions. Further, it revealed that the Sri Lankan stock market is immediately reacting to insider trading announcements, which is evidence for a semi-strong form of an efficient market hypothesis. However, it never showed any concrete evidence of information asymmetry in the market.

Keywords: Insider trading, Efficient market hypothesis, Information asymmetry hypothesis, Abnormal return, Event study methodology

INTRODUCTION

In the ever-evolving landscape of financial markets, the intricate interplay between information, decision-making, and market efficiency is the cornerstone of investor confidence and the promotion of equitable trading practices. Among the various factors influencing share returns, insider trading stands out as a phenomenon that can significantly shape the trajectory of share returns. Insiders, including directors, owners, and employees, can engage in trading based on potential future information about their firms. However, it's essential to note that insider trading may not always be linked to new information. Insiders' in-depth knowledge of internal management strategies about their company may help them identify the timing of investment. On the other hand, they may abuse their power to get hold of materialistic information unavailable to the public (Geyt, 2013). Also, Clacher et al. (2009) conclude in their

research that insiders can detect the mispricing of shares of their own company and use this information for their benefit. However, the insiders' trading on non-public information is considered illegal. To make the stock market a level playing field, the regulators of the stock market of almost every country in the world compel the insiders to disclose their trading to the public.

The way that markets and investors respond when corporate-related events, such as dividend announcements (Bandara & Perera, 2011) and stock splits (Gunathilaka & Kongahawatte, 2011), are announced is a key study trend related to stock markets. Likewise, another significant corporate-related event that affects the decision of investors is the announcement of insider trading. Since insider trading is an obvious example of how the lack of information may cause the loss of shareholder wealth, it has been a significant issue for scholars, investors, and regulators worldwide.

As effective regulation is needed for investor confidence and an efficient stock market, the Securities Exchange Commission of Sri Lanka (SEC) regulates the capital market. The Securities and Exchange Commission of Sri Lanka Act no. 19 of 2021 is the act used to regulate the capital market. According to the act, anyone connected to the listed company should not trade company shares if he/she gets hold of any non-public price-sensitive information. Even though there are several insiders who can trade on securities, the SEC of Sri Lanka instructs the listed companies to disclose only their directors' trading to the public.

Since Sri Lankan share market is a frontier market, there are not many studies available about insider trading. There is enough evidence available to predict the market reaction to insider trading on US stock exchanges (Tavakoli et al., 2012), (Khan et al., 2005). However, insider trading empirical research has lagged far behind in non-US nations compared to US studies, particularly in frontier markets like Sri Lanka. As a result, awareness about insider trading is very poor among Sri Lankan retailers.

This study aims to investigate whether the trading of corporate insiders significantly affects the share returns of listed companies in the CSE. If so, it further examines the relationship between insiders' purchases/sales of directors and the respective abnormal return after the announcement of insider trading.

An article available on the website of Law Net Ministry of Justice on the topic 'Insider Dealing in the Information Age' stresses that there is a need for the amendment of the laws related to insider trading. So, the study on insider trading is essential for the Sri Lankan stock market. Even though a study on the topic 'Information content of insider trading volume: Evidence from Sri Lanka (Perera & Nimal, 2017) is available, that was done for the period 2004 to 2012.

This study did not consider the recent times of the share market like Covid-19 and the recent economic crisis. Analyzing the impact of insider trading on share returns in CSE for the contemporary period will pave the way to identify the recent efficiency of the CSE.

Analyzing the speed of change in the share returns will help to determine the efficiency of the whole stock market. Analyzing how the market reacts to insider trading will provide clear evidence of whether insider trading contains potential information. It also helps to determine whether that market is exposed to efficient information. Understanding the impact of insider trading on share returns is not only crucial for investors making informed decisions but also for regulators striving to maintain integrity and fairness in the financial markets.

This paper is organized as follows. The next section presents the literature review on insider trading and its impact on share returns. In the third section, the methodology will be stated. Section four discusses the analysis and findings, and section five emphasizes the conclusion and implications of this study.

LITERATURE REVIEW

The works of literature on insider trading argue on law and economics over whether it is desirable to restrict insider trading. Some kinds of literature, like Beny (2007), Doffou (2007), and Ali and Gregoriou (2008) state that insider trading itself is an illegal act. They define insider trading as the selling or acquisition of shares by employees of a corporation who use monopolistic knowledge to their advantage to produce abnormal returns. But most empirical studies like Nanda and Barai (2020), Bacon and Roddenberry (2011), Aktas et al. (2008), Aktas et al. (2007), and Hoang et al. (2015) differentiate the legality of insider trading using the information the insider used at the time of trading. If insider trading is based on public information, it is lawful (Nanda & Barai, 2020). Hoang et al. (2015) state that not all insider trading is illegal. However, the term "insider trading" is typically used to describe illicit transactions involving significant, confidential business information.

The term insider trading has contradictory views in the literature. Academic literature on whether to outlaw insider trading has been motivated by questions regarding the information content of insider trading. Whether insider trading is unjust to public investors who are not exposed to confidential corporate information was the main topic of early legal discussion (Beny, 2007). Patterson (1967) claimed that insider trading is beneficial since it is economically efficient, in contrast to the prevailing legal and moral opinion. If insider trading is economically inefficient and, therefore, ought to be controlled by the government, or whether it is

economically efficient and should not be regulated, it is at the heart of the law and economics dispute (Beny, 2007).

The Regulation of Insider Trading

Regulators of several countries have identified illegal insider trading as a criminal offense and implemented criminal fines and jail sentences. Bajo and Petracci (2004) stated in their study that even while insider trading laws are rarely reliably followed in Italy, stock trading that occurs just a few days before market announcements would be simple to identify and prosecute. However many countries around the world effectively enforced insider trading regulations. Clacher et al. (2009) state that in the U.S, the Securities Exchange Commission has prohibited insider trading since 1934. Fisch (1991) states that in Georgia, the SEC decided that the information possessed by insiders has the obligation either to refrain from trading on that information or disclose that information to the public. The European Directive on Insider Trading and Market Manipulation from 2003 served as the basis for Belgium's existing insider trading regulations (Geyt, 2013). Beny (2007) finds out that liquid stock markets are more common in nations with stricter prohibitions against insider trading.

In Sri Lanka, insider trading is considered a serious white-collar crime, and it has been prohibited under the Companies Act and SEC Act. Part V of the Securities and Exchange Commission of Sri Lanka Act, No. 19 of 2021 contains provisions to define and penalize insider dealings with respect to all public listed companies.

On the website of the Ministry of Justice, Sri Lanka, an article was published under the heading 'Insider Dealing in the Information Age'. There mentioned that the Takeover Code, an SEC Act-created rule, regulates insider dealing in the context of takeovers. There are many similarities and variations between the insider dealing provisions of the SEC Act and the Takeover Code. That article further mentions that it is regrettable that the latest SEC Act modifications did not include any in-depth changes pertaining to insider dealing ("Insider Dealing in the Information Age," n.d.). Any delay in implementing these legal and behavioural adjustments will erode the capital market's confidence and have a negative impact on the country's economy.

However, these days the SEC of Sri Lanka is proactively penalizing individuals involved in insider trading, reinforcing a commitment to enforce the law, and foster awareness among the public investors about the consequences of such illicit activities. This vigilant approach serves to promote transparency and maintain the integrity of the financial markets, ultimately safeguarding the interests of investors.

Efficient Market Hypothesis (EMH)

Most of the studies eventually connect the abnormal values of stock characteristics after insider trading with the Efficient Capital Market Hypothesis, formulated by Fama in 1970. Fama (1970) states that the efficiency of the capital market can be divided into three categories depending on the nature of the information. In the weak form of market efficiency, the investors will be fully aware of the historical prices and volumes of securities, and historical information will be reflected in the prices of securities. The semi-strong form of the efficient market hypothesis states that the market's share prices fully reflect all the publicly held information. The information may be stock splits, dividend issues, announcements of annual earnings, mergers, acquisitions of companies, etc.

The strong form of the efficient market hypothesis indicates that share prices reflect all publicly and privately held information (Fama, 1970). But Doffou (2007) states that a strong form of efficient market hypothesis theory is not applicable in practice because insiders or non-insiders with materialistic non-public information can make abnormal returns by using that information to their advantage. So, if insiders earn abnormal share returns, the strong efficient market hypothesis turns out false.

In Sri Lanka, the efficiency of the stock market is a crucial topic to discuss. Perera and Nimal (2017) study Sri Lankan stock market and conclude that the efficiency of the CSE is doubtful in terms of how quickly the insider trading volume's information content is reflected in share price. So, CSE does not provide consistent evidence that the stock market holds an efficient market hypothesis.

Information Asymmetry Hypothesis

A mismatch in the knowledge of significant facts and information between the two negotiating sides is known as information asymmetry. The side with more information typically has a competitive edge over the opposing party due to this imbalance. Bajo and Petracci (2004) backs up the notion that an alteration in insider ownership has informational value and sends a message to the market because of the information asymmetry between insiders and private investors.

If there is a severe information asymmetry, uninformed investors may decide not to trade, making the stock market completely illiquid (Beny, 2007). He further states that the idea that allows insiders to trade on information that is only known to them (information asymmetry) harms liquidity (increases transaction costs) by reducing competition among informed traders. Geyt (2013) examined whether effective communication might lessen the profitability of

insider trading and, consequently, the information asymmetry between insiders and outsiders, using a sample of publicly traded Belgian companies. He finds out that press releases and investor relations initiatives are the most efficient means of reducing information asymmetry between insiders and outsiders.

Gunathilaka and Kongahawatte (2011) find that CSE takes in the news of the split the day it is announced, demonstrating the effectiveness of the information flow. Bandara and Perera (2011) identify that there is a significant effect on the abnormal return on the day of dividend announcement. They further say that the CSE gets delayed responses due to information asymmetry or the inability to obtain information promptly.

Empirical Review

There are several empirical studies available on the topic of insider trading. Most of them, refer to the relationship between the reported insider trading and the change in market prices of shares. Some other research analyzes how market efficiency is determined by insider trading and examines the information content of insider trading.

With reference to the empirical literature, the following hypotheses are developed to be tested in this study.

Hypothesis 01: The insider (directors) trading impacts the share returns at CSE.

According to the research done by Nanda and Barai (2020) based on BSE, by imitating any buy or sale made by a significant shareholder or by directors and executives, an outside investor can generate abnormal returns. Bajo and Petracci (2004) state that in the study on insider trading based on the Italian Stock Exchange, an abnormal market return was observed. The study done by Bacon and Roddenberry (2011) based on NYSE emphasizes that an investor can make an above-average risk-adjusted return by acting on the public announcement of the insider purchases. Hoang et al. (2015) stated that insiders could typically outperform the market. Keeping given the above-mentioned articles, Hypothesis 01 is formulated to examine the effect of insider trading on share returns.

Hypothesis 02: The abnormal return is positive for directors' purchases at CSE.

Hypothesis 03: The abnormal return is negative for directors' sales at CSE.

Bajo and Petracci (2004) found statistical evidence that a positive reaction occurs after an increase in insiders' holdings, and a negative reaction occurs after a decrease in insiders' holdings. Aktas et al. (2007) also conclude that cumulated abnormal returns are positive for the stocks bought and negative for the insider-sold stocks. Even though, the article written by Antoniadis et al. (2015) based on the Athens Stock Exchange did not give any concrete

evidence about insider purchases, they emphasis that abnormal stock return for insider sales reacts negative after the announcement of insider trading. With reference to the studies Aktas et al. (2007), Bajo and Petracci (2004) and Bacon and Roddenberry (2011), the Hypothesis 02 and Hypothesis 03 is developed to test the relationship between the insiders' purchases/sales and abnormal returns.

METHODOLOGY

The quantitative approach and the deductive logic are used as the research logic in this study. The goal of a deductive approach is to create hypotheses based on an existing theory to test the hypothesis. To examine the impact of insider trading on share returns, purchases, and sales of insiders at CSE are considered as independent variable and the abnormal returns earned by those insiders are considered as dependent variable.

The independent variable is the secondary data of announcements of insider trading collected from CSE website. The population of considered data is all the purchases and sales of directors of all listed companies at CSE. The sample of insider trading was considered for the period from January 2012 to March 2022. During this period, random sampling method was used to select listed companies from CSE. Using this, two companies from each sector classified using Global Index Classification Standard (GICS) were selected. Two sub- samples were used in this study. They are:

1. Insider purchases of selected companies from January 2012 to March 2022.
2. Insider sales of selected companies from January 2012 to March 2022.

Additionally, this sample has been omitted directors' purchases/sales made through Employee Share Option Plans (ESOPs), Trust Deeds, Share Warrants, and directors' transactions of ordinary non-voting securities, as well as certain directors' trading events due to thin trading issues.

Also, this study only considered the trades where there were no other insider trades during the estimation and event window for the accuracy of the analysis. Respective of this assumption, Table 1 summarizes the data used for the analysis of this study.

Table 1: Summary of event study data

Insider transaction types	Number of events
All insider transactions	97
Insider purchases	60
Insider sales	37

The abnormal return is calculated using the event study methodology. To conduct an event study methodology, two time periods as estimation window and event window should be determined. The empirical studies on insider trading have adopted various event windows. Antoniadis et al. (2015) used (- 20, +20) as the event windows for their research. Nanda and Barai (2020) has adopted 0th day to $+20^{th}$ day as the study event window. Aktas et al. (2007) used both longer and shorter event windows to investigate the abnormal return more precisely in the Amsterdam Euronext Stock Exchange. And Perera and Nimal (2017) who have done their research on listed companies at CSE, used an event window from -20th day to $+20^{th}$ day. This study decides to use the event window (-20, +20) to track the degree of change in share prices due to insider trading. It helps to find whether there is any significant change in the share return prior to the announcement day as well.

Even though other empirical studies used longer estimation period Nanda and Barai (2020) state that the estimation period is kept short from -90th day to -10th day. Also, Perera and Nimal (2017) state that a fixed event window of 41 days prior to the event window is used as the estimation window to estimate the beta of securities. Considering these studies, it is decided to use -61st day to -20th day as the estimation window. This study only considered the trades where there were no other insider trades during the estimation and event window.

Figure 1: Event Study Methodology
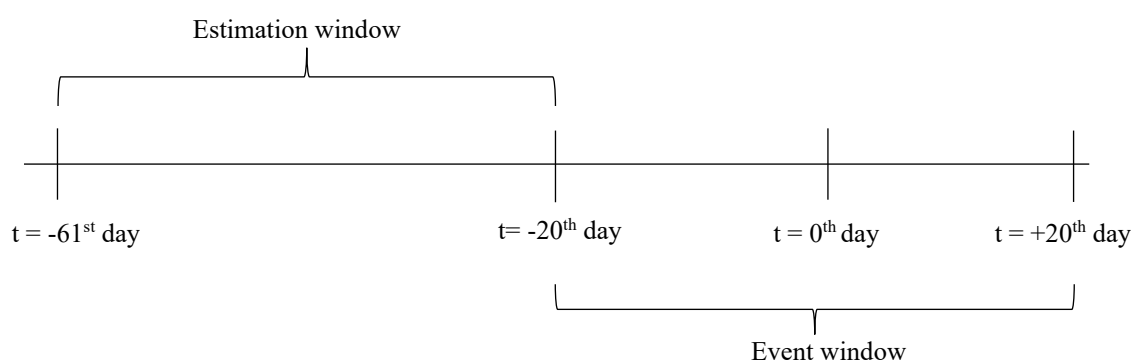
The empirical studies calculated the profitability of directors' trading to measure the impact on share prices. Perera and Nimal (2017) and Aktas et al. (2007) computed daily abnormal returns of directors' trading to measure the degree of change in market shares. To measure the abnormal return, there are several choices available in the empirical studies.

Following Antoniadis et al. (2015) parameters of α_i and β_i of expected return are estimated by applying the values of R_{it} and R_{mt} in the market model using Ordinary least square (OLS) regression.

The following is the equation used to find the expected return:

$$R_{it} = \alpha_i + \beta_i R_{mt} + \mu_{it} \tag{1}$$

μ_{it} = independence disturbance term at time t

Bajo and Petracci (2004) used Market Adjusted Return Model (MAR) while Perera and Nimal (2017), Nanda and Barai (2020), and Antoniadis et al. (2015) used Risk-Adjusted Return Model (RAR). This study decided to use RAR model to compute the directors' abnormal return which is a widely used and more appropriate model. The following is the abnormal return under RAR model:

$$AR_{it} = [R_{it} - (\alpha_i + \beta_i R_{mt})] \tag{2}$$

AR_{it} = Abnormal return for security i at day t
R_{it} = Actual return for security i at day t
R_{mt} = Actual return for the market portfolio at day t
α_i and β_i are the intercept and slope respectively.

In the next step, following Perera and Nimal (2017) and Nanda and Barai (2020) research work, the Average Abnormal Return (AAR) and Cumulative Average Abnormal Return (CAAR) across the sample is calculated for each day from -20th day to +20th day.

$$AAR_t = \frac{1}{N}\sum_{i=1}^{N} AR_{it} \tag{3}$$

AAR = Average Abnormal Return at day t
N = Total number of events

$$CAAR_{(t_1,t_2)} = \sum_{t=t_1}^{t_2} AAR_t \tag{4}$$

$CAAR_{(t_1,t_2)}$ = Cumulative Average Abnormal Return from t_1 to t_2

To test the significance of the statistics, t-statistic for AAR is calculated using the following equation.

$$t - stat = \frac{AAR_t}{\sigma(AAR_t)} \tag{5}$$

$\sigma(Excess\ AAR_t)$ = Standard deviation of AAR across time.

The t-statistic for CAAR is calculated using the following equation.

$$t - stat = \frac{CAAR_{(t_1,t_2)}}{[\sigma^2(t_1,t_2)]^{\frac{1}{2}}} \qquad (6)$$

ANALYSIS AND DISCUSSION

Following the event study methodology explained in the previous section, AR, AAR, and CAAR were calculated for all selected 97 data points. After that, the statistical significance of these values was estimated with the parametric test. According to the parametric test, the coefficient of t is calculated to determine the statistical significance of these values.

Hypothesis 01: The insider (directors) trading impacts the share returns at CSE.
Cumulative Average Abnormal Return (CAAR) is used to study whether insider (directors) trading impacts the share return at CSE. CAAR is calculated using equation (4), and the t-statistic of the CAAR is calculated using equation (6).

Table 2: CAAR and its t-values of insider transactions

	CAAR	*t*-**value**
All transaction	0.042463	2.008078
Purchases	0.045139	2.212902
Sales	0.039788	1.014674

Source: Author Compiled

After finding the CAAR, the positive abnormal share return is identified around all insider transactions. Likewise, positive CAAR is observed for all the insiders' purchases and sales. This positive CAAR indicates that the actual share return is greater than expected after all insider transactions. So, by mimicking insider dealings, an outsider can earn a positive abnormal return. Irrespective of whether the insiders are increasing or decreasing their stake in the listed company, abnormal return is observed over the event window of the study. Overall, as the abnormal return is identified around insidertransactions, the insider (directors) trading impacts the share returns at CSE as hypothesized in Hypothesis 01.

Average abnormal return and Cumulative average abnormal return and their respective *t*-statistics are calculated for insiders' purchases and sales separately and provided in Appendices 01 and 02, respectively. The AAR and CAAR of insider purchases and sales are presented graphically in Figure 2 and Figure 3 respectively. These graphs help to demonstrate whether

the market has responded to the directors' purchases and sales early, immediately, or slowly.

Hypothesis 02: The abnormal return is positive for directors' purchases at CSE.

Hypothesis 03: The abnormal return of is negative for directors' sales at CSE.
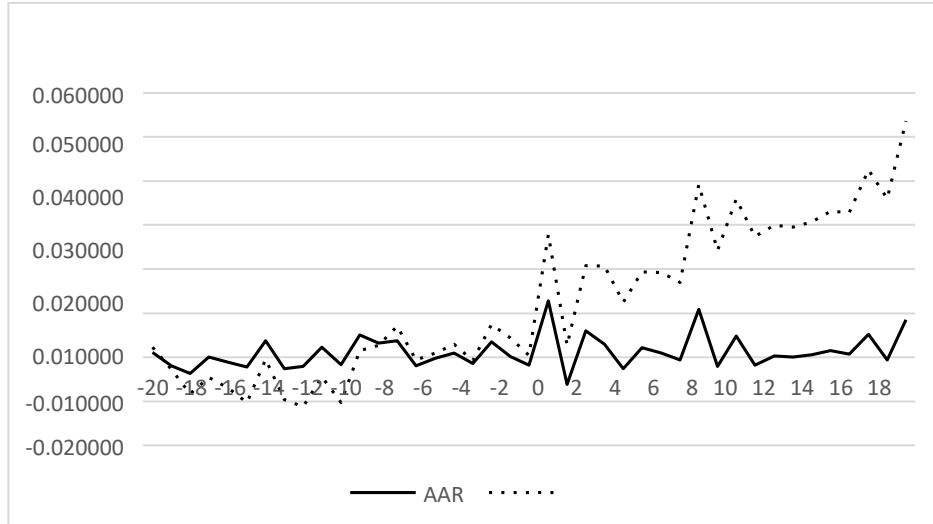
Source: Author Compiled

Figure 2: AAR and CAAR of insider purchases from -20th Day to +20th Day
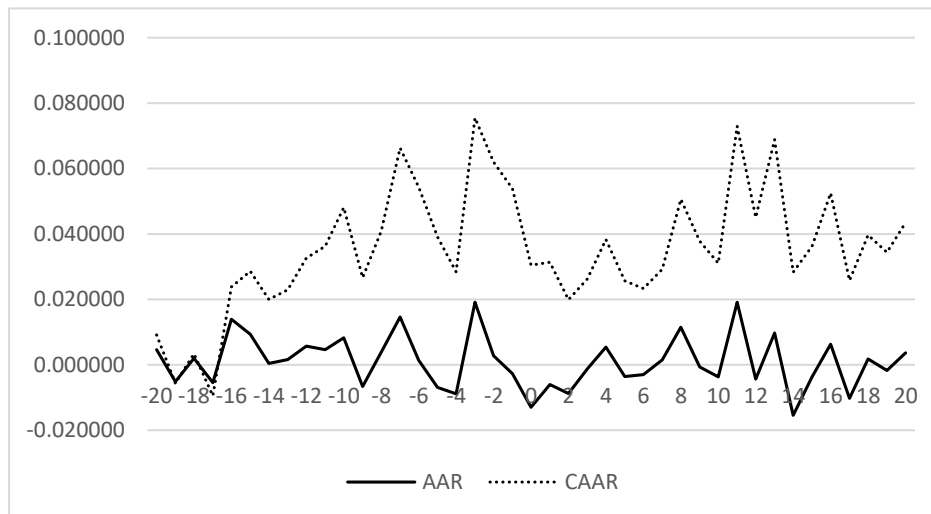
Source: Author Compiled

Figure 3: AAR and CAAR of insider sales from -20th Day to +20th Day

The findings show that the CAAR of insider purchases are positive and significant after the announcement date as hypothesized. Even though CAAR one day prior and after the announcement date of insider sales are negative and significant, the overall CAAR of insider sales over the event window is positive and not consistent with the hypothesis. These results are consistent with Hypothesis 02 that the abnormal return for insider purchases is positive at CSE. As the abnormal return of insider sales is positive, it is not consistent with Hypothesis 03.

Considering the speed of adjusting prices for the insider trading announcement, the CAARof insider purchases shows an increase the following day after the event announcement. As there is a sudden decrease in CAAR on the second day, there is no consistent positive pattern. According to the graphical presentation of CAAR of insider purchases, even though there is no consistent trend line, it shows a long-term positive pattern over the event window. In consideration of Figure 3, the CAAR of insider sales shows a slight decrease three days before the event day and one day after the event day. Going forward, it follows a sideline trend over the event window.

To consider the results of this study more precisely, CAAR is calculated for different event windows from -20 to +20, and its respective *t*-values are also calculated to determine the significance of these values. CAAR and its *t*-values of insider purchases and sales over different event windows are presented in Table 3 and Table 4, respectively.

Table 3: Insider purchases

Event window	Number of days	CAAR	*t*-value
W1 = (-20, -1)	20	0.004183	0.293592
W2 = (-10, -1)	10	0.011009	1.092849
W3 = (-1, 0)	2	-0.001730	-0.383983
W4 = (0, 1)	2	0.010895	2.418419 **
W5 = (-1, 1)	3	0.011062	2.004900 **
W6 = (1, 10)	10	0.024024	2.384789 **
W7 = (1, 20)	20	0.042853	3.007951 ***
W8 = (-20, 20)	41	0.045139	2.212902 **

 * 0.1 significance level, ** 0.05 significance level, *** 0.01 significance level

Source: Author Compiled

Table 3 presents CAAR of insider purchases and their *t*-values for different event windows. CAAR is positive and significant for insider purchases for the event windows (0, 1), (1, 10) and (1, 20) after the event day. It is interesting to note that the CAAR is negative and not statistically significant for the event window (-1, 0). But CAAR is positive for the event windows (-20, -1) and (-10, -1) before the event day, but those values are not significant. According to this finding, although CAAR showed an early reaction to insider purchases, its

values are not statistically significant. The AAR of insider purchases is negative and not significant on the event day. Still, to the contrary, AAR is positive and significant in the 0.01 significance level on day 1 after the event day (Appendix 01).

Table 4: Insider sales

Event window	Number of days	CAAR	*t*-value
W1 = (-20, -1)	20	0.038879	1.419592
W2 = (-10, -1)	10	0.003632	0.187533
W3 = (-1, 0)	2	-0.019098	-2.205119 **
W4 = (0, 1)	2	-0.014824	-1.711683 *
W5 = (-1, 1)	3	-0.027857	-2.626273 ***
W6 = (1, 10)	10	0.016468	0.850391
W7 = (1, 20)	20	0.002389	0.087236
W8 = (-20, 20)	41	0.039788	1.014674

* 0.1 significance level, ** 0.05 significance level, *** 0.01 significance level

Source: Author Compiled

CAAR and its *t*-values of insider sales are presented for different event windows from day -20 to day +20. CAAR is negative and significant for insider sales for event windows (-1, 0), (0,1) and (-1,1). But CAAR is positive and not significant for the event windows (1, 10) and (1, 20). Also, CAAR is positive and not significant for event windows (-20, -1) and (-10, -1). The market showed only an immediate response of negative CAAR from day -1 before the event day to day +1 after the event day. Afterward, CAAR is positive but not statistically significant. AAR is negative and significant in the 0.05 significance level on the event day, and AAR remains negative and not significant for three days after the event day (Appendix 02). Also, as there are positive and negative AAR before the event day, AAR did not show any consistent early response to the insider sales.

DISCUSSION

The Efficient Capital Market Hypothesis, developed by Fama in 1970, is ultimately related to the abnormal values of stock characteristics following insider trading in most studies. According to Fama (1970), a market is said to be weak form efficient if it responds to all past data, and semi-strong efficient if it does so in response to all publicly available data. Markets with a strong form react to all information, both public and private. Prices instantly adjust to reflect newly accessible information in a semi-strong market. At the same time, if insiders earn

abnormal share returns, the strong efficient market hypothesis turns out false.

Considering the research by Perera and Nimal (2017), they concluded in their study that there is no consistency, which raises questions about the effectiveness of the CSE in terms of how quickly the information content of directors' trading activity reflects in the share price.

Also, Nanda and Barai (2020) observed an abnormal movement after insider trading and concluded that BSE does not hold the strong-form efficient market hypothesis. Even in the ATHEX, Antoniadis et al. (2015) observed that there is no evidence for the existence of strong or semi-strong market efficiency hypothesis for insider transactions.

According to Fama (1970) Stock price fluctuations must be realistic in size and occur virtually instantly in order to test a semi-strong market. Following the initial adjustment, semi-strong efficiency is degraded if consistent variation in either direction takes place. After an initial adjustment, a semi-strong efficient market shouldn't indicate that further volatility is essential because it should react to fresh information right away (Fama, 1970).

In this study, CAAR of insider purchases and sales showed immediate response with statistical significance around the event window. Considering the insider sales, it gives evidence to semi-strong market efficiency hypothesis since the CAAR in the event windows (-1, 0), (0, 1), and (-1, 1) are -0.019098, -0.014824, and -0.027857 respectively and these values are statistically significance. Since the CAAR prior to and after these event windows are positive and not significant, the semi-strong form market efficiency hypothesis does not weaken.

In consideration with the insider purchases, it shows a negative CAAR prior to the event day and right after the event day positive and statistically significant CAAR is observed. It supports the semi-strong form market efficiency hypothesis. But the positive CAAR continued throughout the event window of twenty-one days with statistically significant t- values. So, according to Fama (1970), the semi-strong form market efficiency for insider purchases at CSE weakened.

Information asymmetry is a discrepancy in the two negotiating parties' awareness of important facts and information. If the insider earns abnormal return after their transaction, the information asymmetry exists in the market. Bajo and Petracci (2004) stated in their study that insider transaction may exist for two reasons. Insiders may change their holdings if they believe that current stock prices are temporarily overvalued or undervalued (information asymmetry hypothesis) or they might exploit some privileged and materialistic information about the company. They back up the notion that an alteration in insider ownership has informational

value and sends a message to the market because of the information gap between insiders and private investors (Bajo & Petracci, 2004).

In this study, since Cumulative average abnormal return of insider purchases is positive and significant for the event windows (0, 1), (-1, 1), (1, 10), and (1, 20), there is evidence to the information asymmetry hypothesis in the market. The positive CAAR during the post announcement date might cause by two reasons: Insider might do their trading based on any undisclosed information which causes information asymmetry in the market, or it might be a bull market packed with active traders. In the time of event window (-1, 0), CAAR is negative for insider purchases. This negative CAAR prior to the announcementday supports the fact stated by Bacon and Roddenberry (2011) that the insiders are tend to "buy low."

The overall Cumulative average abnormal return for insider sales over the event window of (-20, 20) is positive which is contrary to some literature works. Since these positive abnormal returns for insider sales are confusing, this can be explained in four different ways. First, compared to buying, insider sales are more likely to be motivated by factors besides confidential information (Jeng et al., 2003). Second, when the market is controlledby the buy side, probably because of good press releases, insiders may sell stock. Bacon and Roddenberry (2011) support the fact in their research that insiders tend to "sell high". Insiders might have some aptitude for market timing. According to Bajo and Petracci (2004) insiders may have a better grasp of the true worth of the company. As the final reason, it's also possible that capturing information asymmetry through CAAR may not be the best approach (Aktas et al., 2008).

As this study is based on a frontier market, it does not completely comply with the already mentioned previous studies. In contrast to the studies by Perera and Nimal (2017), Bajo and Petracci (2004), Aktas et al. (2007) and Antoniadis et al. (2015) this study observed positive Cumulative average abnormal return for all insider transactions as well as for only insider purchases and only insider sales. This result completely complies with the research by Nanda and Barai (2020).

Unlike the research by Bajo and Petracci (2004) based on the Italian stock market, a strong market reaction is found with the statistical significance around the announcement day for insider purchases. Also, for the insider sales, negative Cumulative average abnormal return with statistical significance is observed only around the announcement day. This is followed by positive CAAR throughout the event window.

CONCLUSION AND IMPLICATIONS

This study observed positive Cumulative average abnormal return for all insider transactions as well as for only insider purchases and only insider sales. These results answered the question that the insider trading impacts share returns. Through this, the relationship between insider purchases/sales and share returnsis determined as positive.

The findings of this study show a semi-strong form of market efficiency to some extent. Considering the insider sales, CAAR is negative and significant only around the announcement day, but it is positive and not significant before Day -1 and after Day +1. This provides evidence that the market showed an immediate reaction and supports semi-strong efficient market hypothesis. Considering the insider purchase, CAAR is negative and not significant for Day -1, followed by positive and significant CAAR from Day 0 to Day +20. Even though it showed an immediate reaction, it continued throughout the event window. Considering the insider purchases, the semi-strong form of market efficiency weakened.

This study did not show any concrete evidence of information asymmetry in the Sri Lankan stock market. Even though impact of insider trading in share return is found, the positive CAAR for insider purchases and sales may not be necessarily because of information asymmetry in the market.

This study partially agrees with the research done by Perera and Nimal (2017) based on Colombo stock exchange, while it entirely agrees with the research by Nanda and Barai (2020) based on BSE. In the research by Bajo and Petracci (2004) based on the Italian stockmarket, they found no immediate market reaction around the announcement day. Unlike the Italian market, the data analysis of this study showed an immediate reaction to all the insider transactions. In contrast with the previous literature, the CAAR around the announcement day showed statistically significance which added value to the findings of this study.

The study indicates that an outside investor can earn abnormal return by mimicking the insider purchases. As this study found out immediate reaction to the insider transactions in CSE, it will be helpful for the short-term outside traders in the market to earn an abnormal return. Also, this study creates an awareness on the topic insider trading and contributes to the literatures because this is a rare kind of study to be found in a frontier market like Sri Lanka.

Further, there are several gaps in the existing research that warrant further exploration, especially in the context of Sri Lanka. Studies based on CSE mostly generalize the findings across various sectors. There is a potential gap in understanding whether the impact of insider

trading on share returns varies significantly among different sectors in the Sri Lankan market. Subsequent future researchers may choose to focus their efforts on individual sectors, scrutinizing whether the impact of insider trading on share returns differs significantly across various sectors. Also, it is suggested to widen the event window and consider weekly or monthly returns to capture the market reaction more precisely. While this study is confined to examining share returns, there is room for expansion in future research to encompass additional stock characteristics such as share price and share volume. This broader approach would contribute to a more holistic understanding of the dynamics and implications of insider trading on various dimensions of stock behavior.

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APPENDICES

Appendix 01: AAR and CAAR and its *t*-values of insider purchases for the event window

Event window	AAR	*t*-values	CAAR	*t*-values
-20	0.001110	0.348494	0.001110	0.348494
-19	-0.001947	-0.611113	-0.000837	-0.185700
-18	-0.003732	-1.171497	-0.004569	-0.827987
-17	-0.000029	-0.008964	-0.004597	-0.721540
-16	-0.001201	-0.376916	-0.005798	-0.813927
-15	-0.002257	-0.708342	-0.008054	-1.032190
-14	0.003778	1.186027	-0.004276	-0.507346
-13	-0.002696	-0.846178	-0.006972	-0.773748
-12	-0.002142	-0.672403	-0.009114	-0.953631
-11	0.002287	0.717986	-0.006827	-0.677647
-10	-0.001732	-0.543803	-0.008559	-0.810074
-9	0.004984	1.564461	-0.003575	-0.323965
-8	0.003146	0.987633	-0.000429	-0.037336
-7	0.003708	1.163935	0.003279	0.275097
-6	-0.001933	-0.606821	0.001346	0.109088
-5	-0.000204	-0.064088	0.001142	0.089602
-4	0.000916	0.287636	0.002058	0.156689
-3	-0.001434	-0.450116	0.000624	0.046181
-2	0.003392	1.064629	0.004016	0.289192
-1	0.000167	0.052427	0.004183	0.293592
0	-0.001897	-0.595462	0.002286	0.156576
1	0.012792	4.015623***	0.015078	1.009110
2	-0.006183	-1.941041*	0.008895	0.582194
3	0.005929	1.861293*	0.014824	0.949871
4	0.002920	0.916609	0.017744	1.114001
5	-0.002660	-0.834967	0.015084	0.928618
6	0.002149	0.674740	0.017234	1.041113
7	0.000997	0.312929	0.018230	1.081490
8	-0.000659	-0.206996	0.017571	1.024242

9	0.010821	3.396891***	0.028392	1.627211
10	-0.002083	-0.653716	0.026310	1.483340
11	0.004763	1.495172	0.031073	1.724291*
12	-0.001823	-0.572260	0.029250	1.598346
13	0.000318	0.099941	0.029568	1.591805
14	0.000003	0.001089	0.029572	1.569085
15	0.000586	0.183887	0.030158	1.577786
16	0.001461	0.458739	0.031619	1.631735
17	0.000616	0.193327	0.032235	1.641483
18	0.005138	1.612889	0.037373	1.878571*
19	-0.000702	-0.220346	0.036671	1.820101*
20	0.008468	2.658161***	0.045139	2.212902**

* 0.1 significance level, ** 0.05 significance level, *** 0.01 significance level

Appendix 02: AAR and CAAR and its *t*-values of insider sales for the event window

Event window	AAR	*t*-values	CAAR	*t*-values
-20	0.004585	0.748704	0.004585	0.748704
-19	-0.005135	-0.838424	-0.000549	-0.063441
-18	0.001945	0.317560	0.001395	0.131544
-17	-0.005440	-0.888315	-0.004045	-0.330237
-16	0.013909	2.271282**	0.009865	0.720375
-15	0.009369	1.529835	0.019233	1.282162
-14	0.000404	0.066040	0.019638	1.212012
-13	0.001625	0.265428	0.021263	1.227576
-12	0.005661	0.924395	0.026924	1.465502
-11	0.004642	0.758037	0.031566	1.630009
-10	0.008266	1.349736	0.039832	1.961114**
-9	-0.006586	-1.075388	0.033246	1.567186
-8	0.003821	0.623889	0.037067	1.678739*
-7	0.014614	2.386319**	0.051681	2.255444**
-6	0.001352	0.220718	0.053033	2.235955**
-5	-0.006957	-1.135973	0.046076	1.880961
-4	-0.008832	-1.442180	0.037244	1.475020

-3	0.019133	3.124336***	0.056377	2.169875**
-2	0.002796	0.456612	0.059174	2.216755**
-1	-0.002677	-0.437150	0.056497	2.062876**
0	-0.013033	-2.128152**	0.043464	1.548760
1	-0.006065	-0.990357	0.037399	1.302007
2	-0.008759	-1.430329	0.028640	0.975144
3	-0.001210	-0.197548	0.027430	0.914288
4	0.005442	0.888620	0.032872	1.073539
5	-0.003608	-0.589099	0.029264	0.937160
6	-0.002979	-0.486511	0.026285	0.826012
7	0.001457	0.237976	0.027742	0.856101
8	0.011455	1.870452*	0.039197	1.188546
9	-0.000704	-0.114884	0.038493	1.147594
10	-0.003703	-0.604748	0.034790	1.020316
11	0.019078	3.115245***	0.053867	1.554950
12	-0.004403	-0.718984	0.049464	1.406050
13	0.009685	1.581539	0.059150	1.656450*
14	-0.015440	-2.521309**	0.043709	1.206436
15	-0.003734	-0.609699	0.039975	1.087946
16	0.006276	1.024890	0.046252	1.241634
17	-0.010233	-1.670934*	0.036019	0.954126
18	0.001831	0.298996	0.037850	0.989692
19	-0.001718	-0.280574	0.036132	0.932880
20	0.003656	0.597036	0.039788	1.014674

* 0.1 significance level, ** 0.05 significance level, *** 0.01 significance level

The Impact of Website Quality on Purchase Intention in the Sri Lankan E-Commerce Context: The Moderating Effect of Perceived Risk and Perceived Value

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ABSTRACT

Driven by supportive technologies and global circumstances, the e-commerce market is uninterruptedly growing and revolutionizing the way modern consumers shop. Website Quality stands out as a crucial subject in e-commerce since the website is the place from which the customers get their first impression. This impression about the Website Quality is said to eventually influence customers' Purchase Intention. Especially in today's hyper-competitive e-commerce environment, the performance of e-commerce businesses deteriorates when they fail to provide adequate importance to Website Quality as a means of determining the Purchase Intention of customers. Hence, understanding the impact of Website Quality on Purchase Intention becomes critical. Although Website Quality in different contexts was examined, the impact of Website Quality on Purchase Intention was not studied with Perceived Risk and Perceived Values as moderators. Hence, the purpose of this study was to develop a conceptual model to examine the impact of Website Quality on Purchase Intention and to investigate the moderating effect of Perceived Risk and Perceived Value on this relationship, in the Sri Lankan e-commerce context. A deductive quantitative approach was used in this study. The conceptual model was tested using partial least squares-structural equation modeling with data collected through an online questionnaire from 198 'Daraz' website users, employing the convenience sampling method. According to the findings, Information Quality, System Quality and Service Quality had a significant positive effect on Purchase Intention. Notably, Service Quality had the highest effect on Purchase Intention. However, the moderating effect of Perceived Risk and Perceived Value were not supported. This study contributed to strengthening the existing knowledge on the impact of Website Quality on Purchase Intention in the Sri Lankan e-commerce context, and the findings could be more important to developing countries. Further, the findings suggested online retailing managers to provide excellent customer service and to pay greater attention to the technical aspects of the website.

Keywords: Website Quality, Purchase Intention, E-commerce, Perceived Risk, Perceived Value

INTRODUCTION

The introduction of the Internet paved the way for a revolutionary change in the buying and selling of goods and services, popularly known as e-commerce. With the expeditious growth of e-commerce, both businesses and academics are interested in finding the factors that drive the Purchase Intention of customers in the e-commerce context. Website Quality, which consists of Information Quality, System Quality and Service Quality, is a major antecedent that has a direct positive impact on Purchase Intention, in developed as well as developing countries (Khalil, Umapathy, Goel & Reddivari, 2019; Kwaku & Antwi, 2021). The success of e-commerce websites is highly dependent on Website Quality (Chen & Cheng, 2009). Hence, e-commerce businesses must necessarily focus more on improving Website Quality features to boost customer retention and differentiate themselves from competitors (Khalil et al., 2019).

Consumers go through certain risks when they purchase online (financial risk, product risk, security risk, time risk, social risk and psychological risk). Some customers may fear the payment system, some may fear about product failure and some may fear about non-delivery (Khan, Baig, Umair, Ashraf & Noman, 2021). Such fears and risks have a greater potential to negatively affect purchases via e-commerce sites (Ariffin, Mohan & Goh, 2018).

Perceived value is a reliable predictor of consumer purchase behavioral intentions (Pham et al., 2018). Perceived Value of customers differs according to their heterogenous backgrounds in terms of age, gender, prior knowledge, cognitive styles and shopping motives (Fang, Wen, George & Prybutok, 2016). A combination of various aspects of websites including the design of the page, the graphics, the color palette, ease of use, navigation, updated information and security/privacy develops an emotional impact on the customers, contributing to increased Perceived Value that eventually gets mirrored in customer decision making (Alhider, 2018). Customers relate the nature and condition of the e-commerce website, with the products and services that the site offers. Although Perceived Value associates with Website Quality and Purchase Intention, the moderating effect of Perceived Value is underexplored.

The evolution of e-commerce in Sri Lanka dates back to early 2000 with the launch of pure play platforms such as eChannelling.com and kapruka.lk. Since then, brick-and-mortar stores too started to have online presence (Daily FT, 2013). Jayasingha and Sumanasiri (2022) revealed that e-commerce adoption has become a big trend among Sri Lankan consumers, especially the young generation. Since Sri Lankan consumers are more concerned about the

features of the seller's website, e-commerce businesses operating in Sri Lanka are paying more attention to the website's ease of use, attractiveness, layout, simple transactions, and overall Website Quality (Deyalage & Kulathunga, 2019).

Since the inception of e-commerce, scholars have studied the role of Website Quality on e-commerce success. Most of the studies adopted the Updated D&M IS Success Model (DeLone & McLean, 2003) including the three dimensions namely, Information Quality, System Quality and Service Quality (Hsieh & Tsao, 2014; Ihsan, Li & Alexis, 2020). Most of the studies have examined the effect of Website Quality on Purchase Intention (Bebber, Milan, De Toni, Eberle & Slongo, 2017; Oni, Sentanu, Valentinus & Manaf, 2020).

However, a comprehensive review of existing literature revealed that there is a critical need to study the effect of moderators on the relationship between Website Quality and Purchase Intention of customers, as it remains an under-researched area. Only a few studies have explored the moderating effect of Perceived Risk on the relationship between Website Quality and Purchase Intention (Ali & Aziz, 2022; Khalil et al., 2019) and the moderating effect of Perceived Value remains uninvestigated, despite the importance of Perceived Value in positively influencing online Purchase Intention (Mantik, Gaberamos & Pasaribu, 2022; Pham, Tran, Misra, Maskeli & Damaševičius, 2018). Further, in the Sri Lankan e-commerce context, still there is a lack of comprehensive research on Website Quality and Purchase Intention.

Therefore, the purpose of this study was to fill the gap in the existing literature, specially in the Sri Lankan context to a certain extent by addressing the following research questions:

- o What is the impact of Website Quality on Purchase Intention in e-commerce?
- o What is the moderating effect of Perceived Risk and Perceived Value on the relationship of Website Quality and Purchase Intention in e-commerce?

The current study added new knowledge to fill the gap in e-commerce literature to a certain extent through proposing an unprecedented theoretical model, by means of introducing Perceived Value as a moderator on the relationship of Website Quality and Purchase Intention in the e-commerce context. This study could mark the beginning of an interesting discussion in the Sri Lankan e-commerce context, on whether the Website Quality dimensions have a relationship with Purchase Intention.

LITERATURE REVIEW

Theories Applied in Studying Website Quality in the E-commerce Context

Updated D&M IS Success Model: In a period before the giant evolution of e-commerce systems, quality was considered as two-fold comprised of only Information Quality and System Quality in the D&M IS Success Model developed by W.H. DeLone and E.R. McLean (DeLone & McLean, 1992). However, over the years, especially with the augmented use of e-commerce, researchers questioned the validity of the above model at the present context, and several articles were published to challenge, critique or extend the D&M IS Success Model. Hence, understanding the need for model refinement, DeLone and McLean introduced the "Updated D&M IS Success Model" in which they recommended Service Quality as the third quality dimension in measuring e-commerce success (DeLone & McLean, 2003).

A good quality website has the power to induce Purchase Intention by motivating the customers to buy extra goods in addition to what they wanted and helps them to remember the website in future occasions, or recommend it to others (Ihsan et al., 2020). Kwaku and Antwi (2021) also affirmed that Information Quality, System Quality and Service Quality positively influence Purchase Intention. The findings of Khalil et al. (2019) indicated that Information Quality and Service Quality positively influence Initial Purchase Intention and Continued Purchase Intention, but unexpectedly System Quality did not have any direct influence on Initial or Continued Purchase Intention. However, according to the findings of Ghazali, Shahril, Norzeri and Rosle (2021), customers place a higher value on the System Quality of the website than the Information Quality it offers. Kuan, Bock and Vathanophas (2008) further affirmed that System Quality triggers Purchase Intention.

These inconsistencies in research findings about e-commerce Website Quality show the need for further empirical research, especially concerning developing countries (Kwaku & Antwi, 2021). On the other hand, as most of the previous research frameworks for e-commerce were derived from the Western or developed countries, the findings may not be appropriate to be generalized in developing countries. Developing countries are entirely different from developed countries in terms of their needs and culture (Kumar & Lata, 2021). Therefore, the assumptions need to be tested and verified in the context of emerging economies.

Stimulus-Organism-Response Model (S-O-R model): S-O-R model was established by Mehrabian and Russell (1974) and comprises three components: a stimulus, an organism and a response. Aggarwal and Rahul (2017) proposed Perceived Information Quality as one of the major constructs of Website Quality in a shopping website that leads to Purchase Intention. Perceived Information Quality acted as a stimulus (S) resulting in customers' Trust and Satisfaction (O), which in turn led to Purchase Intention (R) of Indian e-commerce customers. The findings showed a close association of Perceived Information Quality, Trust, Satisfaction and Purchase Intention. Further, Kim, Yang and Kim (2013) investigated Reputation and Website Quality as internal and external stimuli respectively; Emotion and Perceived Risk as emotional and cognitive reactions; and Purchase Intention as the behavioral response to the stimuli under two different cultures. The findings showed that while the overall mechanism underpinning decision-making is comparable between the two cultures, there are differences in the relative weighting of the variables influencing customers' cognitive and emotional responses as well as their intention to make an online purchase. Further, the findings of Kühn and Petzer (2018) also proved the importance of Website Design in terms of Visual Appeal and Perceived Usability in affecting Purchase Intention via website Trust and Flow.

Although the S-O-R framework helps to better understand how Website Quality persuades Purchase Intention, it constantly studies the relationship of Website Quality and Purchase Intention with the presence of mediators. Given that increasing intention to make a purchase is the primary objective of Website Quality improvement (Kuan et al., 2008), and the topmost challenge of every online retailer (Hsu, Chang & Chen, 2011), it is important to investigate the direct impact of Website Quality characteristics on Purchase Intention.

Hence, the current study adopted the Updated D&M IS Success Model to evaluate the direct impact of the overall quality of the e-commerce website on Purchase Intention, with the help of three quality dimensions.

Empirical Findings

Website Quality has been recognized as a critical factor to drive e-commerce success. Numerous studies have been devoted to studying the impact of Website Quality dimensions and Purchase Intention, which is the eventual goal of improving Website Quality. Further, research was conducted to examine the relationship between Website Quality and Purchase Intention with the presence of a mediator such as Customer Satisfaction (Bai, Law & Wen,

2008), Perceived Risk (Oni et al., 2020) and Trust (Qalati, Vela, Li, Dakhan, Thuy, & Merani, 2021). Some studies have explored the direct relationship between Website Quality dimensions and Purchase Intention (Bebber et al., 2017; Oni et al., 2020), whereas some have explored the same after categorizing Purchase Intention as Initial Purchase Intention and Continued Purchase Intention (Khalil et al., 2019; Kuan et al., 2008).

Website Quality: Assessment of Website Quality is subjective, however, Website Quality can be broadly identified as the evaluation of the website user on the general performance of the website against his/her needs (Kwaku & Antwi, 2021). From the e-commerce customer's point of view, Website Quality can be addressed in terms of the above three fundamental dimensions, namely Information Quality, System Quality and Service Quality (Hsu, Chang & Chen, 2011). A well-organized information content enhances the Purchase Intention of customers since the customers make judgments based on the given information (Athapaththu & Kulathunga, 2018). E-commerce service providers must ensure to provide clear information, so that their customers who are browsing the website, are free from doubts regarding product features, delivery information, goods return policy etc. (Bebber et al., 2017). Sellers should also update their websites constantly with accurate and useful information to increase Customer Satisfaction and Purchase Intention (Ihsan et al., 2020). When the customers find good information on the website such as a variety of products, offers etc., their feeling of Purchase Intention and level of interest increase (Jauhari, Kusumawati & Nuralam, 2019). Interestingly, the quality of information aids in creating uniqueness between the own e-commerce website and other competitive websites, even if the latter deliver similar products (Ghazali et al., 2021).

In comparison to traditional Information Systems, System Quality is extremely important to e-commerce systems, since the system users are now customers rather than employees. Thus, an unsatisfactory level of System Quality deters customers from using a particular e-commerce site (DeLone & McLean, 2004). The findings of Ghazali et al. (2021) showed that customers give more prominence to the operational characteristics of the website than the quality of information provided by the website. Kuan et al. (2008) suggested that online retailers should increase System Quality to increase customer conversion, as the System Quality triggers the visitor to make a purchase. In terms of System Quality, Hsieh and Tsao (2014) had a different viewpoint where they argued that although System Quality plays an important role in the e-commerce industry, the gradual maturity of e-commerce has made System Quality as a basic, industry-standard attribute of most e-commerce websites. Therefore, they believed that System

Quality no longer serves as a point of differentiation to get a competitive advantage, but rather just the point of parity between websites.

In the e-commerce environment, Service Quality is a significant factor as there is no face-to-face interaction between the seller and the buyer (Kwaku & Antwi, 2021). Website owners are suggested to enhance Service Quality to satisfy customers and naturally earn loyal customers, to build long-term customer relationships (Chang, Wang & Yang, 2009). Hsu et al. (2011) argued that Service Quality is more powerful in influencing customers' decisions than Information Quality and System Quality, because customers who experience excellent Service Quality seem to be more satisfied and are more likely to make a purchase.

Purchase Intention: Online Purchase Intention measures how strongly a customer intends to engage in a particular online purchase (Hsu et al., 2011). According to Hsu et al. (2011), the topmost challenge encountered by every online retailer is to convert the website visitor into a buyer, by persuading their willingness to purchase. Individuals who have higher Purchase Intention are more likely to purchase from the vendor in the future, because the greater the Purchase Intention, the greater the actual purchase level (Milan, Bebber, Toni & Eberle, 2015). Purchase intention is identified as a dimension of behavioral intention that can directly influence both revenue and profitability of the organization (Hsu et al., 2011). Hence, the literature supports the significance of Purchase Intention as a dependent variable.

Customer Satisfaction: According to Jauhari et al. (2019), when a product meets or exceeds a customer's expectations, it is said that the customer is satisfied. However, satisfaction is not only for products but also for services. For instance, an online store that offers a satisfactory level of information and service on their website will produce a feeling of Purchase Intention. A good quality website that is rich in Information, System and Service Quality gives pleasure for website visitors in accessing it (Jauhari et al., 2019). Researchers have widely explored Customer Satisfaction as a mediator in the relationship between Website Quality and Purchase Intention in the e-commerce setting. Website quality has a direct and positive impact on Customer Satisfaction, and Customer Satisfaction has a direct and positive impact on Purchase Intention. Although there is a relationship between Website Quality and Purchase Intention, Customer Satisfaction plays a key mediating role (Bai et al., 2008). In the Indonesian e-commerce context, Jauhari et al. concluded that the direct effect of Website Quality on Purchase Intention is a little less than the indirect effect of Website Quality on Purchase Intention through Customer Satisfaction.

Perceived Risk: With the growth of online transactions, Perceived Risk is not just limited to fraud and product quality risk as in over-the-counter transactions. Instead, it is multi-faceted with several types of risks such as financial risk, product risk, security risk, time risk, and psychological risk where all of which have proven significant relationships with online Purchase Intention (Ariffin et al., 2018). According to Khan et al. (2021), customers see varying types of risks in the online purchase journey. Some may worry that they would lose their money in the e-commerce website. Some may have product-related fears such as the product's appearance, quality, durability etc. as they cannot see, touch, or smell the products. Since transactions happen through online platforms, shoppers may also doubt the safety of the payment system, while some others may anticipate non-delivery risk too. Information Quality has the potential to directly influence Perceived Risk, thus online sellers can reduce Perceived Risk by increasing Information Quality (Milan et al., 2015). Further, the findings of Hsieh and Tsao (2014), showed that System Quality and Information Quality do not have significant negative effects on Perceived Risk, whereas Service Quality is the only element of Website Quality that is capable of reducing Perceived Risk. Although Perceived Risk is associated with both Website Quality and Purchase Intention in the e-commerce environment, only few researchers have studied the moderating effect of Perceived Risk on the relationship between Website Quality dimensions and Purchase Intention (Ali & Aziz, 2022; Khalil et al., 2019).

Perceived Value: Perceived Value is defined as 'a consumer's perception of the net benefits based on the perception of what is received and what is given (Chang et al., 2009, p.428). Chang et al. (2009) recommended that the customers' Perceived Value can be improved by higher product quality or lower price. With regards to Website Quality, Perceived Value is found to be highly affected by Service Quality (Fang et al., 2016). Further, Chang et al. brought an interesting finding regarding the moderating effect of Perceived Value between Customer Satisfaction and Customer Loyalty. They discovered that when websites provide acceptable Service Quality and higher Perceived Value, they will gain higher Customer Loyalty than when providing higher Service Quality while having low Perceived Value. As per the findings, they suggested that the website owners can reduce the costs spent on Service Quality and reflect that cost reduction on the product price, to raise Perceived Value.

Research Gap

Based on the literature reviewed, it is evident that various aspects of Website Quality have been studied in the e-commerce context. However, the review of existing literature provided that

very little is known about the effect of moderators on the relationship between Website Quality and Purchase Intention of customers (Ali & Aziz, 2022; Khalil et al., 2019). Despite the importance of Perceived Value in online Purchase Intention, there is still a lack of research that examines Perceived Value as a moderator between Website Quality and Purchase Intention relationship. Previous studies further urge to investigate the moderating effect of Perceived Risk and other related variables, in different contexts (Khalil et al., 2019), since customer attributes may differ between countries due to varying cultural and technological conditions (Kumar & Lata, 2021; Kwaku & Antwi, 2021).

Furthermore, in the Sri Lankan e-commerce context, only a handful of research was conducted in relation to Website Quality factors and the purchasing behaviour of customers (Athapaththu & Kulathunga, 2018; Deyalage & Kulathunga, 2019; Gamage & Jayatilake, 2019). The direct relationship between quality dimensions and Purchase Intention, and the moderating effects of Perceived Risk and Perceived Value on the relationship are not yet studied in the Sri Lankan e-commerce context.

Therefore, considering the current gaps in the literature, this study aimed to identify the impact of Website Quality on Purchase Intention with the moderating effect of Perceived Risk and Perceived Value, in the Sri Lankan e-commerce context.

METHODOLOGY

Conceptual Framework

The conceptual model of the study was developed to investigate the direct effect of Website Quality on Purchase Intention, and the moderating effect of Perceived Risk and Perceived Value on the relationship between Website Quality and Purchase Intention in the e-commerce context (See Figure 1). The three dimensions of Website Quality, namely, Information Quality, System Quality, and Service Quality were adopted from the Updated D&M IS Success Model of DeLone and McLean (2003). These three dimensions from the Updated D&M IS Success Model were selected for this study as they help to evaluate the overall quality of the e-commerce website, focusing on multiple aspects. About online shopping, Perceived Risk is identified as a common barrier that negatively affects Purchase Intention (Mcknight, Choudhury & Kacmar, 2002; Singh & Srivastava, 2018). However, concerning the role of Perceived Risk in e-commerce, only a few studies have investigated the moderating effect of Perceived Risk on the relationship of Website Quality and Purchase Intention (Ali & Aziz,

2022; Khalil et al., 2019). Similarly, Perceived Value also has a dominant role in affecting Purchase Intention in the e-commerce setting. Scholars have acknowledged that the better the customer's Perceived Value, the higher the Purchase Intention (Gaberamos & Pasaribu, 2022; Pham et al., 2018). Thus, the conceptual model was developed to study the direct relationship of the Website Quality dimensions and Purchase Intention, with the moderating effect of Perceived Risk and Perceived Value.
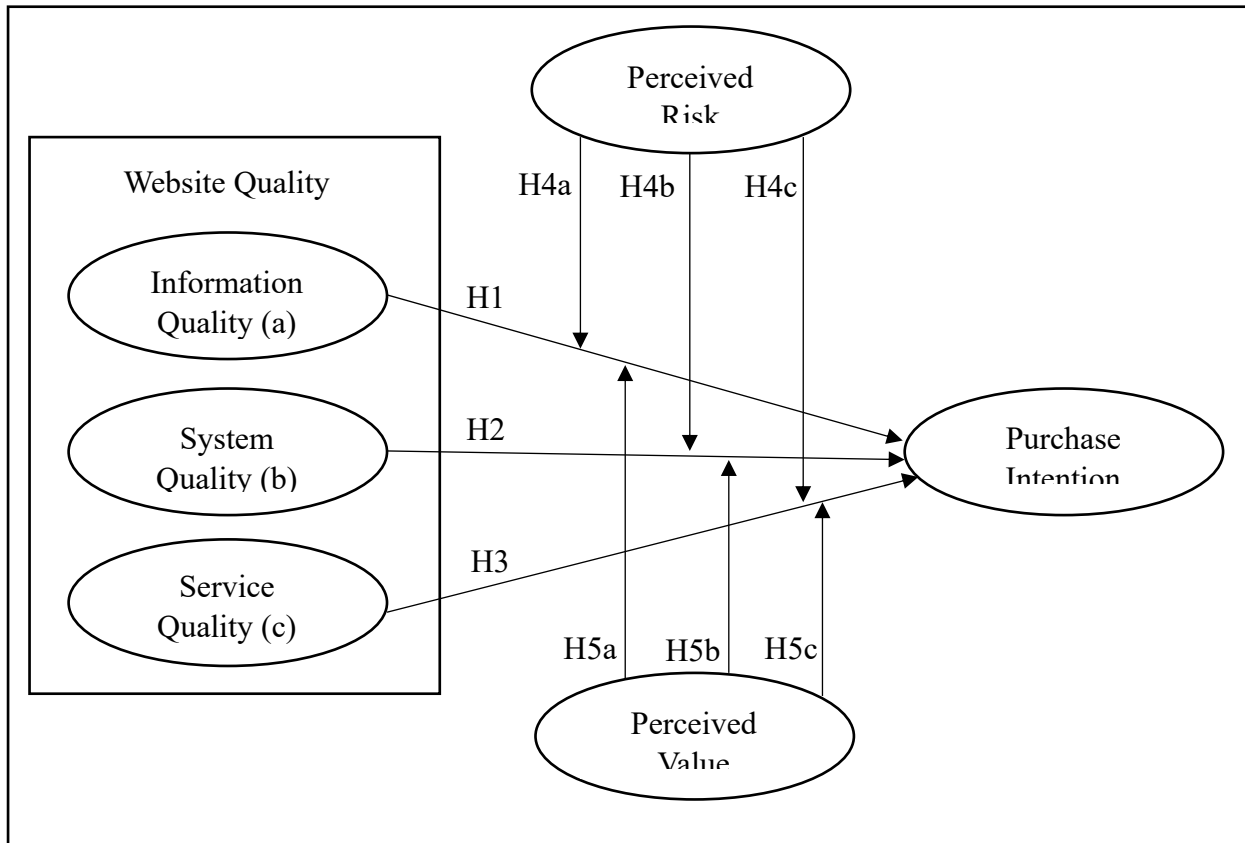
Figure 2: Conceptual Model

Hypotheses of the Study

This section provides justification for the nine hypotheses formulated for this study (see Figure 1).

Information Quality and Purchase Intention:

Information Quality refers to the quality of the content displayed on the website regarding its products and services (Kwaku & Antwi, 2021). New and dynamic personalization measures are important in measuring Information Quality, along with traditional measures such as relevance, accuracy, completeness, and understandability (DeLone & McLean, 2004). Purchase Intention is induced by an e-commerce website's interface, if there is a good display of content (Khalil et al., 2019). According to Bai et al. (2008), website content, including pictures enhances Information Quality and appears to be a strong predictor of online Purchase Intention. Information Quality must be continuously improved to attract and retain customers as well as to get a competitive advantage. More importantly, Information Quality influences Purchase Intention because customers tend to evaluate the quality of the products offered based on the information presented on the website (Milan et al., 2015). The findings of Ghazali et al. (2021) also supported the positive effect of Information Quality on Purchase Intention. Based on the above justification, Hypothesis 1 is proposed:

Hypothesis 1: Information Quality has a positive influence on Purchase Intention

System Quality and Purchase Intention:

System Quality is linked to the technical aspect of the website (Kuan et al., 2008) and it measures technical success (DeLone & McLean, 2003). According to DeLone and McLean (2004), System Quality comprises of important features such as availability, system usefulness, suitability, reliability, and response time. System Quality supports in attracting both new and experienced online customers, by making the website easy to use (Kumar & Lata, 2021). Confidence and trust of the customers on the e-commerce site is built upon the System Quality of the website. Customers would probably move to rival e-commerce sites if they were dissatisfied with the quality of the system (Kuan et al., 2008). Therefore, System Quality is an important aspect of the intention to purchase online. Based on the above justification, Hypothesis 2 is proposed:

Hypothesis 2: System Quality has a positive influence on Purchase Intention

Service Quality and Purchase Intention:

Service Quality measures the quality of the overall service provided by the online retailer in both pre and post-purchase (Chang et al., 2009). It mainly comprises of features such as quick responsiveness, assurance, empathy, following-up service and online support capabilities (DeLone & McLean, 2004). Particularly, as there is no face-to-face interaction in the e-commerce environment, customers give more importance to the level of customer service offered by the online seller, and thereby Service Quality has a promising effect on customers' purchasing decisions (Kwaku & Antwi, 2021). A satisfactory level of Service Quality drives customers towards a high degree of Purchase Intention (Gaberamos & Pasaribu, 2022). Further, the findings of some other previous studies also supported the direct positive effect of Service Quality on Purchase Intention (Khalil et al., 2019; Qalati et al., 2021). Based on the above justification, Hypothesis 3 is proposed:

Hypothesis 3: Service Quality has a positive influence on Purchase Intention

Moderating effect of Perceived Risk on Relationships between Website Quality and Purchase Intention:

Perceived risk refers to possible losses, both monetary and non-monetary, that the customers may perceive in online purchasing in comparison to offline purchasing (Singh & Srivastava, 2018). Kim and Lennon (2013) explained that a well-designed e-commerce website contribute in reducing Perceived Risk by providing a pleasant online experience. Further, they argue that a responsive and helpful customer service, sufficient product and security information, and assured privacy policy makes Perceived Risk less considerable for the customers. Also, Perceived Risk had a negative and direct impact on Purchase Intention, and it is identified as a common obstacle in online shopping (Mcknight et al., 2002; Singh & Srivastava, 2018). Although Website Quality induces Purchase Intention, the existence of risk may discourage the customers from making an online purchase (Kim & Lennon, 2013; Mcknight et al., 2002). As the customers are unaware of the product or Service Quality of the website, they would look for informational cues such as website reviews, before making the purchase decision. While looking for informational cues, if they notice any risk, they will quickly leave the website (Khalil et al., 2019). Based on the above justification, hypotheses 4a, 4b and 4c are proposed:

Hypothesis 4a, Hypothesis 4b, Hypothesis 4c: The relationship between Information Quality (a), System Quality (b), Service Quality (c) and Purchase Intention are weaker when Perceived Risk is high

Moderating effect of Perceived Value on Relationships between Website Quality and Purchase Intention:

Perceived Value is referred as the consumer's evaluation of the rewards he/she has received and the costs he/she has incurred (Chang et al., 2009). Customers tend to have a high degree of Purchase Intention when they enjoy a high degree of Perceived Value (Gaberamos & Pasaribu, 2022; Pham et al., 2018). Also, good quality information and a satisfactory level of service augment the value of a product/service in the minds of customers (Gaberamos & Pasaribu, 2022). According to Putri and Pujani (2019), Website Quality boosts the value perceived by customers in online purchases. Further, they detail that customers who derive higher Perceived Value through Information Quality, System Quality and Service Quality are more likely to continue using the website to buy products and also recommend to others. Based on the above justification, hypotheses 5a, 5b and 5c are proposed:

Hypothesis 5a, Hypothesis 5b, Hypothesis 5c: The relationship between Information Quality (a), System Quality (b), Service Quality (c) and Purchase Intention are stronger when Perceived Value is high

Research Method

Participants: This study focuses on the e-commerce customer population of Sri Lanka. The 'Daraz' website was selected for the study as it has been recognized as the most popular local online shopping site in Sri Lanka. 'Daraz' was ranked 1st among the most popular local online shopping sites in the year 2023, according to an all-island survey (Asia Pacific Institute of Digital Marketing (Pvt) Ltd & Department of Marketing Management, University of Kelaniya, 2023). While 'Daraz' is the most popular e-commerce website in Sri Lanka, 'Daraz' customers would be a true reflection of the e-commerce customers in Sri Lanka. Thus, the individuals who have used the 'Daraz' website for online shopping are taken as the sample of this study. A single website was considered to avoid the contradictory effects of various website sizes, brands and user familiarity rather than conducting a multi-website survey (Zhou, Lu & Wang, 2009). Zhou et al. (2009) and Jauhari et al. (2019) have followed a similar sample selection

approach when investigating Website Quality in e-commerce environment to avoid such consequences.

Data Collection: The survey questionnaire method was used in the study. Questionnaire was administered online to collect data. Questionnaire consisted of measurement items already validated in previous studies, to measure the constructs in the conceptual model. These measurement items were measured using a seven-point Likert scale ranging from 1 = "Strongly Disagree" to 7 = "Strongly Agree". Appendix 1 presents the measurement items used in the study. The questionnaire was distributed among participants after completing a pilot study.

The questionnaire was circulated in the following means: First, invitations to fill out the questionnaire were sent via WhatsApp to the undergraduate students of the University of Sri Jayewardenepura. E-commerce customers are considered to be younger and more highly educated than traditional customers, therefore students fit more to the e-commerce customer population (Mcknight et al., 2002). Second, an online questionnaire was circulated within a Colombo-based Business Process Outsourcing (BPO) company that has a large number of organizational members comprised of permanent employees and independent contractors who work online from different parts of the country. Respondents in both these categories were frequent users of the Internet in day-to-day life. Therefore, these two categories were selected with the intention to access many participants who probably have online shopping experience, given that the use of Internet increases the possibility of e-commerce adoption (Anooja, 2015). Also, Mark and Ganzach (2014) proposed that the findings drawn from a combination of diverse set of respondents can be better generalized to a broader population.

At the end of the data collection period, 227 total responses were collected. A screening question was used at the beginning of the questionnaire, i.e. "Have you used the 'Daraz' website for online shopping?", to identify the relevant participants for the study. 29 responses out of 227 total responses were removed as the respondents answered "No" to the screening question. Thus, 198 responses were qualified for the final data analysis, which is 87% of the total responses.

DATA ANALYSIS AND DISCUSSION

Descriptive Data Analysis: Data analysis for demographic data and descriptive statistics of the constructs were carried out using Statistical Package for Social Sciences (SPSS 29.0.1.0) software. The majority of the respondents were female representing 65.2% of the total valid responses. Nearly 75% of the respondents were residing in the districts of Western province. 70.2% of the respondents were in the age range of 20-24 years. 56.1% of the respondents belonged to the student category.

Descriptive data analysis for model constructs was performed to calculate the mean, standard deviation and skewness values of the constructs (See Table 1).

Table 9: Descriptive data analysis for model constructs

Construct	Mean	Standard Deviation	Skewness
Information Quality	4.893	1.045	-0.371
System Quality	5.338	1.067	-0.728
Service Quality	4.899	1.051	-0.583
Perceived Risk	3.738	1.241	0.318
Perceived Value	4.374	1.085	-0.695
Purchase Intention	4.732	1.278	-0.605

Path Model Analysis: This study used Partial Least Squares Structural Equation Modeling (PLS-SEM) to test the model. A PLS path model consists of two elements: Measurement model and Structural model. SmartPLS (v. 4.0.9.2) software was used for model testing in the current study.

Measurement Model Analysis: Measurement model analysis in PLS-SEM assessment was used to evaluate the reliability and validity of the measures of the construct (Hair, Hult, Ringle & Sarstedt, 2016). The measurement model was assessed in terms of indicator reliability, internal consistency reliability, convergent validity and discriminant validity. Indicator reliability was examined by observing the indicators' outer loadings. Item loadings that are above the threshold value of 0.7, suggest sufficient levels of indicator reliability (Hair et al., 2016). The initial results indicated the existence of indicators with outer loadings below 0.7. Therefore, two items (PR6, SYQ1) were removed from the model and the PLS algorithm was

again executed. The second execution resulted in outer loading values above 0.7 for all items, confirming the indicator reliability of the measurement model (See Table 2). Further, internal consistency reliability of the measurement model was evaluated using Cronbach's alpha and composite reliability (See Table 2). The rule of thumb for evaluating Cronbach's alpha and composite reliability values of reflective measurement models is, that the values should be higher than 0.7 (Hair et al., 2016). As shown in Table 2, all constructs showed Cronbach's alpha and composite reliability values above 0.7, confirming the internal consistency reliability of the measurement model. Furthermore, the convergent validity of the measurement model was measured using the Average Variance Extracted (AVE). A threshold AVE value of 0.5 or higher indicates that the construct explains more than half of the variance of its indicators (Hair et al., 2016). All constructs showed AVE values greater than 0.5. Thus, the convergent validity of all constructs was established (See Table 2).

Table 10: Item loadings, Cronbach's alpha, Composite Reliability and AVE

Construct	Items	Loadings	Cronbach's alpha (> 0.7)	Composite reliability (> 0.7)	AVE (> 0.5)
Information Quality	IQ1	0.737	0.903	0.925	0.674
	IQ2	0.839			
	IQ3	0.814			
	IQ4	0.806			
	IQ5	0.865			
	IQ6	0.858			
System Quality	SYQ2	0.851	0.900	0.923	0.668
	SYQ3	0.878			
	SYQ4	0.744			
	SYQ5	0.780			
	SYQ6	0.794			
	SYQ7	0.850			
Service Quality	SEQ1	0.787	0.876	0.906	0.618
	SEQ2	0.832			
	SEQ3	0.728			
	SEQ4	0.765			
	SEQ5	0.805			

	SEQ6	0.795			
Perceived Risk	PR1	0.806	0.898	0.922	0.702
	PR2	0.776			
	PR3	0.845			
	PR4	0.846			
	PR5	0.910			
Perceived Value	PV1	0.876	0.891	0.925	0.755
	PV2	0.896			
	PV3	0.893			
	PV4	0.807			
Purchase Intention	PI1	0.836	0.902	0.932	0.774
	PI2	0.915			
	PI3	0.896			
	PI4	0.871			

The discriminant validity of the measurement model was examined using cross-loadings and Fornell-Larcker criterion (Hair et al., 2016). As shown in Table 3, the loadings of all indicators exceeded the cross-loading values. Further, the square roots of the AVE values were compared to the correlations of latent variables using the Fornell-Larcker criterion (See Table 4). Hence, discriminant validity of the measurement model was established since loadings of all indicators have exceeded the cross-loading values, and Fornell-Larcker criterion is satisfied.

Table 11: Cross-loadings

	IQ	SYQ	SEQ	PR	PV	PI
IQ1	**0.737**	0.520	0.513	-0.015	0.436	0.390
IQ2	**0.839**	0.503	0.568	0.020	0.498	0.436
IQ3	**0.814**	0.441	0.537	-0.021	0.467	0.408
IQ4	**0.806**	0.524	0.612	-0.040	0.571	0.459
IQ5	**0.865**	0.587	0.663	-0.068	0.558	0.461
IQ6	**0.858**	0.612	0.626	-0.130	0.513	0.474
SYQ2	0.460	**0.851**	0.548	-0.080	0.359	0.403
SYQ3	0.515	**0.878**	0.585	-0.098	0.386	0.426
SYQ4	0.533	**0.744**	0.526	-0.057	0.430	0.472
SYQ5	0.602	**0.780**	0.642	-0.095	0.509	0.475
SYQ6	0.476	**0.794**	0.492	-0.104	0.334	0.418

SYQ7	0.570	**0.850**	0.636	-0.141	0.408	0.482
SEQ1	0.565	0.536	**0.787**	-0.133	0.533	0.478
SEQ2	0.600	0.605	**0.832**	-0.097	0.519	0.481
SEQ3	0.523	0.457	**0.728**	-0.088	0.496	0.376
SEQ4	0.535	0.532	**0.765**	-0.186	0.458	0.424
SEQ5	0.569	0.543	**0.805**	-0.055	0.510	0.474
SEQ6	0.586	0.630	**0.795**	-0.252	0.450	0.502
PR1	-0.002	-0.074	-0.120	**0.806**	0.003	-0.107
PR2	0.032	-0.045	-0.030	**0.776**	0.076	-0.073
PR3	-0.075	-0.159	-0.144	**0.845**	0.016	-0.167
PR4	-0.014	-0.039	-0.100	**0.846**	-0.004	-0.173
PR5	-0.097	-0.137	-0.242	**0.910**	-0.048	-0.219
PV1	0.560	0.540	0.582	0.006	**0.876**	0.531
PV2	0.533	0.427	0.547	0.013	**0.896**	0.499
PV3	0.594	0.477	0.570	-0.050	**0.893**	0.582
PV4	0.456	0.275	0.475	0.024	**0.807**	0.477
PI1	0.453	0.459	0.484	-0.176	0.462	**0.836**
PI2	0.474	0.507	0.523	-0.203	0.542	**0.915**
PI3	0.440	0.438	0.524	-0.131	0.550	**0.896**
PI4	0.513	0.528	0.521	-0.174	0.565	**0.871**

Table 12: Discriminant validity result using Fornell-Larcker criterion

	IQ	PR	PV	PI	SEQ	SYQ
IQ	**0.821**					
PR	-0.054	**0.838**				
PV	0.620	-0.004	**0.869**			
PI	0.535	-0.195	0.604	**0.880**		
SEQ	0.717	-0.174	0.628	0.584	**0.786**	
SYQ	0.649	-0.118	0.500	0.551	0.704	**0.817**

Structural Model Analysis: Hair et al. (2016) recommended to examine the structural model for collinearity, before performing other analyses. According to Hair et al., each predictor construct's VIF value should be lower than the threshold level of 5. As all the VIF values of the constructs were lower than 5, there were no collinearity issues found in the model. The structural model was assessed using coefficient of determination (R^2 value), path coefficients (β) and their corresponding t-values and p-values. Based on the R^2 value of Purchase Intention, 39.3% of its variance was explained by a change in its independent variables namely Information Quality, System Quality and Service Quality. To examine the hypothesized relationships between the constructs, PLS bootstrapping procedure was used to produce the path coefficients (See Table 5 and Table 6).

Table 13: Structural model results (direct effects)

	Hypothesis	Path coefficient (β)	t-value	p-value	Decision
1	Information Quality -> Purchase Intention	0.173	2.039	0.042*	Supported
2	System Quality -> Purchase Intention	0.228	2.280	0.023*	Supported
3	Service Quality -> Purchase Intention	0.229	2.690	0.007*	Supported

Significance at p<0.05

Table 14: Structural model results (moderating effects)

	Hypothesis	Path coefficient (β)	t-value	p-value	Decision
4a	Information Quality -> Purchase Intention *moderated by Perceived Risk*	-0.048	0.628	0.530	Not Supported
4b	System Quality -> Purchase Intention *moderated by Perceived Risk*	-0.036	0.308	0.758	Not Supported

4c	Service Quality -> Purchase Intention *moderated by Perceived Risk*	0.124	1.270	0.204	Not Supported
5a	Information Quality -> Purchase Intention *moderated by Perceived Value*	0.038	0.503	0.615	Not Supported
5b	System Quality -> Purchase Intention *moderated by Perceived Value*	0.071	0.706	0.480	Not Supported
5c	Service Quality -> Purchase Intention *moderated by Perceived Value*	-0.156	2.004	0.045	Not Supported

DISCUSSION OF FINDINGS

The purpose of this study was to explore the effect of Information Quality, System Quality and Service Quality on Purchase Intention as well as to assess the moderating effect of Perceived Risk and Perceived Value between Information Quality, System Quality and Service Quality and Purchase Intention in the Sri Lankan e-commerce context. Information Quality ($\beta = 0.173$, $p = 0.042$), System Quality ($\beta = 0.228$, $p = 0.023$) and Service Quality ($\beta = 0.229$, $p = 0.007$) had statistically significant positive effects on Purchase Intention (See Figure 2). Thus, Hypotheses 1, 2 and 3 were supported. Among the three quality dimensions, Service Quality was found to have the highest significant positive effect on Sri Lankan customers' Purchase Intention. This finding of positive effect was consistent with Bebber et al. (2017), Khalil et al. (2019), Oni et al. (2020) and Qalati et al. (2021). It also aligned with the argument of Hsu et al. (2011) where they argued that Service Quality is more powerful in influencing customers' decisions than Information Quality and System Quality. It implied that customers give more importance to the level of customer service offered by the online seller, as there is no face-to-face interaction in the e-commerce environment. Findings indicated that System Quality has a similar power as Service Quality with a significant positive effect on Purchase intention. This finding was confirmed by Kuan et al. (2008). System Quality is essential in converting the website's visitors to website's customers by enforcing confidence in the website. Further, the findings confirmed a significant positive effect of Information Quality on Purchase Intention in consistent with the findings of Ali and Aziz (2022), Khalil et al., Kuan et al. and Oni et al. The findings proved the influence of website content on e-commerce customers' Purchase

Intention. Overall, the study affirmed a significant positive effect of Information Quality, System Quality and Service Quality on Purchase Intention in the Sri Lankan e-commerce context.

Exploring the moderating role of Perceived Risk, Hypotheses 4a, 4b and 4c postulated that the relationship between Information Quality (a), System Quality (b), Service Quality (c) and Purchase Intention are weaker when Perceived Risk is high. However, due to the non-significance of the moderating effect between Information Quality, System Quality, Service Quality and Purchase Intention, Hypotheses 4a, 4b and 4c were not supported. The analysis did not reveal a statistically significant result for the negative moderating effect of Perceived Risk on Information Quality and Purchase Intention. This insignificant result aligned with the studies of Ali and Aziz (2022) and Khalil et al. (2019) where those studies also could not confirm the moderating effect. Contrast to Khalil et al. (2019), the negative moderating effect of Perceived Risk on System Quality and Purchase Intention was not supported in the current study. Further, contrary to Hypothesis 4c, the findings indicated a positive moderating effect of Perceived Risk on the relationship between Service Quality and Purchase Intention. This finding was similar to that of Khalil et al. (2019), although the two studies were conducted in

Figure 3: Path coefficients of the research model
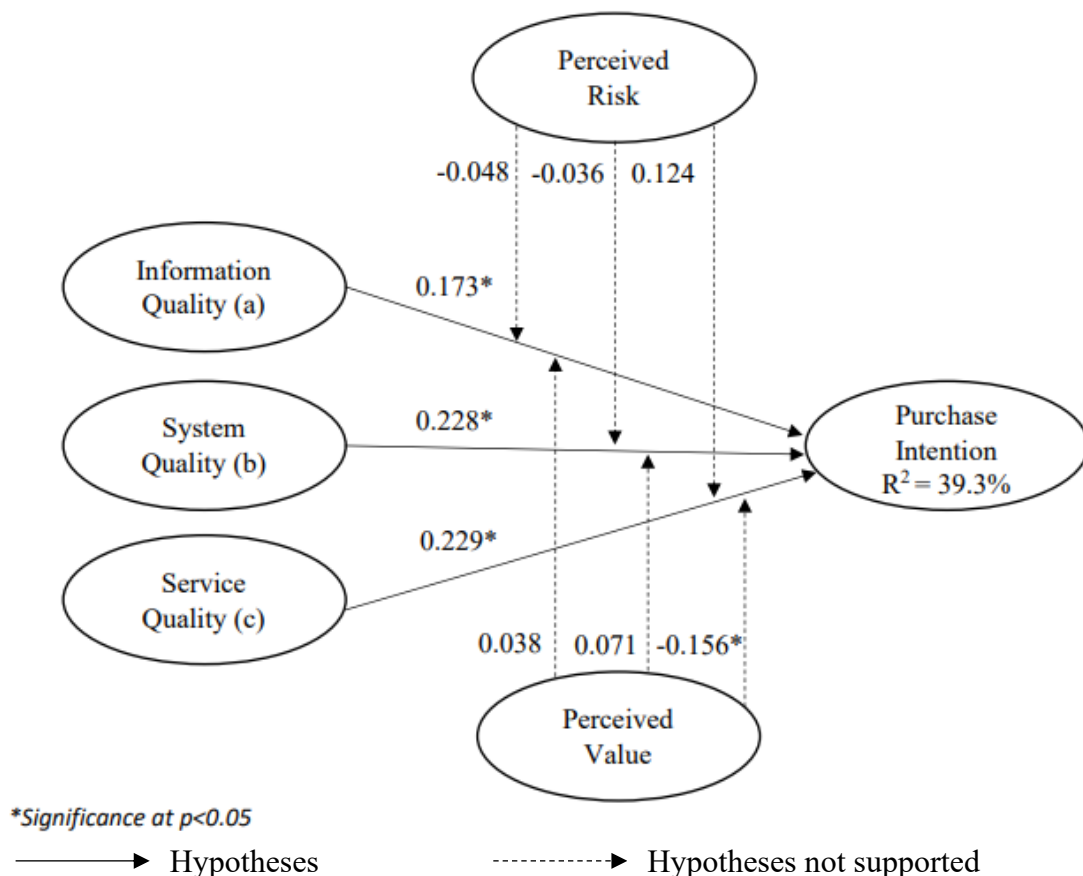
two different contexts, that is in a developed country and a developing country. Nonetheless, this positive moderating effect of Perceived Risk was not significant in the current study. This could be due to the fact that all study participants had experience in online purchasing, which may have caused a reduction in the perception of Perceived Risk (Bebber et al., 2017).

Hypotheses 5a, 5b and 5c postulated that the relationship between Information Quality (a), System Quality (b), Service Quality (c) and Purchase Intention are stronger when Perceived Value is high. However, due to the non-significance of the moderating effect between Information Quality, System Quality and Purchase Intention, 5a and 5b were not supported. Although 5c had significant result, it was not supported since the path coefficient is negative (β = -0.156, p = 0.045) i.e. the finding indicated that Perceived Value exerts a negative moderation effect on the relationship of Service quality and Purchase Intention. Although Perceived Value had a significant effect on the relationships of Information Quality and Purchase Intention, and System Quality and Purchase Intention similar to prior research (Fang et al., 2016; Gaberamos & Pasaribu, 2022), it did not reveal a significant moderating effect in the current study. However, unpredictably the findings showed that Perceived Value negatively moderated the effect of Service Quality on Purchase Intention. To be specific, the relationship between Service Quality and Purchase Intention was weaker when Perceived Value was high. Non-confirmation of these hypotheses could be possibly due to some bias in the responses of 'Daraz' customers who previously had positive purchasing experiences in the website and those who had negative purchasing experiences in the website. Since the customers incurred varied costs and received varied benefits on this single website, the perception of Perceived Value might have had variations.

IMPLICATIONS

Theoretical Implications: This study contributed to the theory by proposing a theoretical model which explored the impact of Website Quality on Purchase Intention in e-commerce with the effect of moderators. The current study extended the research on Website Quality by studying Perceived Value as a moderator, which has not been studied as a moderator in the e-commerce literature. Hence, the model can be considered as an unprecedented model as it has not been tested before by other studies. Further, the study contributed to the limited studies that have been conducted in the Sri Lankan e-commerce context. Although a few research were conducted in relation to Website Quality factors and consumers' purchasing behaviour in Sri Lanka (Athapaththu & Kulathunga, 2018; Deyalage & Kulathunga, 2019; Gamage &

Jayatilake, 2019), the direct relationship between quality dimensions and Purchase Intention, and also the effect of moderators on this relationship were not studied. Besides, the findings of the study strengthen the existing knowledge and the findings could be more important to developing countries, as there is lack of studies conducted in the selected context in developing countries.

Practical Implications: The current study provided directions for online retailing managers in identifying the role of e-commerce Website Quality dimensions in inducing customers' Purchase Intention. According to the findings, Customer service should be an ongoing-process from pre-purchase to post-purchase stages, since Service Quality exerts a greater influence on Purchase Intention. In order to improve sales, the online retailers need to maintain frequent interactions with customers through multiple mechanisms such as instant chats, helpdesks, timely response to queries, brilliant on-site search feature, product recommendations, display of frequently asked questions etc. Further, the study findings suggested that online retailers should give equal importance to System Quality. The professionals who design and administrate the e-commerce sites need to pay greater attention to the technical aspects of the website. Further, Information Quality needs to be carefully addressed by online retailers. The focus should be on ensuring that the customer is free from doubts when browsing the website, by means of providing relevant, sufficient, accurate and up-to-date information that meets customer needs and is personalized to each customer. Therefore, due to the proliferation of B2C websites, it is vital for online retailers to maintain high quality websites that satisfy all three quality dimensions in order to attract, encourage and retain online customers.

Limitations and Suggestions for Future Research

Similar to other research efforts, this study was also subject to some limitations. First, this study conducted a single-website survey to collect data The possibility of some bias in the responses of those who had positive experiences compared to those who had negative experiences in the selected website can be considered as a limitation. This could be a possible reason for obtaining statistically non-significant results for most of the hypothesized moderating effects. Future research can consider conducting multi-website surveys and also can explore the role of Website Quality on other types of e-commerce websites such as travel websites, hotel websites etc. Next, this study was limited to operationalizing the moderators, Perceived Risk and Perceived Value in a uni-dimensional way. Future research is suggested to analyze these constructs in a multidimensional way (for example financial risk, product risk, security risk,

time risk, psychological risk) that could result in different findings. Finally, this study opted for a cross-sectional study due to the time constraint. Future research is recommended to follow a longitudinal study to extend the understanding of the causal relationships between Website Quality dimensions and Purchase Intention, with Perceived Risk and Perceived Value as moderators.

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Usage of Internet Banking in Urban Poor during Covid 19 Pandemic

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ABSTRACT

The banks are trying to popularize the concept of Internet banking among their customers to meet the ever-increasing traffic in physical bank premises. Compared to some developed and developing countries, Internet usage to engage in banking activities is at a primary stage in Sri Lanka, mainly restricted to checking bank balances. However, Internet banking has entered a new path with the COVID-19 pandemic that Sri Lanka faced from the year 2020. In particular, urban Poor people are usually left out of the formal financial system and adoption of technology. These people are constrained by both the demand and supply sides to reach the door of technology. Among the challenges they faced were a lack of financial illiteracy, a Negative perception of technology, Irregular Income, a Lack of trust. Even though there are information technology companies and financial companies in the urban area, a large segment of the population is excluded from using the technology. This paper aimed to identify factors that affect internet banking usage in the urban poor during the COVID-19 pandemic. The article discusses research on factors affecting Internet banking usage, the advantages of Internet banking and the status of Internet banking during the covid 19 pandemic.

Primary data was collected through a semi-structured questionnaire from 200 urban low-income customers in the Colombo divisional secretariat. Data were analyzed using a binary logistic regression model. The study results have shown that income, education, and benefits of Internet banking positively impact Internet banking usage of urban poor. According to that, there is a need to study the financial inclusion of the urban poor to formulate appropriate strategies for increasing the inclusion of the urban poor. Therefore, urban poor people should be fully and effectively educated about Internet banking, and it helps to identify which policies and programs should be designed for the urban poor.

Keywords: Internet Banking, Urban poor, Usage, Technology, Covid 19

INTRODUCTION

Internet banking, also known as online banking, e-banking, or virtual banking, is an electronic payment system that enables customers of a bank or other financial institution to conduct a range of financial transactions through the financial institution's website. Otherwise, E-banking, virtual banking, online banking, and electronic banking relate to the same concept of 'Internet Banking'. Since the introduction of the facility in the early 1980s in The United States of America, the world soon grabbed onto the concept due to the significant benefits it brought to the banking industry. Banks and financial institutions, too, were eager to adopt this new

technology to cut costs while maintaining reliable customer service. (Jayasiri, and kariyawasam, 2016). We all know Internet Banking is becoming popular in every part of the world, and Mauritius is one country where many people are adopting Internet Banking. Also, online banking doesn't require consumers to visit a bank branch to complete most of their basic banking transactions. They can do all of this at their convenience, wherever they want—at home, at work, or on the go.

However, when we consider the history of Internet banking, Online banking was initially used in 1981 in New York, where major financial institutions including Citibank, Chase, and others offered home banking services using a technique known as videotext. In October 1994, Stanford Federal Credit Union was the first to provide Internet banking services. In some European countries, online banking has been adopted differently. It was seen that most banks, which were of medium size, used Internet banking at the very start. However, when comparing the response rates of North Europe with those of the South, it could be deduced that the Northern Europeans adopted online banking at a quicker pace. In early times, e-banking depended on the level of education, and in some parts of Europe, there were more highly educated people than in other regions. Also, when we are focusing on the Internet banking history of Asian countries, in January 2015, the online bank created by Tencent started a 4-month-long online banking trial operation, and in India, in 1998, ICICI Bank introduced Internet banking to its customers, and there are both public and private banks in Sri Lanka. Sri Lanka was the first South Asian country to introduce unrestricted, commercial internet connectivity in April 1995. Since it was first made available to Sri Lankans in March 1999, Internet banking services are now available via the Internet.

Contrary to expectations, clients are still in the beginning. For a nation whose internet usage is 8.3 percent, Only Internet banks and completely committed Internet users will not reach penetration for several more years. The banking sector in Sri Lanka has undergone a rapid transformation with the adoption of ICT (Information Communication Technology)-based banking solutions. The widespread usage of ICT in Sri Lanka's banking sector began only in the late 1980s with the introduction of the first ATM by HSBC Bank in 1986. The most recent delivery channel introduced for financial services is the Internet or Online banking.

On the other hand, it is the latest, most innovative, and most profitable banking service the banks offer. The Internet was first used as a platform for providing banking services in the

USA in 1995. In just a few years, this new channel has rapidly gained popularity in almost all developed countries and many developing countries.

In this way, the beginning and evolution of Internet banking can be pointed out. However, when focusing on Internet banking usage in Sri Lanka, Internet banking, which allows bank customers to access banking services conveniently and efficiently through the Internet, was introduced in Sri Lanka in 1999. Financial institutions offer facilities through Internet banking for customers mainly to obtain account information, apply or subscribe for financial products/services, perform their account/third-party fund transfers and pay utility bills. Reflecting the growing popularity of Internet banking, the volume of financial transactions affected by Internet banking continued to increase during the first quarter of 2019. It may be mainly due to customer convenience, time-saving benefits, and various promotional measures and awareness programs carried out by banks to enhance Internet banking usage (Arun, 2019). There were 11.34 million internet users in Sri Lanka in January 2022. Sri Lanka's internet penetration rate stood at 52.6 percent of the population at the start of 2022. "Bank enlarged the Internet customer base up to 23,000 and 300% increase in the number of transactions and 55% increase in the number of users".

Furthermore, it was implied that banks devote significant resources to creating online banking options due to their advantages. Internet usage in Sri Lanka has expanded significantly over the past five years (Amarasingha, 2014). In Sri Lanka, the use of the Internet and related technologies has steadily increased. The design and delivery of personal financial services are being rapidly altered via digitalization. In an effort to streamline operations and cut expenses, private and public banks in Sri Lanka are currently attempting to implement fresh concepts into the online banking system. Banks invest considerable money in enhancing and modernizing their online banking platforms. Instead of focusing on making a profit, banks established Internet banking primarily to satisfy their consumers, who can now conduct financial activities from any location without having to stand in line. Jegatheesparan, (2020) examined that research on online banking usage can all be used to gain a greater understanding of the advantages of online banking, the variables that influence its use, and the actions being taken to enhance online banking services in the future. By being aware of these aspects, banks can create rules and improve services that will assist them in eventually drawing in clients.

Despite the numerous benefits of online banking, Sri Lankan bank customers remain hesitant to embrace it. The banking and financial sector was one of Sri Lanka's first industries to adopt information and communication technology. It now ranks among the technology users who

utilize it the most. A bank may use the Internet to conduct financial transactions or provide customer services. Internet banking may be unfair in a global competition where Sri Lanka's number of operations is hardly significant compared to the overall situation. The first domestic, commercial bank only began providing transactional-level Internet Banking services in 1999. Hence, Sri Lanka has little time to establish its Internet banking industry. Sri Lankans are much less likely than those in other countries to use internet banking. (Aruna, 2019) Although the clients are aware of the Internet banking option, many are hesitant to use it for their banking operations. Local domestic banks must completely utilize the Internet to increase their productivity and profitability to compete with the competition from globalization. Growing online banking in Sri Lanka is crucial because it is a developing nation. There have been few studies about how customers in Sri Lanka perceive online banking. Additionally, policymakers pay less attention to the Internet banking service.

However, The COVID-19 outbreak, an unprecedented global health crisis that emerged in late 2019, has led to many adverse social and economic implications, necessitating countries to introduce new strategies and financial measures to overcome the ensuing negative situation. The lockdown measures implemented due to the COVID-19 outbreak have restricted cross-border movement of people and goods, disrupting economic and trade activities worldwide. Along with this global epidemic situation, there were drastic changes in the financial system of Sri Lanka, which had a significant impact on the banking system of Sri Lanka (Buddhika & Gunawardana, 2021). Internet banking has always been important for account holders nowadays, and the customer's experience with banking is significant. Accordingly, the recent covid 19 epidemic has managed to pose a great threat to the banking system, customers, and employees. Here, the banking system observed that customers are referring to Internet banking. However, with the COVID-19 pandemic, rumors of the virus spreading through currency notes have led people to turn to internet banking increasingly. Due to the lockdown situation in Sri Lanka and the virus's rapid spread, more people are accessing internet banking. Also, due to the COVID-19 epidemic, people turned to Internet banking, and thus, there was an increase in technical knowledge.

This paper aims to identify factors that affect Internet banking usage in the urban poor. The rest of the paper is structured as follows. The next section of the paper presents a broad review of the theoretical and empirical base on Internet Banking and its adoption. Section 3 discusses the results and discussion of the findings. Section 4 of the paper presents the conclusion drawn from the research.

LITERATURE REVIEW

The literature review aims to identify existing literature on the usage of Internet Banking in low-income customers.

Theoretical Background

The twenty-first century was characterized by information and communication technology, which has revolutionized our working and living patterns. A new era of banking, e-banking or Internet banking has emerged, where customers can perform their financial transactions electronically. After that, In 1986, Fred Davis developed the Technology Acceptance Model (TAM) for his doctoral dissertation. The Technology Acceptance Model, created by Davis (1989), is one of the most critical research models in studies of the factors influencing the acceptance of information systems and information technology. It is used to forecast people's intentions to use and attitudes toward information systems and information technology (Pallant, 2017).

Customer satisfaction is a general principle of customer service. It measures a customer's perception of the quality and utility of a product or service. Customer satisfaction can be measured by offering a service or product or having a relationship with a company, brand, or individual. Fred Reich introduced customer satisfaction theory in his book The Ultimate Question: Driving Good Profits and True Growth, published in 2003. Also, an asset of satisfied customers is the natural diamond for any organization and creates a competitive advantage over other companies.

Factors Affecting the Usage of Internet Banking

When we are considering factors affecting the usage of Internet banking, five factors were taken into consideration. There is perceived usefulness, perceived ease of use, perceived risk, subjective or social norms and behavioral intention, out of which social norms had a significant impact, showing that reference groups play an important role in Internet banking. Behavioral intention proves to be one of the maximum influencing factors, as most respondents had a positive response (Musiime & Malinga, 2011). It shows that with Internet banking, people in a very short time can visit several online banks to compare what they are offering, savings and checking account deals as well as their interest rates. Also, it provides a great deal more convenience than a conventional bank. The factor Perceived Risk came lower, which showed that respondents believe that their online information is not secure. People are sure that there

is no privacy when using this service and a possibility of facing problems while making transactions, and there is high uncertainty and risk about banks' actions with errors occurring during online transactions. It has already been discussed in detail in the studies of Chung and Paynter (2002), Siu and Mou, (2005), and (Limsombunchai and Weng, (2006) cited in (Agrawal & Vohra, 2012). It can see that similar results came out of their studies.

The usage of Internet Banking is not much affected by the global recession. The number of users is continuously growing as Internet Banking provides an easy and one-stop solution to all banking facilities and is safe and secure if accessed through the proper banking channel. The banking environment is more different and competitive due to the continuous and rapidly changing business environment in information technology. Moreover, modern banking services have brought in a paradigm shift in banking operations. Many banks have developed internet-based service models to increase customer transactions. As a result, banks have to adjust their strategies to achieve the current economic conditions. Nowadays, people are so busy in their work lives that they need more time to go to the bank to conduct their banking transactions. All banks provide online banking facilities to their customers as an added advantage. Online banking involves consumers using the Internet to access their bank accounts to undertake banking transactions. Internet banking involves the provision of facilities such as accessing accounts, fund transfers, utility bill payments, Deposits, and credit card payments. Online banking constitutes a fusion of conventional banking and web technology. Internet banking has improved service quality and superior service in the banking sector and also helps banks reduce costs (Jegatheesparan, 2020).

Also, according to the study conducted by, Kolinsky millions of Americans are currently using a variety of e-banking technologies and millions more are expected to be "online." their paper explored factors affecting the adoption or intention to adopt three e-banking technologies and changes of the factors that affecting over time. This study found that relative advantages, complexity/simplicity, compatibility, risk tolerance, and product involvement are associated with adoption. Income, assets, education, gender and marital status, and age though adoption changed, the impacts of other factors on adoption have not changed overtime. (Kolodinsky & Hogert, 2004).

Benefits of usage of Internet banking

All people can access many banking services online. These services include paying bills, transferring funds, and viewing account statements. Banks also deliver their latest products and services online (Kumar et al., 2016). Internet banking is performed through a computer system that can connect to the banking site. We can also use internet banking on our mobile phones, Wi-Fi, or any connection. Online banking has become quite popular with the easy availability of cybercafes and mobile phones in India and China. When considering the advantages of Internet banking, it is simple to open and very easy to operate, quickly pay bills and transfer funds between accounts. People do not have to stand in a queue to pay off their bills. Also, people do not have to keep receipts of all of their bills, as they can now easily view transactions, perform tasks from anywhere and at any time, even at night or on holidays when the bank is closed, and manage several accounts easily through the Internet banking, people can keep an eye on their transactions and account balance all the time (Agarwal, 2022). Technology has been a driving force in changing business processes and the quality of services. Internet banking has become an essential and necessary factor in business strategy. They further add that the new electronic system, especially the development of Internet business in the last century, has significantly impacted how business is conducted.

Banks and the online service providers need to come together to bring a revolution in the field of online banking. There is also a need to generate awareness about online banking. Because that more and more people use it for their benefit. There have been a number of advantages of online banking and these advantages led to the increase in the number of online banking customers today. Customers are highly satisfied with online banking systems due to several reasons. Customers can avail of various types of facilities through the online banking system. They can check the account Customers is also highly satisfied because of the ease of transfer of payments. The Customers used to stand a long queues in banks to deposit money to their accounts. The customer's feelings, complaints and feedback cannot be accessed to directly facing the services. It has been a positive impact on the behavioral intentions of customers' acceptance of online banking. (Mahalakshmi & Kalaiyarasi, 2016)

The financial industry has witnessed a faster change in technology, greater competition among enterprises, and increased customer needs. Technology-based transactions influence the thinking and the operational response of the banks. Barnes and Howlett say that E-business has changed the traditional relationship between banks and its customers and has reduced the

personal contact between them (Hoehle et al,. 2012). This changing scenario has an impact on the operating practices in the banking industry. The advantages include customer convenience, more beneficial rates to customers, additional free services, mobility i).erations, unlimited transfers at no cost, ease of use, and environmentally friendly. Furthermore, customer convenience: Customers can access and do transactions 24 hours a day, 365 days a year. It also observed that convenience is essential in supporting Internet banking.

However, if the internet service is unavailable, customers can still do their work via mobile telephones. Banking through the Internet is faster, easier, and more efficient. More beneficial rates: Banks offering Internet banking services, especially direct banks that do business only through the Internet, save money due to less or very little infrastructure and overhead costs. They can pass on these savings to their customers in the form of higher interest rates, lower rates on loans, and lower mortgage charges. In addition, the benefits are also offered in other forms, like no minimum deposits and carry no minimum balance or service fees. Additional free services: Additional free services offered to the customers include payment of bills online, such as electricity, water, and telephone bills. Banks also provide management tools to customers to carry out budgeting, forecasting, financial planning, loan calculations, investment analysis, etc. Mobility in transactions: Internet banking can be done from anywhere at a convenient time. The banking facility through mobiles and smartphones is an additional advantage. Unlimited transfers at no cost: Internet banking can automatically transfer funds from one account to another. They also do payroll payments and automatic bill payments per the customer's direction. Ease of use: Online banking enables similar transactions to that of traditional banking. In case of a problem, the customer can get assistance online or by email (Obeidat, 2016). Internet banking is perceived to be converted in every way and is one of the main critical factors affecting Internet banking usage. However, client banking requirements will always have to start on the next business day. Also, Transactions, transaction processing, and data transfer happen almost instantly in Internet banking. Georgia Institute of Technology Atlanta Report (2004), Internet banking security is a significant factor affecting its usage. Furthermore, Internet banking can provide banking activity at the lowest cost possible (Kariyawasam, 2016).

Internet banking and the COVID-19 pandemic

When considering Internet banking services during the COVID-19 epidemic, COVID-19 has changed people's lives and made purchase decisions. The fear of COVID-19 is life-threatening

for people around the world. However, students are restricted from taking a class online, teachers and officials need to have online meetings, and Markets are focusing on electronic means, too. It is identical in the banking sector that digital means are getting popular as account holders are already leaning toward online banking. COVID-19 has shut down business worldwide and put a considerable number of people below the poverty line. Also, many opportunities are created, e.g., for information technology businesses, health care, and security firms. Traditional banking has declined during COVID-19, and consequently, an increase in e-banking platforms is observed. Thus, the empirical potential to evaluate the banking services is needed to understand the behavioral changes (Haq & Awan. 2020). Internet banking allows a user to conduct financial transactions via the Internet. Also, online banking is also known as Internet banking or web banking. Internet banking offers customers almost every service traditionally available through a local branch, including deposits, transfers, and online bill payments. During the Covid19 situation, the Government has implemented a lockdown from March 2020 to August 2020. Due to this, most of the industries and organizations are closed. Furthermore, most of the people lost their jobs. However, banks were allowed to function with limited staff and in certain areas.

So, people cannot come out for their regular banking needs, and they find it difficult, and the banks ask their customers to use Internet banking services. Hence, the need for Internet banking has increased during the covid19 situation. The Reserve Bank of India (RBI) said that 57 percent of customers use Internet banking. Then Internet banking is most important for the customers. According to health recommendations, avoiding personal contact is one of the most effective ways to contain the current COVID-19 epidemic. It means reducing the movement of people and increasing the time they spend at home as much as possible. Most banks in the affected countries have reduced the opening hours of their branches, and they recommend that their customers use Internet banking. To encourage the use of this channel, many banks have taken the opportunity to send out positive messages and remind their customers of the benefits of Internet banking. Many banks have also tried to promote Internet banking by sharing tutorials and expanding the types of transactions customers can carry out remotely. The role of banking in the COVID-19 situation: However, people still require banking services, and even minimal in-branch services, because not all users will immediately transition to online channels Dauda & Aliu, 2022).

For example, elderly customers, who are among the most vulnerable to COVID-19, are the least likely to increase their use of internet banking. Use of Internet banking services by age range in Europe shows that among users between 55 and 64 years of age, 48% use Internet banking, less than half, and among those aged between 65 and 74, the figure is even lower at 33%. In any event, however, the increase in the adoption of Internet banking services is being driven by the pandemic and the health restrictions in place; as a result, it could bring about positive change in the medium and long term (Cherukur &Sivakumar, 2020). The current world is unified with expanding on the web admittance to administrations. One piece of this which is growing is E-banking. E-banking is otherwise called electronic banking or Internet banking. Web-based banking permits a client to manage monetary exchanges utilizing the Internet.

Internet banking offers clients almost every help customarily accessible through a nearby office, including stores, moves, and online bill installments. During the COVID-19 pandemic, the Government announced a lockdown from March 2020 to August 2020. Because of this, the greater part of the organizations and associations were shut down, and many lost their positions. Also, banks were permitted to work with restricted staff and in specific regions. Along these lines, individuals cannot come out for their customary requirements for banking, and they think that it is troublesome. The banks request that their clients utilize Internet banking administrations. Hence, the need for E-banking increased during COVID-19, and the Reserve Bank of India (RBI) said that 57 % of customers are using online banking. The banks concentrated more on online banking for the better experience and satisfaction of the customers. As per wellbeing proposals, avoiding individual contact is one of the best approaches to contain the current COVID-19 pandemic. It implies decreasing the development of individuals and expanding the time they spend at home however much as could reasonably be expected. Following these signs, most banks in the influenced nations have decreased the opening times of their branches, and they suggest their customers utilize web-based banking. To energize the utilization of this channel, many banks have made a move to convey positive messages and help their customers remember the advantages of Internet banking. These advantages incorporate the simplicity of completing any exchange all day. A few banks have additionally attempted to advance Internet banking by sharing instructional exercises and growing the kinds of exchanges customers can do distantly. The banking industry has declined during COVID-19, and thus, expansion in e-banking stages is noticed. Electronic banking

constructed a productive progression of administrations furnished with diminished functional and fixed expenses with more security highlights joined (Chavda, 2021).

In Sri Lanka, financial services are marked as essential services. All these new trends place customer convenience at the heart of future banking. Banks are now presented with more opportunities than ever due to COVID-19 impacts and are facing an exciting future. In this COVID-19 pandemic, Internet banking applications have made a sudden gigantic push in terms of number of users. COVID-19 social distancing spotlighted digital delivery and digital transformation in banking services. The COVID-19 pandemic created a shift in behavior, as people are forced to use Internet banking from their mobile devices. During this unique time, banks leverage their client experience with digital product advantages more than ever. More importantly, as consumers get more comfortable and find that managing their money digitally is more accessible and safer, they will stop visiting their bank branches in the future (Sureshkumar, 2020). Internet banking and E-payment usage have improved customer's life by providing ease of payment for online transactions. The effect of intention, attitude, perceived usefulness, and ease of use have long been recognized in Internet banking. However, very few studies have examined these concepts from the viewpoint of the COVID-19 pandemic. The findings suggested that intention to use online banking significantly influences online banking and e-payment usage. Similarly, attitudes toward online banking significantly impact the intention to use online banking and e-payment during the COVID-19 pandemic (Agarwal, 2022).

METHODOLOGY

Study Population: The field of study is the Colombo district. Colombo district was chosen because Colombo is the commercial hub and the fastest-growing city in Sri Lanka, and it has the leading information technology companies and financial institutions. At the same time, Colombo has the largest slum area in the country and consists of a low-income population. Colombo remains diverse in terms of its ethnic mix, economic activities, and income disparities of the city population. Therefore, The population of the study was urban low-income customers in the Colombo district.

Sample of the study: A sample size of 200 low-income customers transacting with BOC and People's Bank branches was taken.

Sampling Method: Purposive sampling was utilized for sample selection. The purposive sampling method was used to select the sample of low-income customers from selected BOC branches and People Bank branches in the Colombo divisional.

Data Collection Method: Primary and secondary data were collected for the research. Primary data was collected through a sample survey utilizing a semi-structured questionnaire evenly distributed to respondents. The questionnaire is designed to collect the required information from the customer. The questionnaire consisted of 20 questions in both closed-ended and open-ended forms. For the secondary data, the Annual reports of the central bank of Sri Lanka, the reports issued by the Department of Census and Statistics, the reports of the Samurdhi Authority of Sri Lanka, and reports of the Colombo and Kolonnawa divisional secretariat have been used. In addition, research reports, books, and journals related to research topics and other publications are utilized.

Data Analysis Method: Data were analyzed using a statistical software package for SPSS version 26.0. The binary logistic regression model was used to assess and identify Internet banking usage. Binary logistic regression analysis is a specialized regression formulated to predict a binary categorical variable. Therefore, this model is appropriate when the dependent variable is binary (Hair et al., 2010). When the use of internet banking, the value "1" is assigned, and "0" no use of internet banking. Therefore, in this study, the logit regression model explained below was used to explain Internet banking usage in the study area.

$Y = B0 + B1Ag + B2Edu + B3Gen + B4Inc + B5Dev + B6Obs + B7Ben$

Y = Usage of Internet Banking (UIB)

B0 = Constant

B1Ag= Age

B2Edu= Education Level

B3Gen= Gender

B4Inc = Family Income

B5Dev = Device

B6Obs = Obstacles

B7Ben = Benefits

In this equation, usage of Internet banking is considered as the Dependent variable and Binary variable, and Age, Education Level, Gender, Family income, Device, Obstacles, and Benefits are considered as independent variables.

DATA ANALYSIS AND DISCUSSION

Demographic data analysis: This section describes the respondents' demographic characteristics, including the percentages of age, gender, educational level, and family income category of the research sample, in terms of frequency analysis.

Age Composition of the Sample

Figure 1: Age of the sample
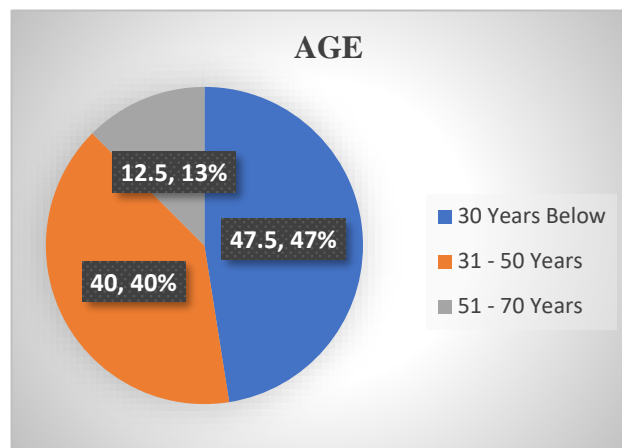
Source: Survey Data, 2023

According to the above pie chart, Internet banking usage is used more by members under the age of 30. It is 47.5% as a percentage. The lowest use of Internet banking is done by members between the ages of 51-70 years, which is 12.5%.

Gender Composition of the Sample

The male's behavior and opinion differ from that of the female. Their opinion plays a major role in using Internet banking. According to that, there are 62.5% males and 37.5% females in the sample, implying that the males are more engaged in Internet banking activities in BOC and People's Bank branches.

Figure 2: Gender Composition of the sample
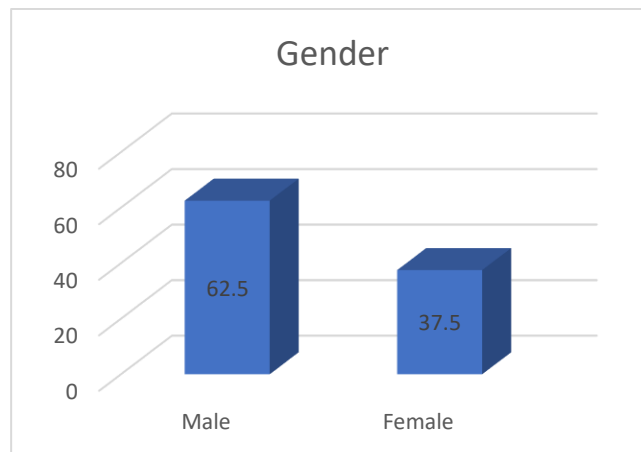
Source: Survey Data, 2023

Educational Level Composition

Figure 3: Education level of the respondent
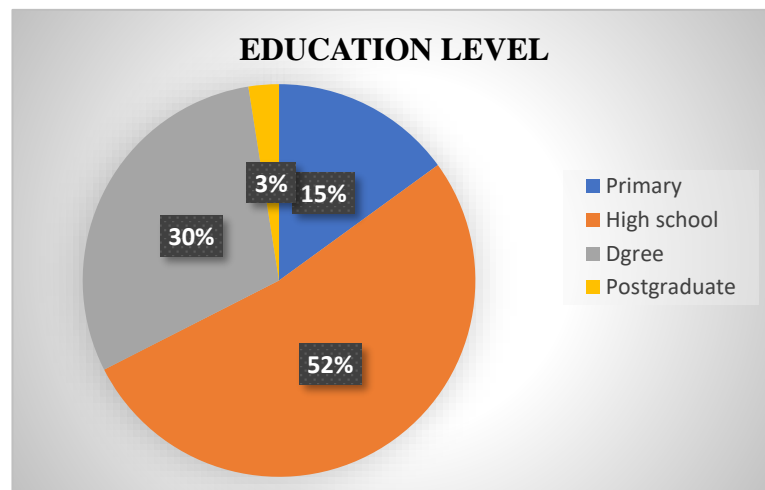
Source: Survey Data, 2023

Regarding the education level, internet banking has mostly been used by high schools. It is a percentage of 52%. As a minimal number of the sample are postgraduates, it shows a percentage of 3%.

Income Composition

To analyze the income status of the sample, the income of the sample was categorized into five categories: less than Rs10000, Rs 10001 to 20000, Rs 20001 to 30000, and more than 30001.

Figure 4: family income of the respondent.
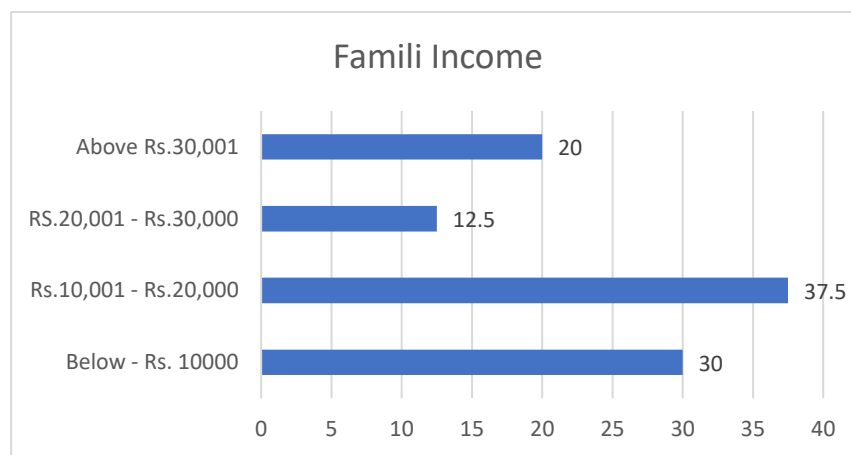
Source: Survey Data, 2023

Figure 04 shows that the majority of respondents belong to the income group Rs 10001, which is 37.5%, and a smaller number of respondents belong to the income category of less than Rs 10000 per month.

Binary logistic regression analysis

Diagnostic Tests

Similar to other multivariate data analysis techniques, important assumptions or diagnostic tests were performed to check the validity of the data for the current binary logistic regression model. Accordingly, diagnostic tests such as autocorrelation and omnibus Tests of model coefficients and Hosmer and Lemeshow tests were used to check model fitness.

Autocorrelation

Autocorrelation is the most celebrated test for detecting correlation, developed by statisticians Durbin and Watson. The regression result shown in the table below the Durbin – Watson d statistics for the current study is 2.307, which is near 2, so we can conclude that the autocorrelation assumption is met, or the residual terms are uncorrelated.

Table 1: Autocorrelation

Model Summary[b]				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	**Durbin – Watson**
1	.752[a]	.566	.471	.27993	**2.307**

Source: SPSS survey output, 2023

Other major assumptions such as normality, heteroscedasticity, and linearity, which are common in many multivariate data analysis techniques, are not compulsory for logistic regression because the error terms of a discrete variable follow the binomial distribution instead of normal distribution, thus invalidating all statistical tests based on the normality assumption. In addition, the variance of the dichotomous variable is not constant, creating instances of heteroscedasticity as well. Moreover, logistic regression does not require linear relationships between the dependent and independent variable; it can address linear effects even when exponential and polynomial terms are not explicitly added as additional independent variables because of the logistic relationship.

Table 2: Model fitness

A. Omnibus Tests of Model Coefficients				
		Chi - square	**Df**	**Sig.**
Step 1	Step	23.134	7	.002
	Block	23.134	7	.002
	Model	23.134	7	.002
C. Hosmer and Lemeshow Test				
Step 1	**Chi - Square**	**Df**	**Sig.**	
	10.438	8	.236	

Source: SPSS Survey output, 2023

The omnibus Tests of Model Coefficients presented above indicate how well the model performs compared to a model with none of the predictors entered. This is referred to as a 'goodness of fit' test. In this case, the value is .000. Therefore, the model is better than SPSS's original guess, which assumed that everyone is included in the usage of Internet Banking service, and it is reported as a chi–square value of 23.134 with 7 degrees of freedom.

The other Statistical measure is Hosmer and Lemeshow's measure of overall fit. This statistical test measures the correspondence of the actual and predicted values of the dependent variable. In our study, the chi–square value for the Hosmer – Lemeshow Test is 10.547 with a significance level of 0.229. This value is greater than .05, therefore indicating support for the model.

Table 3: Model summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	13.965[a]	0.439	0.727
a. Estimation terminated at iteration number 7 because parameter estimates by less than .001.			

Source: SPSS Survey output, 2023

The Cox & Snell R Square and the Negelkerke R Square values provide an indication of the amount of variation in the dependent variable explained by the model / independent variables. These are described as pseudo-R Square statistics, rather than the true R square values that you will see provided in the multiple regression output. In this study, the two values are .433 and .717, suggesting that between 43.3percent and 71.7 percent of the variability is explained by this set of variables.

Table 4: Binary Logistic Regression Estimation Result

Variables	B	S.E	Wald	Df	Sig.	Exp (B)
Age	.507	1.372	.137	1	.711	1.661
Gender	1.486	1.911	.605	1	.437	4.421
Education	1.230	1.545	.634	1	.042	1.292
Income	1.325	1.352	.959	1	.032	3.761
Device	2.106	1.835	1.317	1	.251	8.212
Obstacles	-.378	.912	.172	1	.679	.685
Benefits	2.707	1.250	4.689	1	.030	14.991
Constant	-10.021	5.109	3.848	1	.050	.000

Source: SPSS Survey output, 2023

Table 4 shows us that the estimated model is as follows.

Logit (UIB) = -10.021 + 0.507Ag + 1.486Gen + **1.230Edu** + **1.325Inc** + 2.106Dev – 0.378Obs
+ **2.707Ben**

The result related to the impact of education on the respondent status towards usage of Internet banking revealed that it had a positive significant impact with a p value of 0.042 and an odds ratio of 1.292, which implies that those who have education about Internet banking had 1.292 times more likely to use of internet banking.

Logistic regression output concerning income indicated that it positively impacted internet banking usage with p value of 0.032 and beta value of 3.761. The results imply that respondents in the higher income category were 3.7 times more likely to use Internet banking facilities.

Benefits, as one of the predictor variables in the model, had a positive significant impact on Internet banking usage with a P value of 0.030 and an odds ratio of 14.991. Also, considering the confidence level, the upper bound is 0.127, and the Lower bound is 0.421. It implies that those respondents who have benefits of using Internet banking are 14.9 times more likely to use internet banking facilities. The benefits of using Internet banking have affected the Awareness and usage of Internet banking during the COVID-19 pandemic. The benefits of Internet banking are the ability to manage time, transact on holidays, streamline the safety net, reduce uncertainty and risk, and reduce transportation costs. Due to these benefits, people are more inclined towards internet banking.

However, results related to age, gender, device, and obstacle indicated that those had a negative significant impact on Internet banking usage.

CONCLUSION

The main objective of this study is to identify the factors that affect Internet banking usage in the urban poor during the COVID-19 pandemic. The research findings revealed insights into the reasons that hinder the usage of Internet banking services in Urban poor. Therefore, based on the findings from the binary logistic regression result, it is possible to conclude that among the independent variables included in the model, income, education, and benefits of Internet banking positively impact Internet banking usage in urban low-income earners. Hence. Age, gender, device, and obstacles do not significantly impact Internet banking usage. Further, it was concluded that a major proportion of urban poor customers were not familiar with internet and internet usage. A high percentage of urban poor customers answered that their lack of usage of internet banking is due to their lack of education and knowledge of how internet banking works.

POLICY IMPLICATION

The findings of this study have important practical implications for public banks as well as for private banks. Also, Today, along with technological advancement and globalization, the world is trending towards Internet banking. Thus, Sri Lanka needs a lot of Digital knowledge to deal with the world. Therefore, people should be fully and effectively educated about Internet banking. With the digitalization of the world, awareness programs about Internet banking should be organized to educate the people in Sri Lanka. The most challenging aspect of online banking was detected as the lack of user-friendliness in websites. Hence, the banks need to improve the simplicity and operational convenience of their online platforms. Further, the banks should educate the urban poor customers on how to operate Internet banking on the Internet and extend their prompt assistance towards familiarizing customers with engaging in Internet banking activities.. The banks, regulatory bodies, and policymakers should focus on improving urban poor customers' knowledge of Internet banking.

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Behavioral Intentions Towards the Use of Digital Wallets

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ABSTRACT

All electronic transactions worldwide have consistently reshaped the financial ecosystem and e-wallets have become paramount to the lives of the growing population. This research aimed to analyze the behavioral intentions among users of digital wallets in Yunnan, China, where a total of 606 customers were surveyed using a structured questionnaire. This study tested five structural relationships using the Partial-Least Square Structural Equation Modelling method. The test of correlation suggests positive relationships between the constructs, indicating that higher scores in one construct tend to be associated with higher scores in other constructs. This implies that perceived ease of use, usefulness, risk, awareness, intention to use, and behavioral intention are interconnected somehow. Lastly, based on the hypothesis testing, all the paths from the predictor variables (PEU, PU, PR, AW) to the outcome variable (IU) are statistically significant and supported. The path from IU to BI is also statistically significant and supported.

Keywords: E-wallet; Digital Payments; Behavioral Intentions; Fintech JEL: O31, O32

INTRODUCTION

In the current digital era, behavioral intentions on using digital wallets have grown in importance. Understanding the elements that affect people's intentions to embrace and utilize digital wallets is essential for businesses and regulators as consumers depend increasingly on digital transactions and mobile devices. These intents are affected by several things, including perceived use, usefulness, risk, and awareness. Organizations may improve user acceptability and adoption of digital wallets by looking at and resolving these aspects, eventually changing how people make payments in the current world (Chen et al., 2021).

The attractiveness of digital wallets has dramatically increased especially in the USA and Europe, two technologically advanced regions with developed financial systems. In these locations, various elements, including user experience, convenience, security, and trust, significantly impact people's intention to adopt digital wallets. Companies and governments must have a thorough understanding of these aspects to successfully meet the demands and preferences of customers in the USA and Europe and promote the broad use of digital payment solutions (Liébana-Cabanillas et al., 2022).

China has taken the lead in adopting mobile payment methods around the globe, with digital wallets such as Alipay and WeChat Pay now holding the majority of the market share. The

broad acceptance of digital wallets among Chinese consumers may be attributed, in large part, to the significant roles that factors like convenience, efficacy, social influence, and trust have played in the market. Businesses and governments need to understand these aspects if they wish to capitalize on the huge potential of the Chinese market and adapt to the requirements of tech-savvy customers (Zhang et al., 2022).

Digital wallets are becoming increasingly trendy in Yunnan, China, as most of the shoppers appreciate the ease and efficacy of mobile payments. Residents of Yunnan are using digital wallets for various and several transactions, including online shopping, e-payments, and peer-to-peer transactions, due to the rapid growth of smartphone usage and ubiquitous adoption of digital payment platforms. The widespread adoption of digital wallets in Yunnan has transformed how people manage their finances in the region because of their usability, seamless incorporation with daily activities, and the ability to conduct electronic transactions (Sina Finance, 2020).

Even though much research has been done on how people plan to behave when using digital wallets, there are gaps that this research would like to fill. First, by looking at the macro level and compared to tech city centers such as Shenzhen, Yunnan province is a developing region in China, and the adoption of digital technologies is slow; second, baby boomers and Generation X are suspicious of using digital wallets because of security related issues; third, the hesitance and resistance of some consumers on using e-wallets may be attributed to lack of knowledge and understanding the benefits and advantages of e-wallets compared to the traditional one; and finally, studying the behavioral elements of using or not using e-wallets attracts low attention among scholars, especially among developing states. Hence, this study was proposed to shed light on why some people are still hesitant to adopt this technology. Exploring these gaps will lend a complete picture of the factors that affect consumers' behavioral intentions about using digital wallets as a substitute for cash.

LITERATURE REVIEW

Digital Wallets

Nowadays, the expansion of the blockchain technology industry is in the 3.0 era. Digital wallets are a necessary match for the blockchain 3.0 stage. Judging from the increased number of users, digital currency is developing rapidly. According to the survey (CoinMarketCap data, 2018), as of August 2018, there are 1818 digital currencies in the world, and the total market value of global encrypted digital assets has reached 219.48 billion US dollars. From this, it can be

predicted that after five years, the global data-encrypted digital assets total business will exceed $100 million (IDC, 2021).

People may now securely store, manage, and transact with their digital assets using popular and practical financial technology called "digital wallets." Digital wallets have attracted much attention lately, thanks to the rise of smartphones and the growing reliance on digital payments. Smith and Johnson (2022) concluded that the accessibility, convenience, and security digital wallets provide are the main factors influencing customer acceptance of these wallets. They also pointed out that the availability of value-added services, such as loyalty programs and mobile discounts, and integrating digital wallets with other payment systems have contributed to their rising popularity.

Hou (2020) proposed a secure payment wallet based on Fabric and designed digital wallets on different platforms to meet different transaction needs. Li (2020) proposed the formal verification of Ethereum token intelligent contracts, and Li Kangzi (2019) proposed based on the research of digital wallets on decentralized networks, the literature Yang (2020) proposed research on blockchain transactions based on the UTXO model. The research and application of digital wallets are also constantly taking root and are widely used in the housing rental industry.

Perceived Ease of Use and Intention to Use

There has been substantial research on the link between perceived ease of use and intention to use in the context of technology adoption and acceptance. A person's subjective assessment of how simple it is to use and operate a technology is known as perceived ease of use. On the other side of the coin, the intention to use denotes a person's propensity or readiness to utilize a particular technology. When it comes to digital technologies like digital wallets, several researchers have looked at the positive effect of perceived ease of use on the intention to use. For instance, Venkatesh et al.'s (2020) study examined the factors affecting customers' adoption of mobile payment systems, such as digital wallets and the study showed that perceived ease of use had a significant positive effect on the consumer's intention to use, which implies that people are more likely to have a clear intention to accept and use a mobile payment system when they consider it simple to use and navigate.

Similarly, Li and Li's (2021) study on the adoption of digital wallets discovered a highly positive association between perceived usability and the propensity to adopt. According to the

survey, consumers are more likely to embrace and use new technology if they find it to be simple, intuitive, and user-friendly. Therefore, this study proposed that:

H1: Perceived ease of use has a significant positive effect on the intention to use

Perceived Usefulness and Intention to Use

The term "perceived usefulness" describes a person's subjective assessment of how helpful and valuable they believe technology to be. On the other hand, acceptance intention denotes a person's propensity or readiness to utilize a specific technology. The effect of perceived utility on intention to use has been the subject of several research studies, particularly in digital technology like digital wallets.

For instance, research by Chen and Li (2022) focused on digital wallets and mobile payment systems and discovered a significant positive association between acceptance intention and perceived utility. According to the study, people are more likely to acquire an excellent desire to accept and utilize a mobile payment system if they believe it would help them with their financial activities.

Similarly, Zhang et al. (2021) looked at what factors affected customers' willingness to accept digital wallets and discovered that perceived utility substantially impacted willingness to accept. The survey stressed that customers are likely to embrace and accept new technologies if they perceived digital wallets as practical tools for convenient and effective transactions. These results are consistent with Davis' (1989) Technology Adoption Model (TAM), which contends that perceived utility is crucial in determining adoption intention. According to the Technology Adoption Model, consumers are more likely to acquire a favorable intention to utilize a technology if they believe it will help them accomplish their objectives and tasks. Therefore, this study proposed:

H2: Perceived usefulness has a significant positive effect on intention to use.

Perceived Risk and Intention to Use

The stage where people perceived the potential adverse effects or uncertainty related to using a new technology or product is referred to as perceived risk. Understanding how perceived risk affects acceptance intention is essential for companies and marketing people with the hope of encouraging the adoption of cutting-edge technology. In their study, Chen and Wang (2022) looked at the connection between acceptance intention and perceived risk in the setting of mobile payment systems. The empirical results suggested that customers' intentions to use

mobile payment systems were highly caused by perceived risk, which included worries about security, privacy, and financial loss.

Beyond the world of financial technology, perceived risk affects intention to use in other contexts as well. Li et al. (2023) found perceived risk as a significant element in influencing consumer's propensity to utilize e-commerce services in research on adopting e-commerce platforms. The researchers discovered that customers' acceptance intentions are directly impacted by perceived risks connected to product quality, the reliability of online merchants, and transaction security. They also stressed the value of risk mitigation techniques in fostering trust and lowering perceived risks, such as strong security safeguards and open information disclosure. Therefore, this study proposed:

H3: Perceived risk has a significant impact on intention to use

Awareness on Digital Wallets on Intention to Use

Recent scholarships have paid much attention to the connection between awareness of digital wallets and acceptance intentions. According to studies, customers' intentions to embrace and utilize digital wallets are favorably influenced by greater knowledge of alternative payment options. For instance, a study on the acceptance of mobile payments discovered a correlation between customer acceptance intention and awareness of digital wallets. They highlighted the significance of educational programs and marketing initiatives in promoting awareness of and encouraging favorable views about digital wallets (Zhang & Wang, 2022). According to this study, raising consumer knowledge of the features and advantages of digital wallets may favor their decision to adopt them. Additionally, the influence of awareness of digital wallets on acceptance intention goes beyond the context of mobile payments.

In another research done by Chen et al. (2023) on retail payments, higher levels of knowledge of these payment options favorably affected customer intentions to use digital wallets. The researchers stressed the necessity for clear and straightforward information on digital wallets to increase acceptance intention and the impact of marketing and communication initiatives in raising awareness. Thus, this paper puts forward the following hypothesis:

H4: Digital wallet awareness has a significant positive impact on the intention to use

Intention to Use and Behavioral Intention

Literature has shown interest in the connection between acceptance behavior and acceptance intention for digital wallets. According to several research studies, positive acceptance intentions for digital wallets strongly predict actual acceptance behavior. For instance, Li et al.'s (2022) study on adopting mobile payments showed that individuals with excellent acceptance intentions were more likely to use digital wallets.

The researchers stressed the purpose of favorable attitudes and utility in promoting acceptance behavior. According to this study, those with a high level of acceptable behavior toward digital wallets have a higher possibility of using it in any financial transactions. Beyond the context of mobile payments, the influence of acceptance intention on acceptance behavior is also present. Adopting digital wallets in e-commerce was the focus of Wang et al. (2023), where they have, they researched the connection between acceptance intention and behavior. Researchers discovered that customers' acceptance behavior when completing online purchases was highly impacted by their acceptance intentions toward digital wallets. This study highlights the importance of acceptance intention in predicting acceptance behavior. It shows that people who intend to accept digital wallets have a higher probability of using it in an online purchase. Hence, this paper puts forward the following assumption:

H5: The intention to use e-wallet has a significant positive impact on behavioral intention

Behavioral Intention towards Digital Wallets using PLS-SEM

Various researchers have used different approaches to examine the factors impacting consumer's behavioral intention toward the usage of digital wallets, which have gained popularity in recent years. The Partial Least Squares Structural Equation Modeling (PLS-SEM) method enables the analysis of intricate interactions and latent components in a predictive framework, is one extensively used method. PLS-SEM has been utilized in many research to investigate behavioral intention toward digital wallets. For instance, Li et al. (2022) used PLS-SEM to evaluate the elements that impact customers' behavioral intention to use digital wallets. Their research showed that behavioral intention was highly impacted by perceptions of utility, usability, and security.

In research done in a developed nation, Wang and Hu (2021) used PLS-SEM to look into the variables affecting customers' behavioral intentions toward mobile payment systems, including digital wallets. Their findings showed that behavioral intention was highly impacted by

perceived usability, perceived ease of use, and perceived trust. The study highlighted the influence these elements play in influencing customers' decision to embrace and use digital wallets for their financial activities. These studies show the effectiveness of PLS-SEM in analyzing complicated interactions and identifying the major variables influencing behavioral intention to use digital wallets.

Theory Base

To support the claims and hypotheses of this study, these two theoretical premises were utilized. First, the Theory of Planned Behavior (TPB) served as the main theoretical basis. Ajzen (1985) introduced the Theory of Planned Behavior (TPB) on the foundation of rational behavior. This theory primarily considers that several other circumstances will influence people's conduct. The connection between behavioral goals, behavioral attitudes, and actual conduct under challenging circumstances when behavior cannot be controlled entirely. The theory of planned behavior, based on rational behavior, adds perceived behavior as a new control component and contends that this factor will also influence a person's willingness to act, influencing actual conduct. The degree to which the behavior subject believes he has control over his conduct while he engages in it is referred to as perceived behavioral control. That is, both personal experience and anticipated challenges will impact the actor's will.

Second is Davis's Technology Acceptance Theory by Davis (1986) also served as another theoretical foundation of this investigation. This theory was used to describe and evaluate the scenario that arises after a person uses a product for a while, and it is primarily used to research the factors, such as attitude and intention, that influence the person's acceptance of the product after that person utilizes it.

Further, TAM proposed that when a person accepts a new product, the person will exhibit product usefulness and product usability, which are comparable to the two qualities of interest and usability in Rogers' five factors. This, in Davis' opinion, is a crucial factor. According to TAM, behavioral intention determines system usage, behavioral intention is simultaneously driven by perceived usefulness and the attitude toward using it, and attitude towards using it further is determined by both perceived utility and ease of use. It is shown that perceived usefulness depends on both perceived usability and outside factors, whereas perceived usability depends on outside factors.

Hypothesized Model

This study presented that the digital wallet must have numerous key components of the theory to be readily accepted and used by consumers. In light of the acceptability above model for digital wallets, this study generated the following hypothesized model, and the following framework was suggested based on literature and theoretical analysis:

Figure 1: Hypothesized Regression Model
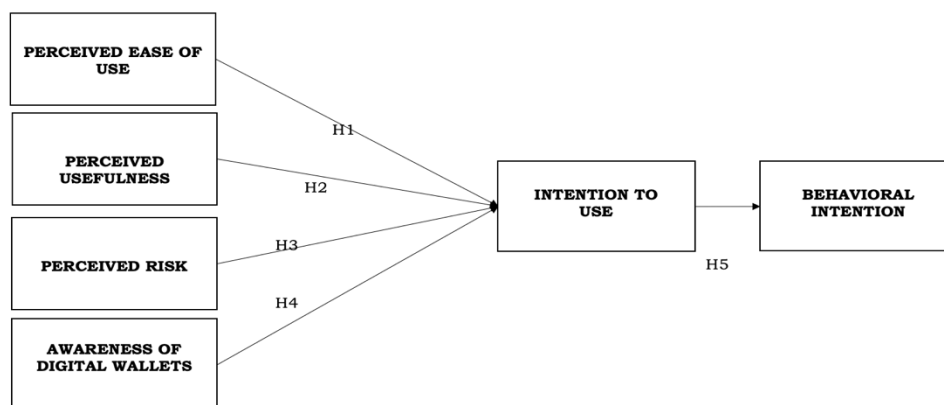
METHODOLOGY

Research Design

This study explored behavioral intention toward using digital wallets among the residents in Yunnan, China. To realize this goal, a quantitative non-experimental research design was utilized. Before the study, the relevant literature was comprehensively analyzed, and the research results about the technology acceptance model and the influencing factors of acceptance were obtained from the literature. At the same time, a questionnaire design was carried out based on this. This process is the basis of a scientific and practical investigation in statistical survey research, and the consistency between actual measurement indicators and variables should be achieved as much as possible.

This non-experimental research design provides a collection of methods for conducting quantitative studies in which no study variable was altered. In other words, variables were assessed naturally, free from human intervention. This absence of manipulation may be because the variable was already "manipulated" naturally prior to the study or because it would be impossible or impractical for the researcher to manipulate the variable in question (Mertler, 2014).

This survey research aimed to characterize a population's or group's characteristics (Fraenkel et al., 2012). It is primarily a quantitative research technique in which the researcher uses a survey or questionnaire to describe the attitudes, opinions, behaviors, experiences, or other characteristics of the population among a sample of people—or, in some cases, the entire population (Creswell & Plano Clark, 2007). Meanwhile, structural equation modeling (SEM) techniques may assess and explain study outcomes. SEM is a multivariate analytic method that may consider the connection between several possible factors simultaneously. Researchers can do model comparisons and adjustments, evaluate the path coefficients across variables, and confirm the fit of the study model using SEM (Ullman & Bentler, 2012).

Sources of Data

The primary data of this paper comes from a questionnaire survey. The questionnaire was carried out to the users of digital wallets in the Region. Participants in the study were adults (primarily of legal age) and the survey was distributed to bank customers in 10 districts of Yunnan, China. The selection of participants covered groups of different ages, genders, occupations, and education levels to ensure representativeness and generalizability of results. A total of 606 bank customers were considered in this study.

Data Gathering Instrument

This study designed a questionnaire with questions related to behavioral intention toward using digital wallets. The questionnaire was translated into Chinese and distributed to respondents in the Yunnan region through paper questionnaires or online survey platforms (Google Forms and WeChat Questionnaire Mini Program). The survey questionnaire used in this study emanated from various published works. The questions for each construct were taken from the following validated scales of the following published references:

Table 1: Source of Items in Survey Questionnaire

Construct	Source
Perceived Ease of Use	Venkatesh et al., 2012
Perceived usefulness	Venkatesh et al., 2012
Perceived Risk	Mohd Razif et al., 2020
Awareness on Digital Wallets	Santosh Bagale et al., 2023

Intention to Use	Zhou, 2011; Daragmeh et al., 2021
Behavioral Intention	Venkatesh et al., 2003; Venkatesh et al., 2012

Sampling Technique

In order to obtain a sufficient sample size, this study used Purposive Proportionate Sampling (Saldaña, 2013) to select a representative sample from the clients of 10 branches of Yunnan Hekou Rural Commercial Bank. This technique includes deciding whom to include based on requirements and ensuring that the sample is representative of the target population. A random sampling technique was employed for the decision on the number of customers surveyed in each branch. A total of 606 bank customers in the entire region were considered.

The Procedure of the Study

The following sequence of activities was performed throughout the course of this research undertaking:

Literature review and Hypotheses Development. First, the researcher carefully sorted out domestic and foreign academic papers, journals, and monographs on digital wallets and technology acceptance models, the research topics of the articles were clarified, the research path was determined for the development of the research gap.

Questionnaire Development and Administration. After the research proposal was conducted, the questionnaire was reviewed considering it was lifted from different sources. The combined adapted questionnaire was tested through the relevant validity tests. After passing the small-sample test, a formal survey will be conducted using purposive proportionate sampling.

Data Collection. A survey questions was lifted in an e-survey platform, which was distributed online and was intended to collect data anchored to the objectives of the study. The researcher sought approval from the bank manager of each branch to allow the researcher to ask bank customers to complete the survey whenever it is convenient for them.

Empirical Analysis and Interpretation. The collected questionnaires were analyzed by SPSS data processing software to ensure the rationality and validity of the data results and processing process. Through reliability and validity analysis, correlation analysis and regression analysis, the research hypotheses and conceptual model of this paper were verified.

RESULTS

Measurement Model Analysis

In this study, the measurement model comprised the following items: item reliability, convergent, and internal consistency. As shown in Table 3, the minor loading is 0.605, while the highest loading is 0.803. Both values surpass the threshold level of 0.50, as Hair et al. (2014) suggested. To evaluate the internal consistency, two measures were used: Cronbach's alpha (α) and composite reliability (CR), as described by Chin (2010).

In addition, Hair et al. (2019) recommends a value of α greater than 0.70 for the construct to be considered acceptable. Table 3 shows that the Cronbach alpha values range from 0.870 to 0.887, surpassing the threshold of 0.70. Likewise, the criterion for CR is also set at >0.70. The obtained CR values in Table 3 range from 0.710 to 0.864, satisfying the threshold criteria. Hence, both indicators demonstrate satisfactory internal consistency and reliability. Convergent validity assesses the extent to which a construct measures the same concept; this study calculated the average variance extracted (AVE). The AVE values range from 0.550 to 0.630, meeting the threshold criteria established by Hair et al. (2014) of having a value greater than 0.50.

Table 2. Items and Construct Reliability

Construct	CR	α	Item	Factor Loading	AVE
			PEU1	.720	
			PEU2	.776	
Perceived Ease of Use	.864	.880	PEU3	.759	.560
			PEU4	.710	
			PEU5	.775	
			PU1	.759	
			PU2	.750	
Perceived Usefulness	.830	.879	PU3	.722	.550
			PU4	.735	
			PR1	.657	
			PR2	.654	
Perceived Risk	.710	.870	PR3	.666	.555
			PR4	.656	
			PR5	.699	
			AW1	.608	
			AW2	.670	

Construct				Item	Loading		
Awareness on				AW3	.663		.578
Digital Wallets	.814		.887	AW4		.605	
		AW5		.681			
		AW6		.664			
				IU1			.659
				IU2			.658
Intention to Use				IU3		.670	
	.551		.803	.872			
				IU4			.678
				IU5			.686
				BI1			.803
Behavioral Intention				B12		.794	
	.630		.836	.870			
				BI3			.785

Structural Model Analysis

Descriptive and Correlational Analysis

Presented Table 4 is the descriptive calculation of the constructs using mean and standard deviation. Also shown in this table is the correlational analysis, which was done using the latent correlational matrix on PLS. As shown, the overall mean for all variables ranges from 3.27 to 3.98, and the standard deviation ranges from .812 to .943. Based on the means scores, perceived ease of use, perceived usefulness, and awareness level were described as high, which means that the customer's expectation about e-wallets based on these elements are satisfactory, and the likelihood (3.53) to use the e-wallet is highly possible. However, it can be seen that perceived risk obtained the lowest mean (3.27), which signifies that customers are still doubtful about the security features of the e-wallets.

Furthermore, the correlation coefficients among the latent constructs are also reflected in this table, where the correlation values range from .204 to .509. This study classified the correlation as low, moderate, and strong. Coolidge (2006) and Field (2005) set the threshold for correlation values where a correlation score of .10 is considered as "low correlation," a correlation coefficient of .30 is labeled as "medium correlation," and a correlation value of .50 and above represent "strong correlation." One strong correlation is between perceived ease of use and behavioral intention (.509), which is anticipated from a customer expecting that e-wallets are easy to use and navigate through the cellular phone.

Table 3: Descriptive and Correlational Statistics

Construct	Mean	SD	PEU	PU	PR	AW	IU	BI
PEU	3.98	.812	1.00	.258	.342	.319	.272	.509
PU	3.46	.943	.258	1.00	.228	.204	.246	.360
PR	3.27	.931	.342	.228	1.00	.213	.279	.438
AW	3.71	.854	.319	.204	.213	1.00	.219	.411
IU	3.53	.907	.272	.246	.279	.219	1.00	.451
BI	3.81	.903	.509	.360	.438	.411	.451	1.00

Note. N=606

The lowest correlation was between digital wallet awareness and perceived usefulness (.204). One possible explanation is that, while a customer is aware of digital wallets, the customer may need to learn their perceived usefulness, especially if such a customer has no prior or even experience of using the service. This idea somehow parallels the concepts expressed by Carrero and Valor (2012), who posited that 'labels of products may increase awareness, but it may not always result in a purchase decision.' So, in this case, brands of e-wallets may be known to the customers but appreciating their usefulness will depend on when the service is experienced.

Regression Model Test

This study portion shows the structural model, specifically in testing the research hypotheses. The researcher used the Smart-PLS software in processing the data. For the first path, perceived ease of use towards intention to use, statistics showed that the p-value is less than the threshold value of 0.05, indicating that perceived ease of use is related to intention to use. Similar to other paths, PU≥IU ($p<.000$), PR≥IU ($p<.000$), AW≥IU ($p<.000$), and IU≥BI ($p<.000$) since the p-values are all less than 0.05, all are positively related, hence, H1, H2, H3, H4, and H5 are accepted.

Also shown in the table below are the respective regression estimates per path, corresponding to the influence's strength. As shown, the strongest influence was the path from IU≥BI, as evidenced by a regression estimate of .449, and the path AW≥IU showed the weakest influence (.113), which may be attributed to the fact that the three elements, namely PEU, PU, and PR and could be the most important aspect for Chinese customers in deciding to use e-wallets.

Table 4. Hypotheses Testing

Paths	Estimates	SE	*p-value*	Decision

PEU	>	IU	.157			.047
			0.008**	Supported		
PU	>	IU	.142			.038
			0.000**	Supported		
PR	>	IU	.170			.040
			0.000**	Supported		
AW	>	IU	.113			.043
			0.000**	Supported		
IU	>	BI	.449			.036
			0.000**	Supported		

*Note.*p<0.01, **p<0.05, PEU>Perceived ease of use; PU>Perceived usefulness; PR>Perceived risk; AW>Awareness on Digital Wallets; IU> Intention to use; BI> Behavioral Intention

Shown in Figure 2 is the hypothesized model fit, which reflects the regression estimates for each path identified. The first path, perceived ease of use toward intention to use, has a regression estimate of .16, which was earlier described as significant. Scholars such as Wu Bing and Zhou Yannan (2017) contended that users' perceived ease of use significantly and positively affect their use attitude, and users' use attitude has a significant positive impact on their continued use intention. Similarly, Chu Xiaoyuan, Liu Ke, Li Yuan, and Lei Li (2021) concluded that perceived ease of use of virtual goods could significantly positively predict the intention to use.

Figure 2: Hypothesized Model Fit in Standardized Values
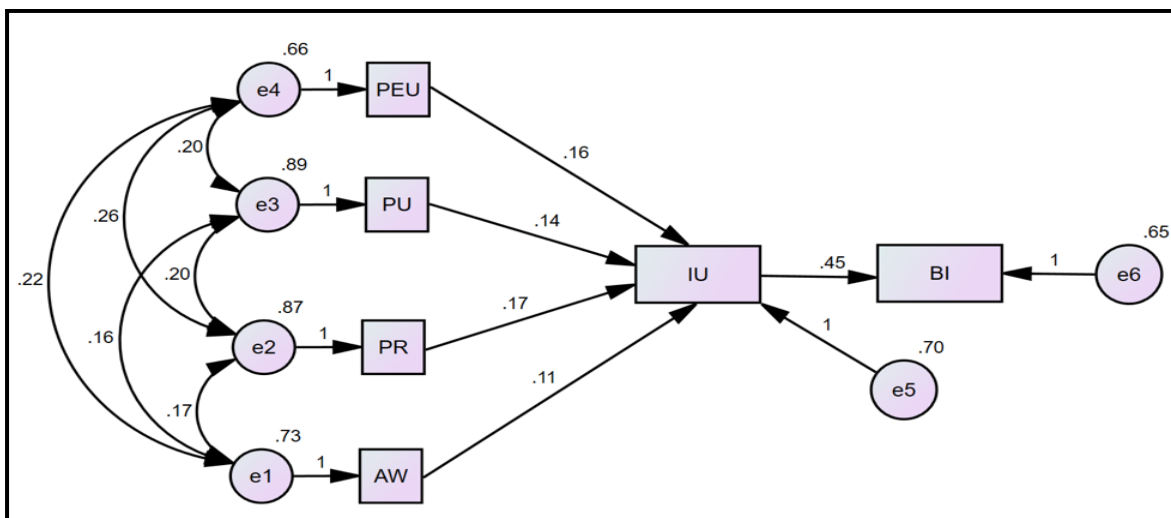
Note. Chi square=246.732; Chi square/df=61.683; df=4; *p*=.000; pclose=.000; RMSEA=.317; CFI=.642,TLI=-.342; NFI=.644 ;IFI.648; AIC=280.732

Second, for the second path, perceived usefulness has a regression estimate of .14 and was positively related to intention to use. Research by Chen and Li (2022) focused on digital wallets and mobile payment systems and discovered a substantial positive association between acceptance intention and perceived utility. People are more likely to acquire an excellent desire to accept and utilize a mobile payment system if they believe it would help them with their financial activities. Zhang et al. (2021) also stressed that customers are likelier to embrace and adopt new technologies when they believe digital wallets are practical instruments for convenient and effective transactions.

For the third path, perceived risk towards intention to use showed a positive relationship. The regression estimate is .17. Just recently, Chen and Wang (2022) showed that customers' intentions to use mobile payment systems or electronic wallets were highly impacted by perceived risk, which included worries about security, privacy, and financial loss. In addition, Li et al. (2023) found perceived risk as a critical factor influencing customers' propensity to utilize e-commerce services, and customers' acceptance intentions are directly impacted by perceived risks connected to product quality, the reliability of online merchants, and transaction security.

The fourth path, awareness of digital wallets towards intention to use, also showed a positive relationship and the regression estimate of .11. Customers' intentions to embrace and utilize digital wallets are favorably influenced by greater knowledge of alternative payment options. Zhang and Wang (2022) highlighted the significance of educational programs and marketing initiatives in promoting awareness of and encouraging favorable views about digital wallets. According to this study, raising consumer knowledge of the features and advantages of digital wallets may favor their decision to adopt them. Chen et al. (2023) further stressed the necessity for clear and straightforward information on digital wallets to increase acceptance intention and the impact of marketing and communication initiatives in raising awareness.

Lastly, the direct relationship between intention to use and behavioral intention has a regression estimate of .45. Positive acceptance intentions for digital wallets strongly predict actual acceptance behavior. For instance, Li et al. (2022) posited that individuals with excellent acceptance intentions were more likely to use digital wallets. The researchers stressed the role of favorable attitudes and perceived utility in promoting acceptance behavior. In a similar tone,

Wang et al. (2023) discovered that customers' acceptance behavior/behavioral intention when completing online purchases were highly impacted by their acceptance intentions toward digital wallets.

MANAGERIAL IMPLICATIONS

The high level of perceived ease of use, perceived usefulness, and awareness of digital wallets suggest that Fintech companies may maintain the credibility of these features to maintain the customers' trust. However, findings also suggest that Fintech companies may invest to ensure that e-wallet is less risky. One good strategy is to invest in studying and developing software that would complement existing digital wallets' security features. This plan may be necessary to ensure that the app is safe to use, and while risks may not be gone, the company made sure that the protection of the customer's money is a top priority to avoid eroding their trust and confidence. On the policy side, strict adherence to the existing data privacy laws must be ensured to protect the public's interest.

Second, the positive correlation among the constructs considered in this study may be the basis for e-wallet companies to consider strengthening these pillars as they may help in the total adoption of e-wallets among the population of Yunnan.

Third, Fintech companies and affiliated financial institutions may also see the need to enhance and expand the usefulness of e-wallets and may add other services such as insurance, short-term loans, and personal finance monitoring. This way, e-wallets fulfill more than just a single role. Instead, they promote financial inclusivity among the population of Yunnan.

Lastly, there may be a need to continuously improve the user interface, make the e-wallets user-friendly, and provide clear instructions to improve the perception of ease of use. This could be the best way to capture the attention of the late majority and laggards to utilize this innovative effort which directly contributed to Yunnan, China's economic and social development.

CONCLUSION

The findings of this study provide valuable insights on the acceptance willingness of digital wallets among users in Yunnan Province, China. The research contributes to the existing literature on technology acceptance and provides a comprehensive model for understanding the factors influencing behavioral intentions toward digital wallet usage. Additionally, the path

from intention to use to behavioral intention was also found to be statistically significant and accepted. This indicates that perceived ease of use, perceived usefulness, perceived relevance, perceived affordability, and intention to use all significantly influence behavioral intention. Hence, all hypotheses set on this are supported. These findings can benefit policymakers, businesses, and researchers in digital payments, as they shed light on the key dimensions that need to be considered to promote the adoption and usage of digital wallets in the region.

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Adoption of Digital Technologies to Enhance Port Competitiveness in Maritime Trading Value Network: Future Research Directions through a Systematic Literature Review

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ABSTRACT

Maritime trading is creating a critical transition to enhance the value network through digitalization in the global supply chain. As a node in this chain, ports should play their role effectively and efficiently in value creation in a sustainable manner. Digitalization is adding a new version with considerable changes in the trading environment. These technological changes establish a more collaborative, innovative, and sustainable business. Many researchers have been more concerned with the usage of technological applications than the future trends for enhancing port competitiveness. Competing abilities depend on well-thought-out planning and directing to achieve organizational goals while maximizing customer satisfaction. Therefore, this research objective is to identify the future directions of digitalization to strengthen the port's competitiveness. This objective is addressed using the systematic literature review (SLR) method, which makes the final results consider evaluated articles on emerging digitalization and port competitiveness concepts. For that, article sources were MDPI, Springer, and Emerald Insight, which were published during 2022–2023. Mainly, it was evaluating 60 articles for this research after scrutinizing 144. Those have been given open access and conducted peer review. This research found five major future directions in view of the positive relationship between digitalization and port competitiveness. It is helped by the identification of the characteristics of digitalization and port competitiveness. Their interrelationship guides identify the prominent future requirements of maritime trading: innovations, enhancing stakeholder networks, balancing port sustainability and commerciality, increasing the involvement of maritime institutions, and real-time information flow. The boundary line of these directions is interconnecting each direction. Especially currently, port activities are operated through sustainability initiatives, and economic, social, and environmental strategies are based on the whole range of external and internal environmental factors of the organization: political, economic, environmental, social, technological, and legal. Meanwhile, research has concluded that balancing sustainability and commerciality is the most important of these directions. Future research should be more concerned about these aspects due to the outcome of the sustainable port operation, which creates a win-win situation for each stakeholder in the network.

Keywords; Port Competitiveness, Digitalization, Maritime Trading, Sustainability, Future Directions

INTRODUCTION

In the eco-system, digitalization is not a single technology, and more than a hundred technologies are working together to maximize the supply chain. Technology has spread throughout the entire process of maritime trading, making it very comprehensive and widespread over the global supply chain. It is challenged by the new business environment and digital transformation (Othman & El-gazzar, 2022). Maritime logistics entrust the importance of port management and the efficiency of maritime transportation (Monzon, Baeza, & Ortiz, 2022). Port supply chains play a pivotal role in the process of global economics (Liu et al., 2022). Also, sustainable development and competitive advantage entrust technology to provide solutions for the changing environment (Othman & El Gazzar, 2022).

Traditionally, determinants affecting port competitiveness have been studied and employed to draw the most important conclusions. Major associated determinants of the port can be identified as geographical location, infrastructure, and services that have the capacity to compete and collaborate with other ports (Russo & Musolino, 2021). Relatively recently, Hales et al. (2016) highlighted the necessity of considering the current trends and circumstances in the shipping industry when measuring port competitiveness. Meanwhile, this has become the basement for taking advantage of the port management. Such as enhancing connectivity and sustainability of ports, usage of renewable energy, increased air quality, zero carbon emission practices, reducing greenhouse gases, and observing, monitoring, and managing the practices of sustainability (Sankla & Muangpan, 2022).

In recent years, a new pillar has emerged: emerging technologies (Russo & Musolino, 2021). The focus of innovation is on digitalization, which will make ports more automated, environmentally friendly, and collaborative (Heikkilä et al., 2022). Also, port management and technology have been major driving forces in establishing green competitiveness, which can be identified due to greater usage of the technology by the ports (Kuang et al., 2023). Jun et al. (2018) have mentioned that those ports can be considered autonomous ports, robotic ports, and intelligent ports. Meanwhile, this innovative place improves operational efficiency through information and communication technology, improves the quality of life, and increases port competitiveness. That means it ensures the needs of current and future generations, considering the environmental, economic, and social dimensions (Othman et al., 2022).

The efficiency and effectiveness of the port community system can be increased by emerging

technologies. Innovations and sustainable goals create greater control over global logistics. As an example, the One Belt, One Road (OBOR) infrastructure program has been supported by for Chinese companies. Therefore, this transformation impacts not only national but also international politics (Heikkilä et al., 2022). Also, 5G technologies can enable innovations and make the bridge between the SDG and key performance indicators (KPI) of the port (Cavalli et al., 2021). Moreover, in 2019, Singapore port was named "Best Seaport in Asia" while benchmarking for the global green ports as "Best Green Port," and this port is regarded as the model for sustainable port and strong port development (ESCAP, 2021). Therefore, technological advancement, including digitalization, enhances the sustainability and competitiveness of the port (Cavalli et al., 2021).

The innovations of the global supply chain have been influencing port competitiveness in maritime transportation. The prime characteristic is that productivity-based decisions have been made by the partners of this chain, adding value throughout the network. This competitiveness has evolved through the sustainable activities of the shipping industry. Meanwhile, technology is envisaged as a key driver for the sustainable transition of the port. Also, they are enhancing their competitiveness not only through advanced technology but also by investing in infrastructure development, reducing cost and price, improving hinterland connectivity, service quality, green port activities, training and development, etc.

Scientific and professional literature shows the growing interest in the concepts of digitalization, smart ports, and determinants of port competitiveness due to the rapidly spreading of the applications of technology in the port industry. The digital transformation produces recognition from the customers, improves efficiency, builds relationships with customers, and ensures sustainability (Kuo et al., 2022). It also facilitates to community play on a single platform, supporting each other through the sharing of real-time information (Caldeirinha & Nabais, 2022; Serra et al., 2022).

Relationships among stakeholders (port authorities, ministry, harbormaster's offices, freight forwarders, agents, by adapting technology (Aksentijevi´c & Tijan, 2022; Cil et al., 2022; Jovi´c et al., 2022). And it helps with monitoring and traceability to identify the cargo movement (Zhou et al., 2022), ensure the security of maritime trading (Serra et al., 2022), mitigate the human-related risks, threats, and vulnerabilities (Ibrahim, 2022) and it will reduce the manpower requirement and improve fuel consumption with efficient service (Farah et al., 2022). Port efficiency and competitiveness are interconnected terms (Li et al., 2022).

Competitiveness is related to a port's performance in providing value-added goods and services to its customers (Gleser et al., 2023). It focuses on profit maximization and high service quality. Digital transformations improve port operations efficiency, customer relationships, and sustainability. This is facilitated by shipping professional organizations and associations and port authorities (Kuo et al., 2022).

The importance and competition of the regional port have increased during the past few years. More than 80% of the operations of the Colombo port are relevant to transshipment. According to the Frontier Technology Readiness Index (Table 1.1), Sri Lanka will be ranked 89 in 2022 (UNCTAD, 2023). Comparing with regional countries, Sri Lanka is lacking. Digitalization has been adapting to their port activities. It has been creating a critical environment for maritime trading through the booming competitiveness of Colombo port.

Table 1: The Frontier Technology Readiness Index (Rank) – 2023

Country	2023	2021
Singapore	3	5
Malaysia	32	31
United Arab Emirates	37	42
India	46	43
Saudi Arabia	47	50
Indonesia	85	82
Sri Lanka	89	86

Source: (UNCTAD, 2023)

Meanwhile researches should give the future direction to enhance competitiveness through digital technologies due to the uncertainty of the ecosystem. Therefore, this article presents a comprehensive review of the scientific literature on digitalization and port competitiveness and various directions to enhance port competitiveness. Accordingly, this paper is divided into five sections: description of the port's competitiveness and importance of the study: a description of the systematic review methodology: synthesis and result analysis, making scenarios, and drawing conclusions.

PORT COMPETITION AND ITS IMPORTANCE OF THE STUDY

Port competition is a critical topic in transportation economics. This is due not only to the large

volumes of goods involved in port throughput a direct measure of a port's competitiveness but also to induced effects in terms of employment and investment (Meersman et al., 2010). Verhoeff (1981) defined port competition under four levels of seaport competition: competition between port undertakings, competition between ports, competition between port clusters (a group of ports in close proximity with common geographical characteristics), and competition between ranges (i.e., ports located along the same coastline or with a largely identical hinterland).

Productivity is one of the major factors in the port industry for developing competitiveness and market potential. Many factors of competitiveness are affected by this productivity enhancement (Kuo et al., 2020). According to Scaramelli (2010), competitiveness is related to a port's performance in providing value-added goods and services to its customers; in doing so, ports pursue not only economic values, such as profit maximization but also non-economic values, such as improving service quality to secure customer loyalty. He has mentioned that competitiveness does not equal productivity, and neither does productivity equal competitiveness.

Currently, port competition is concerning from an economic, social, political, and business perspective. Therefore, the shipping industry has faced a complicated situation and accelerated competition for the hub port selection process (Kuo et al., 2022). Among these criteria is the indirect impact of technology on operational efficiency (Kavirathna et al., 2018). According to Kaburu (2022), they discovered that digitalization increases efficiency and shortens operations processes, implying that there is an indirect relationship between digital maturity level and port choice.

Therefore, identifying the success of competitiveness is very important for future planning. Port authorities and terminal operators are required to identify this instead of shipping lines as the major customer (Kavirarthaa et al., 2018). In developed countries, the government is involved in enhancing the port's competitiveness (Wahyuni et al., 2019). Supply chain optimization depends on efficient port operations. Large port users' influence depends on their agenda (Kuo et al., 2022). Therefore, government involvement is necessary to make the port sustainable by addressing the gaps between legislation and implementation (Wahyuni et al., 2019).

METHODOLOGY

This study aims to examine the literature on digitalization and port competitiveness. For it, researchers used a systematic approach following Denyer & Tranfiel (2009). They have proposed five steps for the systematic review: (1) review and formulation of the research question; (2) location of studies; (3) selection and evaluation of studies; (4) analysis and synthesis; and (5) results presentation.

In the first step, the researcher identifies the port's competitiveness and digitalization. Second step: identify the previous studies and search scientific data bases. In this literature, article sources were MDPI, Springer, and Emerald Insight, which published during 2022–2023. Those have given open access and conducted peer review. As the third step, the researcher ensured the quality and transparency of the selection of the literature using a set of inclusion criteria mentioned in Table 2 and Figure 1.

Table 2: Criteria

Criteria	Definition of the criteria	Criteria included
Language	Internationally recognized article	English
Research period	Article identifying period	02nd to 05th of April 2023
Type of items	Aim for quality of published articles	Peer-reviewed scientific articles
Publication period	Period consider the concepts are	January 2022 to April 2023
of the articles	Emerged	

Figure 1: Data Source Wise, Distribution of Evaluated Article
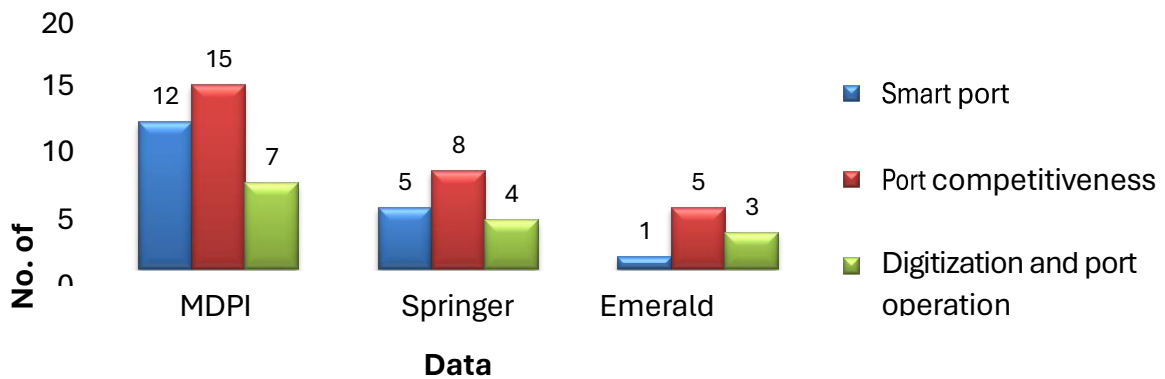
According to key words "smart port", "port competitiveness" and "digitization and port operation", details of article selection are illustrated in Figure 2. The Web source indicated 2119 files, but only 144 had free access to download. Then the researcher analyzed the remaining 134 articles after removing the 10 duplicates. This analysis enabled him to select articles that aimed to provide an understanding of the digitalization and port competitiveness concepts based on the title of the article and the abstract. Finally, 60 articles were selected for this research for literature analysis.

The fourth step analyzes and synthesizes selected studies to highlight emerging digitalization and factors of competitiveness for an overall understanding of the concept, and finally classifies characteristics defined in the literature. Based on these characteristics, scenarios for future directions were identified.

Figure 2: Identify, Selection and Evaluated Articles
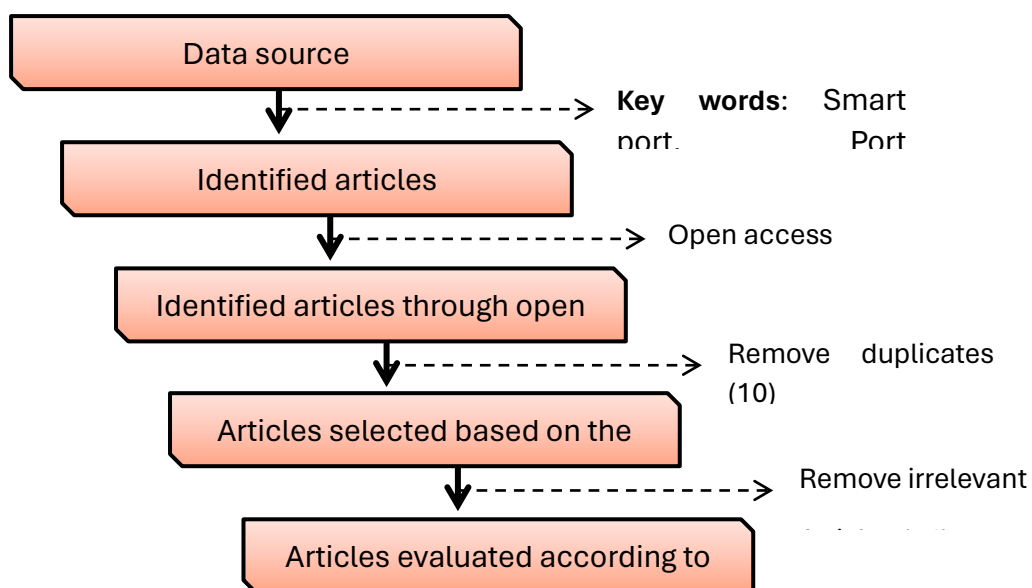
LITERATURE REVIEW

Digitalization in Port Operation

Port supply chain plays a pivotal role in the process of global economy (Liu et al., 2022). Maritime logistics entrust the importance of port management and the efficiency of maritime transportation to decarburization (Monzon Baeza & Ortiz, 2022). Many research studies mentioned the rapid growth of technology during the past few years as part of maritime logistics (Iman et al., 2022). The new business environment and digital transformation have been challenging the global supply chain, and adapting new technology can address these challenges (Othman & El-gazzar, 2022).

According to UNCTAD (2023), new technologies in trading can be identified under the 16 categories of technologies. Table 3 shows the digitalization of maritime logistics.

Table 3: Usage Digitalization Approaches in the Maritime Logistics

Author	Usage of Digitalization
Heikkilä, et al., (2022)	Applications of Smart port 4.0: renewable energy, hybrid, electric based terminal equipment and container tracking system
Alamoush, et al., (2021)	Digitalization – single window system, port community system which give service to ship and land transportation for other users also. E-document management system (EDI –Electronic Data Exchange, E-document program, RFID). Technologies for connectivity and analysis of data (IoT, big data, cloud and edge computing). Block chains (digitalized ledger system, e-bill of lading). Measures of cyber security
Sankla & Muangpan, (2022)	Smart port applications for environment, economic and social aspects.
Jun, et al., (2018)	Practices of smart ports; environment, energy, operational, safety, security, people factor
Sankla & Muangpan, (2022)	Internet of Thing (IoT) – exchanging of information about the climate, position, sea route and specifications of cargo. Big Data (BD) – for the purpose of analysis of low enforcement and cargo owner, shippers etc…

	Block Chain (BC) – facilitates the monetary transactions between the stakeholders and digital legalization
	Artificial Intelligence (AI) – space allocations, security detection and actions, allocations of containers automatically
	Digital Twin – interface and simulations of physical movement and live seen
Mudronja, et al., (2022)	Drones, G networks, fuel technology, internet of Vehicles etc…

Source: Developed by author

Digital transformation gives many benefits to maritime shipping (Kuo et al., 2022). It produces recognition from the customers, improves efficiency, and builds relationships with customers and sustainability and digitalization facilitate community play on a single platform, supporting each other through the sharing of real-time information (Caldeirinha & Nabais, 2022; Serra et al., 2022). It helps monitor the visualization and audibility of terminal and yard operations (Cil et al., 2022 ; Zhou et al., 2022), and identify container movement in the global (Aksentijevi´c & Tijan, 2022), mitigate the human-related risks, threats, and vulnerabilities (Ibrahim, 2022), and ensure the security of maritime trading (Serra et al., 2022).

Directions of Digitalization

According to the literature, researcher could identify the various approaches to digitalization and their benefits for maritime transportation and other logistics services. This research aims to identify the future directions of digitalization to enhance port competition. Considering the various approaches, researcher could identify the current and future directions of digitalization through various empirical evidence. However, any research has not demarcated these directions, and many of the directions are interconnected. Information flow can be achieved through automation and traceability. Safety and security require better information flow and connectivity. According to Iman et al. (2022), the rapid growth of technology during the past few years has become a part of maritime logistics. Therefore, directions have been changing from time to time according to the digital transformation.

Further, Othman & El-gazzar (2022) have mentioned that the new business environment and digital transformation have been challenging to the global supply chain and that port users need to address these challenges by adapting new technology and smart management. Considering this phenomenon of the technology and business environment, researchers have identified

major directions from previous research. Such as innovations, connectivity, and information flow; environment management system, safety and security, sustainable initiatives of the port, commerciality, and maritime institutions.

Innovations

According to Bhandari, (2022) technology is a vehicle to drive supply chain competitiveness and performance through improving the overall effectiveness and efficiency of the logistics system. And facilitate prosperity in individuals, businesses, and nations (Chebo & Wubatie, 2021). Also, various types of technology can make tasks easier and faster for the customer with the minimum number of workers. Specially, in today's digital era, businesses need to be agile and adaptive. With a plethora of affordable technologies now available, it has never been easier to build modern architecture by composing various services. Further, they have mentioned that the direct and indirect effects of technology adoption, innovation, and diffusion on value creation and competitive advantages will be a novel contribution to the study of such a relationship. With this technology, key changes have been happening in maritime logistics. Such as innovations in port operation and shipping transportation (Farah et al., 2022; Tsvetkova & Hellström, 2022),

Bhandari, (2022) has highlighted that emerging new technologies provide strategic opportunities for institutions and organizations to develop their competitiveness in various management fields, including logistics and supply chain management. He has categorized this innovative technology into three categories: automatic identification technology, communication technology, and information technology.

Innovation makes ports more automated, environmentally friendly, and collaborative. It is emphasized by the environmental, social, and economic aspects of smart ports (Sankla & Muangpan, 2022). Amarathunga (2022) has mentioned the configuration of an automated port as seaside, quayside, and landside. It consists of quayside automation, horizontal transport (seaside), yardside automation, horizontal transport (landside), and gate automation. Terminal automation mainly focuses on transportation, yard automation, and quayside areas (Amarathunga, 2022). Such technology is used for automated guided vehicles (AGV), automated rail-mounted gantries (ARMG), automated and unmanned tractors, runners, cranes, shipping equipment to shore, equipment in the yard, and container movement from berth to yard. Also, they have used various technologies for that, such as radio frequency identification

(RFID) and optical character recognition (OCR) (Knatz et al., 2022).

Automation has been increasingly used by global ports due to its ability to improve the efficiency of the port and fulfill the requirements of maritime trading (Amarathunga, 2022). Declining business development urgently requires automation, and as a result, management has been concerned about the automation of the terminal (Amarathunga, 2022). The top twenty ports have been automated at a certain level, it increases the frequency of container movement and reduces unwanted cargo handling and movement. That means it gives optimal cargo handling through automated equipment and analysis programs (Rodeigue & Notteboom, 2021).

Another example is the single window system. Singapore's National Single Window for Trade Declaration is Trade Net. It provides a single platform for Singapore's trade and logistics community to meet all regulatory requirements related to import, export, and transshipment. TradeNet reduces the cost and time required to prepare, submit, and process trade documents by providing a single point of entry for the submission of a single declaration to multiple regulatory agencies.

In addition to that, composable technologies are a major innovation in the port industry. It allows companies to seamlessly integrate and automate their workflows across different platforms. Composable technology means building on the digital core that companies have in place to power their businesses, quickly incorporating required new or enhanced capabilities through additional applications and allowing for easy integration (McGuigan & McKillips, 2022). Businesses can decipher the data required to make better, faster decisions by connecting these platforms and applications, running them in the cloud, and adding an advanced data integration layer. Composable (modular) technology shortens transformation time by leveraging proven, repeatable solutions that can be configured and reconfigured quickly to address changing business needs and pave the way for rapid value realization.

Connectivity

Relationships between stakeholders: port authorities, ministries, harbormaster's offices, freight forwarders, agents, and terminal operators can be enhanced by adapting technology (Jovic et al., 2022). Most of the port recognizes the importance of not only investing in infrastructure but also smart technologies and integration within the port community (Othman et al., 2022). Digitalization integrates all the parties into a single port and connects all the ports (Farah et al.,

2022). Also, it makes bridges, gives power (Liu et al., 2022), reduces costs, and enhances the maritime supply chain's efficiency (Gavalas et al., 2022; Liu et al., 2022).

As an example, the terminal operating system provides tracking facilities for cargo movement while all parties are aware of all the container data in real-time (Othman et al., 2022). This real-time tracking technology improves connectivity, procedures, and function ability throughout the port administration and cargo owners. It reduces cargo delays and increases efficiency between shipping lines and ports. Tracking is also important because it verifies that the correct container is loaded into the correct vessel at the right time. That means actual data can be identified. Also, logistics service providers, freight forwarders, and container warehouses are other information users in this supply chain (Rodeigue & Notteboom, 2021).

Barcodes and global positioning systems give better information about shipping and cargo movement by enhancing supply chain performance, utilization rates, and container cycle volume (Calatayud et al., 2020). Cargo passes various ports and a variety of stakeholders who need information about cargo location, reasons for delay, and arrival time. Because they are not actively participating in container handling (Rodeigue & Notteboom, 2021).

Information Communication System (ICT):

The flow of goods (cargo), information, and finance can be efficiently and effectively transferred within the decision-makers through ICT as a single-port operation. It helps to make decisions for the different decision-makers (Russo & Musolino, 2021). ICT gives a better interface with stakeholders, assisting them to maximize the bottlenecks, plan well, and achieve the expected gains from international trade (Calatayud et al., 2020). Another important thing is that it guarantees information's relevancy, integrity, and consistency through the sharing and storage of information. And it gives a better economic outcome through better decision-making supported by an information system (Knatz et al., 2022). Also, the information system automatically gives safe guidelines for operating ships with the correct position, speed, path, route, and course (Tran, 2022).

Scanners and positioning systems provide better control of the terminal by effectively transferring information and helping to move the automated trucks. It helps to work at night without any accidents is harmless to the people, reduces labor costs by 70 percent, and increases efficiency by 30% (Koroleva et al., 2019). Another important concept is the single-window concept. All the stakeholders in the chain exchange information in real-time, which improves

the business process and sustainable development (Mudronja et al., 2022). Rotterdam port: IoT sensors, AI, and augmented intelligence give weather data in real-time, berth availability, and other parameters to carriers, reducing the stay time and increasing the loading and unloading volume and efficiency of the terminal operation. As a result of more vessels adopting the system. Digital dolphins clear the port from traffic congestion and make space for optimal utilization of trucks and ships at the port.

5G is also providing benefits for port users through a real-time and high-speed data transfer system. It is helping the functioning of other technologies and equipment. Such as automated vehicles and IoT, which provide efficiency in operation and transparency for the activities. Also reduces cost and waiting time, increasing traffic safety, which helps to achieve sustainable developments (Mudronja et al., 2022). Block chain also improves the efficiency of the storage system and freight document and data transfer. It improves the visibility of the entire supply chain (Mudronja et al., 2022).

Container terminals have been utilizing information technology for better management. It helps to manage the assets and provide alternatives for the human job role. Such terminal operating systems (TOS) facilitate control, maximizing movement and storage in the terminal area. Also, they have been using RFID, OCR, and anti-sway systems for that purpose (Knatz et al., 2022).

The prime characteristic is that productivity-based decisions have been made by the partners of this chain, adding value throughout the network. This competitiveness has evolved through the sustainable activities of the shipping industry. Meanwhile, technology is envisaged as a key driver for the sustainable transition of the port. Also, they are enhancing their competitiveness not only through advanced technology but also by investing in infrastructure development, reducing cost and price, improving hinterland connectivity, service quality, green port activities, training and development, etc.

Environment Management System (EMS):

Environmental degradation occurs through maritime activities. Smart ports highlight the importance of the role of a variety of indicators in economic, social, and environmental performance. Those indicators provide benefits for all the stakeholders in maritime logistics by achieving environmental objectives (Othman et al., 2022). Smart and sustainable port operations ensure functions related to economic, environmental, and social smart ports (Sankla & Muangpan, 2022).

Specially smart ports ensure lower emissions, pollution, and consumption of energy (Othman et al., 2022). It is important to maximize the use of natural resources, space, time, and finance to create energy and operational efficiency and establish environmental sustainability. Hence, the inclusive performance of the port can be increased by the smart port. Automation and connectivity mainly help reduce environmental pollution (Othman, Gazzar, & Knez, 2022; Sankla & Muangpan, 2022). Applications of ICT help not only with connectivity and collaboration but also with environmental friendliness and energy efficiency in freight transportation (Evangelista et al., 2018).

Safety and Security:

Ports are facing vulnerabilities in safety and security matters. Digitalization can solve these problems, ensure productivity, address environmental aspects, and use energy efficiently (Othman et al., 2022). Digitalization facilitated efficient supervision of the port area and better identification of the persons, equipment, and treats, which can be further analyzed through ICT (Rodeigue & Notteboom, 2021). Smart port impact on productivity, value-added services, and employment as a result, all parties can ensure cargo movement is safe without any internal harm and ensure the safety of the employees (Rodeigue & Notteboom, 2021). Applications of smart ports in Egypt could ensure the safety and security of the ship, solving the uncertainty in the trading pattern (Othman et al., 2022).

Sankla & Muangpan (2022) mention the safety of workers, the security of the port, and the community as the social aspects of the smart port. It has an impact on boosting the activities of the port, which ensure best practices and create recognition through the implanting of digitalization tools. Block chain also improves the efficiency of the storage system and freight document and data transfer. It improves the visibility of the entire supply chain. Further, it helps to minimize human errors by minimizing waste, fraud, and theft, providing tracking facilities, cost reduction, eliminating time delays, and saving time and other resources. which help to achieve sustainable goals (Mudronja et al., 2022). IoT provides facilities for storage and monitoring of the data. Also, RFID and camera-built technologies ensure the safe handling of cargo while minimizing the time. However, those are very extensive facilities and face cyber-attacks, which are vulnerabilities of ICT (Kosiek et al., 2021).

Sustainable Initiatives of the Port

Sustainable initiatives are defined clearly by the American Association of Port Authorities (AAPA) as strategies, policies, and actions that meet the needs of present and future stakeholders of the port while ensuring the protection and sustainability of natural and human resources (Degens, 2008). Most industries in the world have been facing novel, unpredictable, and extraordinary challenges. As a result, operational decisions made by them are liable, accountable, and reflect sustainable initiatives (Cavalli et al., 2021). Sustainable initiatives are required for the maritime business as an emerging trend in the shipping industry. As a result, port authorities have been influenced to adapt this green governance practice in the port (Jugovic et al., 2022).

Port stakeholders have been implementing a variety of measures to enhance the port's sustainability and meet the challenges of social, economic, and environmental conditions (Hossain et al., 2021). Therefore, these three dimensions are most important when pursuing sustainable development in the port (Cavalli et al., 2021). On the other hand, port sustainability is an international obligation that is programmed as the Sustainable Development Goals (SDG) promulgated by the United Nations (Jun et al., 2018).

Increasing trade flows require port development, which drives economic growth. Port authorities need to increase port expansion and infrastructure development while meeting economic, social, and environmental objectives and goals (ESCAP, 2021). That means while reducing environmental negative impact and improving social welfare, ports need to operate with higher economic performance (Sankla & Muangpan, 2022). WPSP (2020) mentions the main five areas covering the activities, responsibilities, and competencies of port participants. Such as strong infrastructure, community and stakeholder participation, safety and security, governance, and ethics.

Commerciality

According to the dictionary, the meaning of commerciality is commercial quality or character; ability to produce a profit. It helps to maximize the returns of the business. One important thing is that the company should have a better understanding of the other parties in the network. They should have better knowledge about the issues and problems and, ultimately, should provide advice to achieve their objectives and outcomes. It is a deeper understanding of the customer's environment, challenges, market impact, business strategy, their audiences, political and legislative implications, and a whole host of commercial activities. Through the network, it

provides first-class service, enhances competitiveness, and ultimately achieves business goals. Therefore, credibility is important for not only retaining customers but also making a huge profit from their demand.

Maritime Institution

Global institutions, professional organizations, and associations provide support to digital transformation by providing consultation and funding (Clott & Hartman, 2022), and the social network has initiated the promotion of sustainability (Vitellaro et al., 2022). Shipping professional organizations and associations are providing standards, guidelines, and recommendations for the shipping industry considering the new trend of the digital transformation (Kuo et al., 2022).

As an example, UNCTAD has been implementing trade facilitation and promotion programs around the world. Through this intervention, they increase knowledge, raise funds for the project, and guide the achievement of the sustainable development goals. Therefore, private and government, local, regional, and global government and non-government organizations and institutions make their programs and implantations to ensure the smooth functioning of the global supply chain. Also, universities and education institutes are arranging programs to develop the duration of maritime logistics. Such as World Maritime University, Lloyd Institution, etc.

Port Competitiveness

Port and maritime transportation have a positive and significant relationship (Igemohia & Faghawari, 2022). Enhancing the efficiency and competitiveness of the port are critical concerns in maritime transport (Mouafo Nebot & Wang, 2022). Competitiveness has always been used as a comparison to provide two or more things (Rozar et al., 2022). In this context, efficiency and competitiveness are more closely associated with maritime logistics. Economic development and proper management of the port realize the high efficiency of the port and its influence to direct the economic development of the hinterland and enhance the import and export trading competitiveness (Li et al., 2022).

In the current maritime trading scenario, factors affecting competitiveness vary according to the port users. Scholars and professionals have identified those factors in different ways. For instance, Tijan et al.(2022) have identified these determinants as geographic location, feeder connection, maritime connectivity, superstructure and infrastructure facilities of the container terminal and the port, length of the berth, depth, hinterland connectivity, reputation, cost,

custom procedure, and ICT systems.

Wagner et al. (2022) have mentioned that the cost of the operation, the security of the chain, and the low carbon emissions through the chain are important attributes of the chain. The selection process may differ for perishable items such as fruits and vegetables (Mohseni et al., 2023). Also, governance practice (Gracia et al., 2022), new facilities and infrastructure (Wagner et al., 2022), consolidation of multiple terminals, terminal size, and low energy consumption and low pollution equipment handling (Jiang et al., 2023), cost reduction (Jiang et al., 2022), adaptation of port access infrastructure (Wagner et al., 2022), and efficient maritime container terminals enhance the port's competitiveness (Ambrosino & Xie, 2022).

Sufficient government funds, high tertiary commerce, good economic development, and openness of the market are critical conditions required to maintain high port competitiveness (Huang et al., 2022). Also, inter-ports (Bernacki & Lis, 2022) and relations between two countries play a predominant role in shaping competitiveness (Tsantis et al., 2022). Customer preferences influence maritime trading in various ways, creating an opportunity to expand the value network of maritime trading (Zhou et al., 2022). Maritime transport financing enhances the total trade flow to the country and the port (Matekenya & Ncwadi, 2022).

Port users and supply chain participants' roles are important to building the Port Community Systems (PCS). It determines productivity, efficiencies, and competitiveness while improving the port's attractiveness through better connectivity (Mthembu & Chasomeris, 2022). The integration of the core players—ports with inland logistics providers and government intervention—and the integration of new technologies (Lin & Chang, 2022), green competitiveness (Kuang et al., 2023) and hinterland connectivity (Gleser et al., 2023) can improve the efficiency and resilience of the maritime supply chain.

New technology enhances the sustainable development and competitive advantage of the port business (Othman & El Gazzar, 2022). Digitalization will deliver the greatest benefits to maritime trading to improve the port's competitiveness: improved efficiency, relationships with the participants in the network, and sustainability (Kuo et al., 2022). Autonomous container truck help to minimize the energy consumption, level of manpower, reduce the cost, and improve the service efficiency (Farah et al., 2022); Hong et al., 2023). TOS (Terminal Operating System) can manage the real-time storage and flow of the cargo between the transport nodes (Ambrosino & Xie, 2022). Government-owned companies (GOCs), such as

ports, make the strategies and policies considering port sustainability (Barreiro-Gen et al., 2022). The consideration of technology makes a difference when port size is different, which is important to maintain green competitiveness (Kuang et al., 2023). New mega containers require advanced port technology facilities, which create demand among these shipping owners (Wagner et al., 2022).

Relationship between Digitalization and Port Competitiveness

Spreading of digital trade has a greater impact on service trade which than the merchandise goods trade (ESCAP, 2016). Technology can be considered as a vehicle to enhance the competitiveness and supply chain performances through improving the logistics services' efficiency and effectiveness. Also, directly and indirectly, it affects value creation and creates competitive advantages (Bhandari, n.d.).

Digitalization delivers greater benefits to maritime trading to improve port competitiveness: efficiency, relationships with the participants in the network, and sustainability (Kuo et al., 2022). Smart port, technology, and sustainable performance have a relationship, and they address the issues efficiently in maritime logistics (Othman et al., 2022). As part of this, artificial intelligence, big data, and automation can improve the efficiency of the port's operational status and make it more competitive (Lin & Chang, 2022).

Mthembu & Chasomeris, (2022) has mentioned role of the port users and other stakeholders are important to develop the Port Community System (PCS). It determines port competitiveness, and productivity throughout the supply chain whiles enhancing the attractiveness through the better connectivity. The integration of the core players, ports with inland logistics providers and government intervention, integration of new technologies (Lin & Chang, 2022), green competitiveness (Kuang, et al., 2023) and hinterland connectivity (Gleser, et al., 2023) can improve the same as mentioned by Mthembu & Chasomeris, (2022) and frthermore supply chain resilience.

Autonomous container trucks help to minimize the energy consumption and level of manpower, reduce the cost, and improve service efficiency (Farah et al., 2022; Hong et al., 2023). TOS (Terminal Operating System) can manage the real-time storage and flow of cargo between the transport nodes (Ambrosino & Xie, 2022). Digital platforms among the port

community exchange and share real-time information. This integration enhances competitiveness through efficiency (Mthembu & Chasomeris, 2022).

Block chain also improves the efficiency of the storage system and freight document and data transfer. It improves the visibility of the entire supply chain. Further, it helps to minimize human errors by minimizing waste, fraud, and theft, providing tracking facilities, cost reduction, eliminating time delays, and saving time and other resources (Mudronja et al., 2022). Also, a single-window system creates a shorter waiting time through the speed of the loading and unloading processes and reduces the cost of the entire process by removing the delay. Also, it enhances communication and the transfer of information among stakeholders through 5G. Therefore, productivity is enhanced in the operation. It generates a large amount of data within a few seconds and makes business processes efficient. Also manage the traffic, improve transparency and safety, and reduce business costs (Mudronja et al., 2022).

Smart Port has created a new logistics system that ensures safety, quickly delivers goods, and has a minimum cost. The most important thing is the increasing influence of efficiency on the recognition and improvement of the port, which is important for the strategic positioning among the ports, future development activities, and investment flow (Koroleva et al., 2019). TOS provides integrated real-time systems and automation that are hosted in the cloud. Also, better visibility and interoperability of the supply chain are provided by digital twins, artificial intelligence, the internet of things, and machine learning. Therefore, it is important to maintain transparency and collective efforts for sustainability (Tran, 2022).

Belmoukari et al. (2023) have mentioned the relationship between digitization and sustainability, which trust digitization due to its providing the solution for changing environments in the global supply chain. Because innovation in port operation and shipping transportation has been complying with sustainability through smart port activities and digitalization (Farah et al., 2022; Tsvetkova & Hellström, 2022). Also, it enhances the green port capabilities (Han et al., 2022; Jugovic et al., 2022).

Tijan et al. (2022) have indicated that sustainable port operations ensure the functions related to three kinds of smart ports: economic, social, and environmental smart ports. As a result, best operation planning gives many benefits, such as improving business sustainability in the port, renewable energy usage, improving social safety and health, managing the environment in the port, decreasing emissions, improving air quality, minimizing greenhouse gas emissions, minimizing water consumption, waste management, electricity consumption, and monitoring

and managing green concepts. Therefore, digitalization gives sustainable portability. On the other hand, these requirements have been seen as an added value to the port charges and costs (Adams et al., 2009).

As a part of smart port initiatives, sustainability initiatives consider sustainable performance through not only port operation but also energy, environment, safety, and security. In the future, digital innovation will make the difference between sustainable development, cooperation, and automation. (Othman & El-Gazar, 2022). As an example, the renewable energy-based hydrogen-based Automated Container Terminal (ACT) has become more famous as the low-carbon transmission system in the port due to the effective usage of clean energy (Yang et al., 2022). Therefore, smart port, technology, and sustainable performance have become necessities for sustainable port operations (Belmoukari et al., 2023).

Considering the ports in the world, the green competitiveness of the port has been enhanced by the port management and the technology. In fact, innovation plays a major role in port sustainability (Kuang et al., 2023). Also, Heikkilä et al. (2022) have indicated that key components of the smart port are automation, collaboration, and sustainability (Sankla & Muangpan, 2022). Automation and connectivity mainly help reduce environmental pollution. Applications of ICT help not only for connectivity and collaboration but also for environmental friendliness and energy efficiency in freight movement (Jiang et al., 2022).Therefore digitalization as the part of innovation creates ports more automated, environmental friendly and collaborative. It is emphasized by environmental, social, and economic aspect of smart port (Sankla & Muangpan, 2022).

Currently, digitalization has become a threat to port operations. Such as stolen goods, illegal activities, cyber-attacks, etc. (Othman et al., 2022). Under this situation, technology has connected the social dimension of the port operation (Heikkilä et al., 2022). On the other side, the implementation of sustainable technologies can make the best practices to ensure the employees safety, the security of the port, and social security. And it creates a good image among the stakeholders (Rodeigue & Notteboom, 2021; Sankla & Muangpan, 2022). Special supervision of the port area, people and objects identification, threat analysis, and cyber security threat analysis have been ensured by the digitalization (Sankla & Muangpan, 2022).

Digital transformation is not an easy task for organizations. It needs skilled staff, and their knowledge is very important. Because of their resistance to change, insufficient knowledge about the process, and lack of coordination among the departments. That need to be solved for

sustainable port operation through technology (Othman et al., 2022). It saves money and time with the shorter processing time and minimizes the environmental impact by reducing the waiting time for loading and unloading at the terminal and yard area. Especially, it uses human resources efficiently through increasing productivity and information exchange (Mudronja et al., 2022).

Furthermore, digitalization influences logistics capabilities such as green logistics, international logistics, and total logistics capabilities (Iman et al., 2022). As a result of stakeholders' concrete new business, new service, and introduction of new channels throughout the network, additional revenue will be generated (Farah et al., 2022) and a win-win situation will be achieved. Therefore, it creates a business opportunity for the stakeholders and the country by improving their customized service in the maritime field for the entire network (Shi et al., 2022).

Kavirathna et al. (2018) mention that identifying the success of competitiveness is identical and significant for future planning. In view of this, major parties such as port authorities and terminal operators need to identify this shipping line as the key customer. In developed countries, the government is involved to enhance port competitiveness (Wahyuni et al., 2019). Supply chain optimization depends on efficient port operations. Largest port users influence based on their agenda (Kuo et al., 2022). Therefore, government involvement is necessary to ensure the port's sustainability through digitalization, addressing the gaps between legislation and implementation (Wahyuni et al., 2019).

RESULTS AND DISCUSSION

Digitalization

Articles mentioned the benefits, characteristics, and applications of digitalized technology for port operations. Table 4 and figure illustrate 10 characteristics based on digitalization that were identified from 32 articles.

Table 4: Summary of the Grouped Digitalization Characteristics

Characteristics	Source
Operational efficiency	(Kuo, et al., 2022), (Gavalas, et al., 2022), (Tsvetkova & Hellström, 2022), (Serra, et al., 2022), (Farah , et al., 2022), (Othman & El-gazzar, 2022), (Othman & El Gazzar, 2022), (Han, et al., 2022)
Maritime logistics capabilities	(Iman, et al., 2022), (Serra, et al., 2022), (Tsvetkova & Hellström, 2022), (Zeng, et al., 2022)
Contribution of maritime institution	(Kuo, et al., 2022), (Vitellaro, et al., 2022), (Clott & Hartman, 2022)
Strategies for digitalization and port sustainability	(Kuo, et al., 2022), (Jugovi´c, et al., 2022), (Akkerman, et al., 2022), (Belmoukari , et al., 2023), (Heikkilä, et al., 2022), (Othman & El-gazzar, 2022), , (Othman & El Gazzar, 2022), (Clott & Hartman, 2022)
Stakeholder connectivity	(Iman, et al., 2022), (Serra, et al., 2022), (Caldeirinha & Nabais, 2022), (Jovi´c, et al., 2022), (Serra, et al., 2022), (Farah , et al., 2022), (Heikkilä, et al., 2022), (Othman & El Gazzar, 2022)
Efficient information flow	(Serra, et al., 2022), (Caldeirinha & Nabais, 2022), (Sahu , et al., 2022), (Serra, et al., 2022), (Li, et al., 2022), (Monzon Baeza & Ortiz, 2022), (Clott & Hartman, 2022)
Automation	(Yang, et al., 2022), (Heikkilä, et al., 2022)
Decarbonize	(Yang, et al., 2022), (Farah , et al., 2022), (Monzon Baeza & Ortiz, 2022)
Monitoring and traceability	(Caldeirinha & Nabais, 2022), (Zhou, et al., 2022), (Aksentijevi´c, et al., 2022), (Cil, et al., 2022), (Hake, et al., 2023), (Li, et al., 2022), (Monzon Baeza & Ortiz, 2022), (Sahu , et al., 2022)
Security	(Ibrahim, 2022), (Tsvetkova & Hellström, 2022), (Serra, et al., 2022), (Farah , et al., 2022), (Han, et al., 2022)

Source: Developed by Author

Mainly four characteristics are highlighted in the eight articles. Those who have mentioned the digitalization influence on port operations are: Operational efficiency, Strategies for digitalization and Sustainability, Stakeholder connectivity and monitoring and traceability. Efficient information flow, security, maritime logistics capabilities, the contribution of maritime institutions, decarburization, and automation are highlighted in 7, 5, 4, 3, and 2, no of articles respectively. However these distinctions are considered the interrelations of these characteristics such as automation make the low carbon emission terminal operation, equipment etc. And it is impacted by the strategies relevant to sustainability.

Port Competitiveness

All the articles relevant to port competitiveness give a new rather than traditional view of this concept. The term competitive has always been used as a comparison to provide a distinction between two or more things (Rozar et al., 2022). These characteristics can be considered as factors affecting the port's competitiveness, as illustrated in the table 5.

Table 5: Summary of the Grouped Digitalization Characteristics

Characteristics	Source
Terminal operation	(Jiang, et al., 2022), (Mouafo Nebot & Wang, 2022), (Jiang, et al., 2023), (Ambrosino & Xie, 2022)
Digital transformation	(Jiang, et al., 2022), (Lin & Chang, 2022),
	(Othman & El Gazzar, 2022), (Kuang, et al., 2023), (Hong, et al., 2023), (Iman, et al., 2022), (Mthembu & Chasomeris, 2022), (Gracia , et al., 2022)
Operational efficiency	(Li, et al., 2022), (Lin & Chang, 2022), (Igemohia & Faghawari, 2022), (Rozar, et al., 2022), (Iman, et al., 2022), (Mohseni, et al., 2023)
Maritime shipping network	(Bernacki & Lis, 2022), (Zhou, et al., 2022), (Gracia , et al., 2022), (Notteboomand & Rodrigue, 2022), (SHI, et al., 2022)

Maritime logistics capabilities and service	(Wagner, et al., 2022), (Costa & Soares-Filho, 2022), (Igemohia & Faghawari, 2022), (Iman, et al., 2022), (Ambrosino & Xie, 2022), (Tsantis, et al., 2022), (Notteboomand & Rodrigue, 2022), (SHI, et al., 2022)
Low carbon emission	(Wagner, et al., 2022) (Jiang, et al., 2023), (Hong, et al., 2023)
Sustainable port performance	(Othman & El Gazzar, 2022), (Kuang, et al., 2023), (Barreiro-Gen, et al., 2022)

Source: Developed by Author

Eight articles out of 28 mentioned that both maritime logistics capabilities and services and digital transformation enhance port competitiveness. Operational efficiency and the maritime shipping network are highlighted in six articles. Terminal operation, sustainable performance, and low carbon emission are indicated on 4, 3, and 3 articles, respectively. Sustainable performance and low carbon emission factors are relevant to the sustainable practices of the port and, therefore, need to be considered for future planning and operation of the port. Meanwhile, high port competitiveness consisted of improving logistics capabilities and service, as well as undergoing digital transformation.

Impact of Digitalization on Port Competitiveness

During the identification of characteristics of both concepts: digitalization and port competitiveness, researcher could scrutinize the relationship between these concepts. This impact can be illustrated in the table 6. Meanwhile, it shows the influence of the applications of digitalization to enhance port competitiveness. Such as digitalization, it can improve the operational efficiency of port activities while improving port efficiency. According to Scaramelli (2010), competitiveness is related to a port's performance in providing value-added goods and services to its customers; in doing so, ports pursue not only economic values, such as profit maximization, but also non-economic values, such as improving service quality to secure customer loyalty. Therefore, this illustration presents the direct and indirect impact of digitalization on port competitiveness through the involvement of digitalization in port activities.

Table 6: Relationship with Digitalization and Port Competitiveness

Focus on Digitalization	Impact on port competitiveness	Literature
Operational efficiency	Port operational efficiency	(Kuo, et al., 2022), (Gavalas, et al., 2022), (Othman & El Gazzar, 2022), (Farah , et al., 2022), (Han, et al., 2022), (Serra, et al., 2022), (Jovi´c, et al., 2022)
	Digital transformation	(Kuo, et al., 2022), (Othman & El Gazzar, 2022), (Farah , et al., 2022)
	Sustainable port performance	(Othman & El Gazzar, 2022)
Decarbonize	Port operational efficiency	(Farah , et al., 2022), (Monzon Baeza & Ortiz, 2022), (Yang, Meng, & He, 2022)
	Maritime shipping network	(Farah , et al., 2022)
	Digital transformation	(Farah , et al., 2022)
	Low carbon emission	(Yang, Meng, & He, 2022)
	Maritime logistics capabilities and service	(Yang, Meng, & He, 2022)
	Terminal operation	(Yang, Meng, & He, 2022)
Security	Port operational efficiency	(Han, et al., 2022), (Serra, et al., 2022), (Ibrahim, 2022)
Stakeholder connectivity	Port operational efficiency	(Serra, et al., 2022), (Jovi´c, et al., 2022), (Serra, et al., 2022), (Caldeirinha & Nabais, 2022)
	Maritime shipping network	(Serra, et al., 2022), (Heikkilä, et al., 2022)
	Maritime logistics capabilities and service	(Jovi´c, et al., 2022), (Iman, et al., 2022)
	Digital transformation	(Heikkilä, et al., 2022)

	Sustainable port performance	(Heikkilä, et al., 2022)
	Low carbon emission	(Heikkilä, et al., 2022)
Efficient information flow	Port operational efficiency	(Serra, et al., 2022) (Serra, et al., 2022), , (Sahu , et al., 2022), (Caldeirinha & Nabais, 2022), (Monzon Baeza & Ortiz, 2022)
	Maritime shipping network	(Serra, et al., 2022)
	Maritime logistics capabilities	(Clott & Hartman, 2022)
	Digital transformation	(Sahu , et al., 2022)
	Terminal operation	(Li, et al., 2022)
Maritime logistics capabilities	Maritime logistics capabilities	(Iman, et al., 2022), (Clott & Hartman, 2022)
Contribution of maritime institution	Maritime logistics capabilities	(Kuo, et al., 2022), (Vitellaro, et al., 2022) , (Clott & Hartman, 2022),
	Maritime shipping network	(Kuo, et al., 2022), (Vitellaro, et al., 2022) , (Clott & Hartman, 2022)
Strategies for digitalization and port Sustainability	Sustainable port performance	(Jugovi´c, et al., 2022), (Belmoukari , et al., 2023), (Othman & El-gazzar, 2022), (Othman & El Gazzar, 2022), (Heikkilä, et al., 2022)
	Low carbon emission	(Jugovi´c, et al., 2022), (Belmoukari , et al., 2023), (Othman & El-gazzar, 2022), (Othman & El Gazzar, 2022), (Heikkilä, et al., 2022)
	Digital transformation	(Jugovi´c, et al., 2022), (Belmoukari , et al., 2023), (Othman & El-gazzar, 2022), (Othman & El Gazzar, 2022), (Sahu , et al., 2022)

	Port operational efficiency	(Belmoukari , et al., 2023), (Othman & El-gazzar, 2022) (Serra, et al., 2022) , (Sahu , et al., 2022)
	Maritime shipping network	(Heikkilä, et al., 2022)
Automation	Maritime shipping network	(Heikkilä, et al., 2022)
	Operational efficiency	(Yang, Meng, & He, 2022), (Hake, et al., 2023)
	Low carbon emission	(Yang, Meng, & He, 2022)
	Maritime logistics capabilities and service	(Yang, Meng, & He, 2022)
	Terminal operation	(Yang, Meng, & He, 2022)
	Digital transformation	(Yang, Meng, & He, 2022)
Monitoring and traceability	Port operational efficiency	(Caldeirinha & Nabais, 2022), (Li, et al., 2022), (Monzon Baeza & Ortiz, 2022), (Zhou, et al., 2022), (Aksentijevi´c, et al., 2022), (Cil, et al., 2022), (Yang, Meng, & He, 2022)
	Terminal operation	(Li, et al., 2022), (Zhou, et al., 2022)
	Maritime logistics capabilities	(Zhou, et al., 2022)
	Digital transformation	(Cil, et al., 2022), (Yang, Meng, & He, 2022)

Source: Developed by Author

FUTURE RESEARCH DIRECTIONS

Considering the data presentation of the research, the researcher could draw attention towards identifying future directions. This new phenomenon in the maritime industry, considering digitalization and port competitiveness, has not been considered by previous and recent researchers. Therefore, for the development of maritime trading and the global supply chain, it is necessary to comply with these new directions through their research. On the other hand, political, economic, technological, environmental, social, and cultural phenomena in the world

have been rapidly changing, and adaptation to these changes is essential for sustainable maritime trading in the country and the global supply chain.

The characteristics and relationship between digitalization and port competitiveness make for a futuristic view of maritime trading operations. Therefore, future directions can be identified as the accumulation result of these research findings. Specially those based on the positive aspects of these characteristics and relationships. Stakeholders in this global supply chain are inventing new technologies as they emerge for the digitalization of port activities. Digitalization consists of many technologies that are used for automated terminal operation, security systems, identification, etc. This direction of innovation needs to be considered as an emerging technology for the future development of the maritime sector.

Likewise researcher has identified futuristic developments in the maritime sector through research findings (Table 6). Such as innovations, enhancing stakeholder networks, balancing port sustainability and commerciality, increasing the involvement of maritime institutions, and real-time information flow.

Innovation: The direct and indirect effects of technology adoption, innovation, and diffusion on value creation and competitive advantages will be a novel contribution to the study of such a relationship. With this technology, key changes have been happening in maritime logistics. Such as innovations in port operation and shipping transportation (Farah et al., 2022; Tsvetkova & Hellström, 2022).

Port efficiency and competitiveness are interconnected terms (Jiang et al., 2022). Bhandari, (2022) has highlighted that emerging new technologies provide strategic opportunities for institutions and organizations to develop their competitiveness in various management fields, including logistics and supply chain management. He has categorized this innovative technology into three categories: automatic identification technology, communication technology, and information technology.

According to the findings of the research, several attempts can be identified as the emerging technologies in the maritime industry. Kuo et al., (2022) has indicated ten digital transformations and those improve port operations while also improving customer relationships and sustainability. Gavalas et al., (2022) has mentioned emerging technologies as (1) sophisticated cloud computing, (2) broadband internet connections, (3) enterprise resource planning, (4) customer relationship management, and (5) an e-commerce website which create

firm-level efficiency. Those promote efficiency across shipping firms and divisions (Gavalas et al., 2022).

Further automation, big data, and artificial intelligence help to economically carry out port operations, and it needs better governance of the port (Lin & Chang, 2022). The growing interest in adapting 5G and virtual reality (VR) technology intensifies industrial operations by improving efficiency and safety. These innovative technologies increase the value of the network and create competitive advantages through enhancing the efficiency of the supply chain (Han et al., 2022). Therefore innovation is creating a version of maritime trading. In addition to that composable technologies is a major innovation in the port industry. It companies to seamlessly integrate and automate their workflows across different platforms. Composable technology means building on the digital core that companies have in place to power their businesses, quickly incorporating required new or enhanced capabilities through additional applications, and allowing for easy integration (McGuigan & McKillips, 2022)

This positive correlation impacts the need to invest in the digital infrastructure by adopting digital technology, empowering talents to get more benefits from the transformation (Kuo et al., 2022). Also, this technology facilitates the sustainable port's management of changing business requirements (Othman & El Gazzar, 2022) and, it will reduce the manpower requirement and improve fuel consumption with efficient service (Farah et al., 2022).

Enhancing Stakeholders' Networks: Relationships among stakeholders (port authorities, ministry, harbormaster's offices, freight forwarders, agents, terminal operators) can be enhanced by adapting technology (Jovi´c et al., 2022). As a result of, Most of the port recognizes the importance of not only investing in infrastructure but also smart technologies and integration within the port community (Othman et al., 2022). Digitalization integrates all the parties into a single port and connected all the ports (Farah et al., 2022). Also, it makes bridges, gives power (Liu et al., 2022), reduces costs, and enhances the maritime supply chain's efficiency (Gavalas et al., 2022; Liu et al., 2022).

As an example, the terminal operating system provides the tracking facilities for the cargo movement while all parties are aware of all the container data in real-time (Othman et al., 2022). This real-time tracking technology improves connectivity, procedures, and function ability throughout the port administration and cargo owners. It reduces cargo delays and increases efficiency between shipping lines and ports (Serra, et al., 2022), (Jovi´c, et al., 2022), (Serra, et al., 2022), (Caldeirinha & Nabais, 2022). Tracking is also important because it

verifies that the correct container is loaded into the correct vessel at the right time. That means actual data can be identified. Also, logistics service providers, freight forwarders, and container warehouses are other information users in this supply chain (Rodeigue & Notteboom, 2021).

Barcodes and global positioning systems give better information about shipping and cargo movement by enhancing supply chain performance, utilization rates, and container cycle volume (Calatayud et al., 2020). Cargo passes various ports and a variety of stakeholders who need information about cargo location, reasons for delay, and arrival time. Because they are not actively participating in container handling (Rodeigue & Notteboom, 2021).

This connectivity will improve the logistics capabilities (international logistics capabilities, green logistics capabilities, and total logistics capabilities) in the port (Jovi´c, et al., 2022) and increase the service through this digitalization (Iman et al., 2022; Zeng et al., 2022). As a result, throughout the network, stakeholders will create concrete new businesses, new services, and introduce new channels to generate additional revenue (Farah et al., 2022). And, achieve the win-win situation.

Therefore, it creates a business opportunity for the stakeholders and the country by improving their customized service in the maritime field for the entire network (Shi et al., 2022). And make the digital transformation enhance sustainability and low carbon emissions as the benefits of this connectivity (Heikkilä et al., 2022). Every node of the chain is being collaborated on through this technology.

Balancing Port Sustainability and Commerciality: Most industries in the world have been facing novel, unpredictable, and extraordinary challenges. As a result, operational decisions made by them are liable, accountable, and reflect sustainable initiatives (Cavalli et al., 2021). Sustainable initiatives are required for the maritime business as an emerging trend in the shipping industry. As a result, port authorities have been influenced to adapt this green governance practice in the port (Jugovic et al., 2022). Also, it is a part of the smart port and needs to consider operations, environment, energy, safety, and security for sustainable performance. This research shows the positive impact on port competitiveness through sustainable port performance, low carbon emissions, digital transformation, operational efficiency, and maritime shipping networks, and it requires strategies for digitalization and port sustainability (Table 6).

For instance, Industry 4.0 and smart applications have been adopted by many companies and

well-advanced ports. And digital innovation makes the difference between automation, sustainable development, and cooperation in the future (Othman & El-gazzar, 2022). Hydrogen energy in Automated Container Terminals (ACT) will become more popular as the low-carbon transmission in the port due to effective usage of clean energy (Yang et al., 2022). Therefore, smart ports, technology, and sustainable performance have been becoming necessities for sustainable port operations (Othman & El Gazzar, 2022).

According to the dictionary, commerciality means commercial quality or character; ability to produce a profit. One important thing is that the company should have a better understanding of the other parties in the network. They should have better knowledge about the issues and problems and, ultimately, should provide advice to achieve their objectives and outcomes.

Heikkilä et al., (2022) mentioned the importance of maritim shipping ntwork and focused on nhanc to compete through managing ntwork effectively. It is a deeper understanding of the customer's environment, challenges, market impact, business strategy, their audiences, political and legislative implications, and a whole host of commercial activities. Through the network, it provides first-class service, enhances competitiveness, and ultimately achieves business goals. Therefore, credibility is important for not only retaining customers but also making a huge profit from their demand. Therefore, future ports will become more sustainable, and most of the companies and ports have been balancing commerciality and sustainability through their innovations.

Increasing contribution of maritime institution:

This research has found that some aspects of the study highlight the role of maritime sector institutions. These are internationally, locally, regionally, and government- or non-government-related. This Global institutions, professional organizations, and associations provide support for digital transformation by providing consultation and funding (Clott & Hartman, 2022), and the social network has initiated the promotion of sustainability (Vitellaro et al., 2022). Shipping professional organizations and associations are providing standards, guidelines, and recommendations for the shipping industry, considering the new trend of the digital transformation (Kuo et al., 2022).

Specially, research highlights the need to enhance port competitiveness through maritime logistics capabilities and a maritime shipping network developed by the maritime institution (Kuo et al., 2022; Vitellaro et al., 2022; Clott & Hartman, 2022).

Innovation centers also work to establish the world's "Blue Economy" by delivering programs and providing funding (Clott & Hartman, 2022). Social media also help to promote the CSR

activities of the port industry (Vitellaro et al., 2022). Meanwhile those issues related to CSR and sustainable development initiatives need to be carried out by the stakeholders. Therefore, third-party involvement can promote the usage of digital technologies and maritime capabilities in the countries. And entrust the port's sustainability. For instance, UNCTAD has been implementing trade facilitation programs around the world. Through this intervention, they increase knowledge, raise funds for the project, and guide the achievement of the sustainable development goals.

Real time information flow:

The flow of goods (cargo), information, and finance can be efficiently and effectively transferred within the decision-makers through ICT as a single-port operation. It helps to make decisions for the different decision-makers (Russo & Musolino, 2021). ICT gives a better interface with stakeholders, assisting them to maximize the bottlenecks, plan well, and achieve the expected gains from international trade (Calatayud et al., 2020). Another important thing is that it guarantees information's relevancy, integrity, and consistency through the sharing and storage of information. And it gives a better economic outcome through better decision-making supported by an information system (Knatz et al., 2022). Also, the information system automatically gives safe guide lines for operating ships with the correct position, speed, path, route, and course (Tran, 2022).

This study identifies the impact of financial information flow on operational efficiency, maritime shipping networks, maritime logistics capabilities, digital transformation, and terminal operations. Caldeirinha & Nabais, (2022) have illustrated that the supply chain can enhance transparency and traceability through physical and informational flow. Because there are multiple players in maritime transportation, they interact with different perspectives, creating conflict with each other. Accordingly, they are adapting technology for their port activities. As an example, many terminals are installing sensors in different locations to grab the data and become more intelligent (Li et al., 2022). Meanwhile, the best real-time information performance and a clear visual are given by the digital twin crane monitoring system (Zhou et al., 2022). Therefore, remote control of the software platform in the terminal operation is accurate and effective. Also, integrated container technologies overcome the inefficiency of container identifications (Aksentijevi´c et al., 2022).

Maritime port security is another approach for mitigating threats and vulnerabilities in ports and port facilities (Ibrahim, 2022). Not only for efficiency but also for security purposes, information sharing is very important for the safety and security of the sustainable network

(Serra et al., 2022). For this purpose, monitoring and tracking can ensure the safety and security of the cargo, routes, and places. The Global Positioning System (GPS) and security through the Automatic Identification System (AIS) are sharing real-time data among the parties to ensure safety and security (Monzon Baeza & Ortiz, 2022). Those approaches that allow for automated, consistent, and complete damage detection (Farah et al., 2022). Precise monitoring and control of the system are vital to port logistics management. They can facilitate the establishment of a sustainable network (Cil et al., 2022). It accelerates the value generation fulfilling real time requirements.

CONCLUSION

Port competitiveness is evolving with globalization and digital transformation. These changes have been impacted by the technological applications used by the stakeholders. Currently, ports have become a more sensitive operational node in the global supply chain. It was backed by efficient informational flow, connectivity of the maritime trading, enhancing the logistics capabilities, and strategies relevant to digitalization and sustainability. As a result, port operations have become more sustainable, maximizing their returns through their efficiency. According to the systematic review, characteristics of the digitalization highly influence the port's competitiveness, both directly and indirectly, and those determinants are interdependent. These characteristics take a broader view of the various aspects of digitalization and port competitiveness. In relation to digitalization, researchers could identify main characteristics such as operational efficiency, maritime logistics capabilities, contribution of maritime institutions, strategies for digitalization and port sustainability, stakeholder connectivity, efficient information flow, automation, decarbonization, monitoring and traceability, and security while identifying the characteristics of port competitiveness: terminal operation, digital transformation, operational efficiency, maritime shipping network, maritime logistics capabilities and service, low carbon emissions, and sustainable port performance.

Authorities and users of the port as the main counterparts need attention about the future requirements of maritime trading. More than the value chain, these directions develop the value network through many initiatives. Such as innovative technology, more complex and collaborative connectivity among the stakeholders, recognizing the importance of profit maximization and sustainability, the fastest information flow, and the growing commitment of international institutions. Considering all aspects and the core functioning of the directions, it is most viable and important to balance sustainability and commerciality among the

stakeholders. The boundary line of these directions is interconnecting each direction. Especially currently, port activities are operated through sustainability initiatives, and economic, social, and environmental strategies are based on the organization's internal and external environmental factors: political, economic, environmental, social, technological, and legal. It is the future research area due to the unpredictable and challenging business environment.

The relationship between these two aspects shows a positive correlation through their characteristics. That could help to achieve the main aim of this research, which is to identify the future directions of the research. However, research concludes that all characteristics indicate future directions while indicating this significant relationship between digitalization and port competitiveness. These directions have border view and future research can pay more attention to this direction for the purpose of making better policies and strategic decisions in maritime trading network.

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An analysis of the legal responsibility of corporations towards industrial water pollution in Sri Lanka

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ABSTRACT

Water pollution resulting from industrial activities has emerged as one of the most pressing issues in contemporary Sri Lanka. It has profoundly impacted the environment and human lives, leading to a wide range of repercussions. This research aims to analyse the provisions within the corporate law in Sri Lanka that establish the responsibility for the environmental pollution caused by corporations. Specifically, it addresses the overarching question of whether the corporations in Sri Lanka bear legal responsibility for water pollution resulting from their activities. It also aims to provide brief examples from Canada, the UK, India, and Australia to illustrate key lessons for law reform. This research employs the black-letter approach of research and international and comparative research methodologies. The research reveals that corporate law in Sri Lanka lacks adequate provisions to hold corporations responsible for industrial water pollution. The research offers a guide for law makers for legal reform to ensure that corporations fulfil their responsibilities to both humans and the environment and fill a gap in the existing body of literature by addressing a matter that has received limited attention in the academic literature on Sri Lanka.

Keywords: industrial water pollution, corporate legal responsibility, environmental reporting, stakeholder approach to corporate accountability, directors' duties to stakeholders

INTRODUCTION

This research aims to assess the adequacy of legal responsibility imposed on corporations for water pollution resulting from their activities and to propose recommendations for legal reforms. This objective becomes particularly crucial in contemporary Sri Lanka where water pollution due to industrial activities has become a common occurrence. For instance, the Kelani River, considered to be the fourth-longest river on the island and the home to a substantial number of threatened species (Goonatilake et al., 2016, pp. 14–27) is under constant threat of being polluted due to human activities. Two major industrial zones, equipped with central waste treatment facilities, are situated along the banks of the Kelani River in Seethawaka and Biyagama. The area hosts approximately 2,840 industries, each with varying pollution potentials, all located along the Kelani River (Goonatilake et al., 2016, pp. 26, 29–30).

Research indicates that these industries release both treated and untreated wastewater into the river (Goonatilake et al., 2016, pp. 26, 29–30). Studies, such as the one conducted by Makumbura and others, which assessed the water quality of the Kelani River using nine key parameters, conclude that 'the surface quality [of the river water] gradually declined due to development and industrial activities' (Makubura et al., 2022, p. 147). One of the most controversial incidents related to Kelani River pollution occurred in 2015 when a prominent multinational beverage company discharged diesel oil into the river. This contamination rendered the primary water source for millions of Sri Lankans living in suburban Colombo entirely unsafe for consumption for several days (Konasinghe & Edirisinghe, 2020, pp. 60-61; Environmental Foundation Limited, 2015). Unfortunately, industrial water pollution is not limited to the Kelani River; it affects many rivers and many water sources throughout the country.

Research Problem

In light of the escalating levels of industrial water pollution in Sri Lanka, it is crucial to hold polluters responsible for the contamination stemming from their activities. This paper seeks to answer the overarching question of whether the law governing corporations in Sri Lanka imposes a legal responsibility on corporations for water pollution caused by their activities.

Methodology

The research is conducted using two methodological approaches: the black-letter approach and international and comparative research methodology. A Black-letter approach was used to carry out an in-depth analysis of the existing legal framework of corporate legal responsibility in Sri Lanka and its adequacy to make corporations accountable for water pollution caused by them. International and comparative analysis is used to determine the lessons that could be gleaned from the comparative jurisdictions of Canada, the UK, India, and Australia, which carry more comprehensive legislative provisions and legal mechanisms to enhance corporate accountability towards stakeholders. Both methodologies were utilized using legislation and judicial decisions as primary sources and books, journal articles, conference proceedings, theses, and internet resources as secondary sources.

The paper is structured into 4 main sections in the discussion to follow. In section two, the concept of the stakeholder approach to corporate accountability is elucidated, particularly in its connection to the issue of industrial water pollution. The third section conducts an in-depth

analysis of how the current legal framework in Sri Lanka addresses corporate accountability for industrial water pollution. Section four offers recommendations tailored for Sri Lanka, aiming to bolster corporate responsibility for activities that contribute to water pollution. The final section of the paper concludes.

LITERATURE REVIEW

Stakeholder Approach to Corporate Accountability

This research rejects the traditional notion that companies are only accountable and responsible towards their capital providers and adopts the broader view that companies shall be answerable to all parties connected with the company, whether internal or external.

It has long been accepted that since the shareholders own a company's equity, corporations have legal obligations to serve their interests and they acquire certain superior rights and privileges over other categories of interested parties. It is often perceived that any action taken by the management must ultimately be justified by 'whether it furthers the interests of the firm's shareholders?' (Shao, 2009, p. 6). The shareholder perspective is grounded in the principle of private property rights, which forms the bedrock of capitalism. The conventional belief is that private ownership is fundamental not only to economic efficiency but also to the maintenance of social order. The shareholder approach to property and corporation has found additional validation through the principles of free market, economic efficiency, and profit maximization (Gamble & Kelly, 2001, p. 110).

The stakeholder theory challenges the notion that shareholders hold a privileged position within a business enterprise. Instead, it advocates that corporations should fairly serve all groups or individuals with a vested interest in the corporation. This perspective was initially introduced by Freeman, who defined stakeholders as any group or individual capable of influencing or being influenced by the firm's objectives (Freeman, 1984). It was later extended to include the actions, decisions, policies, practices, or goals of the organization. In this research, this broader definition is employed to establish that industrial water pollution that negatively affects the environment and the public at large is a violation of the responsibility of the corporations towards its stakeholders.

While shareholder theory advocates the 'free market' doctrine, stakeholder theory contends that the issues of free riders, moral hazards, and monopolistic power inherent in the free market justify government intervention and promote corporate social responsibility (Shao, 2009, p. 7).

According to the stakeholder perspective, corporations cannot prioritize shareholder interests at the cost of other stakeholders, as such a practice is deemed both morally and economically inefficient (Alkhafaji, 1989). Therefore, this research posits that companies have both a moral duty and an economic interest in being accountable for their actions, particularly when those actions affect stakeholders, encompassing industrial water pollution's impact on the general community and the environment.

The stakeholder theory is discussed in three broad ways in the academic literature: descriptive, instrumental, and normative (Donaldson & Preston, 1995, pp. 69-71). Descriptive stakeholder theory is focused on providing a detailed description of distinct corporate characteristics and behaviours (Donaldson & Preston, 1995, p. 70; Jawahar & McLaughlin, 2001; Egels-Zandén & Sandberg, 2010). Instrumental stakeholder theory seeks to establish a link between stakeholder management and firm performance (Donaldson & Preston, 1995, p. 71; Egels-Zandén & Sandberg, 2010) Normative stakeholder theory primarily aims to offer guidance for corporate governance, specifically addressing how firms should be governed and to whom managers should be accountable (Donaldson & Preston, 1995, p. 71). The present research particularly focuses on the third approach to stakeholder theory. This approach involves interpreting data related to industrial wastewater generation and disposal in light of the overarching principle that companies/organizations must conduct their business in a manner that avoids any adverse impact on the various stakeholders associated with the company, including the general public and the environment. It, therefore, argues that the legal framework governing corporations should hold that companies are accountable for ensuring that no one, not even individuals remotely connected, is affected by the discharge of such wastewater.

In this context, the following section of the paper aims to investigate how the existing legal framework governing corporations in Sri Lanka acknowledges and establishes corporate accountability for industrial water pollution stemming from their operations.

Corporate Accountability for Industrial Water Pollution in Sri Lanka

Sri Lankan corporate law does not place direct and explicit obligations on corporations to be accountable for their actions that impact both people and the environment including industrial water pollution. Nonetheless, it is crucial to examine the current legislative provisions to determine if such a duty has, at the very least, been implicitly acknowledged. This analysis can be categorized under three main headings: the director's duties towards the stakeholders and

the environment, environmental reporting obligations of the corporations, and corporate social responsibility.

Director's Duties towards the Stakeholders and the Environment:

The main legislation governing corporations in Sri Lanka, the Companies Act, No. 7 of 2007 (hereinafter referred to as CASL) does not impose an express duty on the directors to take environmental or social concerns into account in their operations. Section 187 of the CASL imposes a duty on the directors to act in good faith and in the interest of the company. An emerging trend in many jurisdictions is to adopt a progressive interpretation of this duty and acknowledge that it encompasses all stakeholders of the company and concerns for the environment.

For instance, the *National Roads and Motorists' Association Ltd v Geeson* (2001) decided in Australia highlighted that, in specific situations, directors may have a 'public duty' to take actions or refrain from them for the greater benefit of the entire community, rather than exclusively prioritizing the interests of the company. Commenting on the case, Professor Robert Baxt has stated:

> The law of directors' duties may again be about to head down an 'uncharted road', where traditional principles such as acting in the best interests of the company and maximising profits for shareholders will be forced to interact with, and accommodate, contemporary considerations including corporate social responsibility (CSR), triple bottom line reporting and, certainly, sustainable development.

<div align="right">(Baxt, 2002, pp. 445-447)</div>

In the Canadian case of *Peoples Department Stores Inc. (Trustee of) v. Wise* (2004), the court ruled that when assessing whether directors are acting in the best interests of the corporation, it may be legally acceptable for the board of directors to consider various factors. These factors can include the interests of shareholders, employees, suppliers, creditors, consumers, governments, and the environment, depending on the specific circumstances of the case.

In the United Kingdom, section 172 of the UK Companies Act (2006) outlines directors' duties in acting in good faith for the benefit of the company. It specifies six factors that directors must consider, including the impact of company operations on the environment and the community.

In essence, this section makes it clear that directors are duty-bound to take into account and care for the environment when making business decisions.

The rationale behind this broadening of perspective is straightforward. If a company conducts its operations in a manner that goes against the interests of the general public and environmental protection, it may boost short-term profits. However, in the long term, it can lead to negative community backlash, legal actions, government investigations, and regulatory interventions, all of which can harm the company's reputation and result in financial losses. Such outcomes can ultimately diminish the company's profitability, sustainability, and long-term viability. Consequently, it can be logically deduced that business activities impacting the general public and the environment are detrimental to the company's interests. The situation remains the same when it comes to industrial water pollution. Water, being a fundamental necessity for communities and a vital component of the environment, places even greater responsibility on corporations when it comes to pollution of this resource.

CASL, however, does not explicitly specify to whom the duty of directors is owed, nor does it offer a precise definition of the term 'best interest of the company'. This ambiguity has yet to be conclusively addressed and resolved through judicial interpretation. Nevertheless, from a progressive standpoint, Sri Lanka can utilize section 187 of the CASL to establish a broader duty for directors to act in the interest of all stakeholders of the company and the environment following many lessons from jurisdictions around the world such as those cited above. Recognizing such an expanded scope of directors' duties ensures that their industrial activities, including industrial wastewater disposal, do not have harmful effects on the company's stakeholders and environmental well-being. Nevertheless, until this is explicitly defined by an authoritative legal source, whether through legislation or a judicial decision, there will always be an element of skepticism surrounding the scope of corporate accountability in Sri Lanka

Environmental Disclosure and Reporting:

On the other hand, the Sri Lankan legal framework does not impose an express duty on corporations to disclose their environmental impacts. Environmental reporting plays a crucial role in enhancing a company's accountability concerning industrial wastewater management and treatment. It helps preserve or restore the company's perceived legitimacy while enabling relevant authorities to assess the environmental impacts created by corporate entities through the production and discharge of industrial wastewater. This, in turn, mitigates environmental

risks and fulfills the companies' responsibilities towards society and future generations. Environmental reporting also empowers the broader community to monitor the corporation's activities affecting them and their water sources, identify risks, and exert pressure on the corporation to adhere to the highest possible standards for protecting water sources and the environment as a whole. All of these factors collectively contribute to the achievement of sustainable development.

Arguably, establishing a robust legal framework that compels corporate entities to adhere to environmental reporting standards would be a more effective approach to promoting good practices in environmental reporting by corporate entities. This stands in contrast to relying on a voluntary approach, where corporations have the discretion to disclose or abstain from disclosing their environmental implications (Deegan & Gordon, 1996; Cunningham & Gadenne, 2003)

Sri Lanka Accounting and Auditing Standards Act, No. 15 of 1995 (hereinafter referred to as SLAASA) deals with the Accounting Standards associated with financial reporting in Sri Lanka. The Act empowers the Institute of Chartered Accountants of Sri Lanka (hereinafter referred to as ICASL) to adopt Accounting Standards from time to time for the purpose of maintaining a uniform and high standard in the preparation and presentation of accounts of the business enterprises. In 2009, ICASL made the decision to fully converge with all pronouncements issued by the International Accounting Standards Board (hereinafter referred to as IASB), with some minor modifications, and to subsequently adopt all IASB pronouncements. Sri Lanka Accounting Standard (hereinafter referred to as LKAS) 1 aligns with International Accounting Standard (hereinafter referred to as IAS) 1 and encourages environmental reporting in paragraph 114 (d). Furthermore, IAS 8 and LKAS 8, which follow it, facilitate provisions for environmental-related costs. IAS 16 and LKAS 16 provide guidelines on the treatment of environmental expenditures related to property, plant, and equipment. However, Sri Lanka currently lacks an accounting standard that explicitly and exclusively addresses environmental reporting.

Under section 5 of SLAASA, the application of standards adopted by ICASL is limited to the business enterprises listed in Schedule I of the Act. In terms of section 6 of the Act, only these enterprises are legally obligated to comply with such standards. Hence, accounting standards that address environmental reporting may exclude companies not specified in Schedule 1 of SLAASA. While the counterargument to this stance, that larger corporations are typically the

major polluters, holds merit, the cumulative environmental impact of small-scale industries discharging wastewater must not be overlooked.

The Code of Best Practice on Corporate Governance (2017) which is a joint initiative between the Securities & Exchange Commission of Sri Lanka (hereinafter referred to as SEC) and the ICASL, in clause H.1.1, states that the annual reports of the companies listed in the SEC shall contain sufficient information on how environmental, social and governance risks are recognised, managed, measured and reported. Clause H.1.2, further compels listed companies to adopt an integrated approach with regard to environmental governance which takes into account pollution prevention, sustainable resource use, climate change, protection of the environment, biodiversity, and restoration of natural resources. Furthermore, it mandates sustainability reporting and underscores that an organization's environmental governance should embrace an integrated approach. This approach considers the direct and indirect economic, social, health, and environmental consequences of their decisions and activities. It encompasses aspects such as pollution prevention, sustainable resource utilization, climate change mitigation, environmental protection, biodiversity preservation, and national resource restoration. The Code of Best Practice offers a robust framework for environmental reporting, and it is obligatory for listed companies to adhere to these corporate governance rules. In contrast, companies not listed under the SEC do not have a mandatory requirement to comply with the code. Thus, the application of the Corporate Governance Code is limited and relies on the discretion of non-listed companies.

The primary limitation in the environmental reporting legal framework in Sri Lanka is the absence of explicit legal recognition of such reporting. Even the legislations that indirectly acknowledge environmental reporting are applicable only to specific categories of companies. This setup allows certain companies to entirely forego environmental reporting unless they voluntarily choose to engage in such reporting.

By contrast, the need for disclosing the environmental impacts of a company's operations is more explicitly recognized in other jurisdictions. For instance, in Australia, there are certain general reporting obligations on corporations that require them to disclose the environmental impacts of their activities. Corporations operating in Australia are currently required to provide information on environmental performance in their annual directors' report under section 299(1)(f) of the Corporations Act 2001 (Cth). The section provides that:

> If a company's operations are subject to any particular and significant environmental regulation under a law of the Commonwealth or of a State or Territory, the directors' report must give details of the company's performance in relation to environmental regulation.

This section mandates companies to disclose their engagement with environmental matters and their compliance with environmental regulations.

In the United Kingdom, section 415 of the Companies Act imposes an obligation on directors to prepare an annual director's report. According to sections 417(1) and 417(5)(b)(i), for quoted companies, this report must include a business review that covers various aspects, including environmental matters and their impact on the company's business. In terms of section 417(6)(b), the review may also include analysis using key performance indicators related to environmental and employee matters.

These examples from comparative jurisdictions, while they may have certain limitations, ensure that a company's engagement with the environment is disclosed to the wider community. This disclosure enables compliance monitoring, the ability to identify risks beforehand, and empowers stakeholders to exert pressure on corporations to refrain from actions that affect water sources or to take appropriate precautionary measures.

Corporate Social Responsibility

An explicit acknowledgment of corporate social responsibility (hereinafter referred to as CSR) is another compelling approach to ensure corporate accountability for industrial water pollution. It places an obligation on corporations to act ethically and responsibly towards the environment and the community. Furthermore, it encourages corporations to engage with a broad spectrum of stakeholders, including local communities and environmental organizations. This, in turn, motivates corporations to maintain transparency and accountability in their practices related to the generation, treatment, and discharge of industrial wastewater.

In addition to the discussed provisions that might indirectly establish a CSR expectation for companies, Sri Lankan law does not explicitly acknowledge a distinct CSR obligation for corporations. In contrast, India has legally mandated corporate social responsibility through Section 135 of India's Companies Act. Under this legislation, companies meeting certain financial criteria must establish a Corporate Social Responsibility Committee consisting of three or more directors. This committee has the responsibility to formulate and recommend a

CSR Policy, which specifies the activities to be carried out as per Schedule VII. These acts include, among other things,

> ensuring environmental sustainability, ecological balance, protection of flora and fauna, animal welfare, agroforestry, conservation of natural resources and maintaining quality of soil, air and water including contribution to the Clean Ganga Fund setup by the Central Government for rejuvenation of river Ganga. Companies Act of India (2013), Schedule VII, s iv.

The committee's responsibilities include crafting a CSR Policy that delineates activities addressing environmental and social matters, including those pertaining to water sources. By recommending funding for these endeavors and regularly overseeing the policy's execution, it guarantees that companies implement tangible measures to reduce the adverse effects of their operations on water sources. This legal mandate establishes a structure that fosters greater transparency and accountability among corporations concerning their involvement in industrial water pollution and other environmental concerns. Accordingly, this legal framework encourages corporations to contribute to the sustainability and protection of water sources.

It is clear from the discussion above that there is a notable gap in Sri Lanka's corporate legal framework that allows corporations to evade their responsibility for industrial water pollution. Given this context, it becomes essential to ascertain how the Sri Lankan law be reformed to address this salient gap. The next section of the paper focuses on this aspect and will lay down recommendations.

RECOMMENDATIONS

The Expansion of Directors Duties

It is imperative to hold company directors accountable for untreated wastewater discharge that affects the environment and the wider community. Following the lessons from the UK, as discussed in section 3.1. of this paper, CASL should be amended to explicitly impose an obligation on directors to consider the environmental impact of business operations and the long-term consequences of their decisions when acting in the company's best interests. This duty should be clearly defined in the company legislation, rather than relying on judicial interpretation or prolonged debates. The duty should specify that directors, when acting in good faith, must take into account factors such as the long-term consequences of their decisions and the impact of the company's operations on the community and the environment. This would

establish a clear and unequivocal obligation for directors to consider the environmental and social consequences in taking decisions related to industrial wastewater.

Nevertheless, a concern arises in this context: should the law allow directors to consider environmental concerns even when they are not directly related to promoting the company's success, or when such considerations do not yield direct benefits in terms of maximizing shareholder returns? Therefore, it is advisable to impose a duty on directors to give due consideration to environmental sustainability alongside the interests of the company. However, directors should be guided by the conscious understanding that industrial water pollution, which causes significant harm to the environment and human health, does not serve the best interests of the company in the long run.

Disclosing Environmental Impacts of Business Entities

Business entities should disclose the external impacts of their operations to both capital providers and all stakeholders. This disclosure is crucial for the sustainable management of industrial wastewater discharge practices, as it integrates long-term profitability with environmental responsibility (Khuntia, 2014).

Following the UK and Australian models, CASL could initially establish a duty for directors to compile an annual director's report for each financial year, a critical tool for informing stakeholders and assessing directorial performance. This report should provide a comprehensive analysis of key financial performance indicators, extending to include environmental and social considerations. In the case of publicly listed companies, their strategic reports must encompass environmental and social impacts, offering stakeholders a holistic understanding of the company's development, performance, and societal footprint. If a company's operations fall under the purview of environmental regulations, the director's report must meticulously outline the company's compliance with these environmental standards. Subsequently, the board of directors should grant approval to the director's report. Failure to adhere to these statutory reporting requirements should carry legal consequences, making directors liable to fines. Such penalties aim to incentivize companies to diligently meet their reporting obligations.

Secondly, it is recommended to impose a duty on all the companies incorporated under the Companies Act No 07 of 2007 to comply with the accounting standards in force for the time being. Accounting standards shall be further developed focusing more on Triple Bottom Line

Reporting which broadens a business's focus to include social and environmental considerations.

Encourage Social Responsibility of the Company

It is imperative to establish a clear legal framework that emphasizes a company's responsibility towards both the environment and society. Water pollution stands as one of the most pressing environmental challenges, significantly impacting the well-being of communities. Within the realm of CSR, companies hold moral obligations to mitigate water pollution and manage wastewater sustainably. Therefore, it is strongly recommended that the CASL explicitly incorporates CSR principles and mandates the formation of a CSR Committee within the Board of Directors following the lessons from India. The primary role of this committee would be to provide comprehensive guidelines for companies to follow when engaging in CSR activities. Subsequently, the Board of Directors should be obligated to approve the company's CSR policy, taking into consideration the recommendations put forth by the CSR committee, and disclose this policy within the director's report, as previously suggested. In instances where a company fails to allocate the prescribed CSR funds, the board must provide transparent reasons for this in their report. By enacting these provisions, the Companies Act in Sri Lanka can take a significant stride toward becoming one of the world's most progressive pieces of corporate social responsibility (CSR) legislation. This move represents a crucial step towards achieving sustainable development and fostering responsible business practices.

CONCLUSION

It is imperative to ensure that a country's corporate legal system imposes obligations on corporations to be accountable for their actions affecting water sources, such as industrial water pollution. Sri Lanka's current legal framework lacks such an express obligation. Valuable lessons can be drawn from the legal systems of the UK, Australia, India, and Canada in this regard. Therefore, it is necessary to amend the existing laws in Sri Lanka to establish broader corporate accountability in their activities related to industrial wastewater generation, management, and discharge. Such legal reforms are essential to prevent adverse impacts on the environment and the well-being of the country's residents, ultimately promoting sustainable development.

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A Comparative Analysis between Sri Lankan and Indian Agricultural Policies towards the Exportation of Organic Products during COVID-19 Pandemic

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ABSTRACT

The COVID-19 has been one of the unprecedented crises in the world. Even though the pandemic certainly plunged the world economy into a deep recession a green economy emerged during both the pandemic and post-pandemic period. As the green economy concept, organic agriculture was identified in that period. It is a sustainable form of agriculture both ecologically and economically. Sri Lanka and India as the major countries that follow sustainable organic farming and export its production in the Asian region, less of studies have been done to analyze the policies applied in the pandemic period in those countries. Based on the identified research gap, this study aims to compare both Sri Lankan and Indian agricultural policies towards the exportation of organic products during the COVID-19 pandemic period from 2018 to 2021 by identifying their performance in the world organic product export market, policy implementations and whether they contributed to the development of the exportation of organic products during the pandemic period. Mixed research design was employed in this study. Secondary data was used as the study was based on the agricultural policies of both countries. A comparative analysis was carried out to identify the effectiveness of the agricultural policies of both countries using qualitative data. Excel and descriptive statistics were used to show the trends and performance of each country in the organic product exportation market. It has been found that both Sri Lankan and Indian organic product exportation have been taken a significant place in the world export market of organic product during COVID-19 period while Indian governmental policies towards the organic product export market in the pandemic period were more effective than Sri Lankan policies. With the time period, policies of both countries have become weak in a way that the export of organic product has been declined or static by 2021 due to structural, functional and administrative issues. Hence, it is recommended that by providing better organic market facilities, adequate funding, training, education and awareness programs would facilitate the production of more organic products in sustainable way in both countries.

Keywords: Agricultural policies, COVID-19, India, Organic product exportation, Sri Lanka

INTRODUCTION

COVID-19 was one of the unprecedented crises that the whole globe was faced in the 21ˢᵗ century. It was a global outbreak of coronavirus, an infectious disease caused by the severe

acute respiratory syndrome coronavirus 2 (SARS-CoV-2) virus ("Coronavirus disease (COVID-19) pandemic," n.d.). It was first detected in December 2019 with its effectiveness more than two years. In real sense, COVID-19 pandemic made the world into a world with Volatility, Uncertainty, Complexity and Ambiguity (VUCA) where everything that happens around human being is more volatile which makes them to change faster, harder to predict and more uncertain, difficult to analyze because of the complexity of institutional and more challenging to interpret reflecting its ambiguity.

According to the data of World Economic Forum (2020), the economic shock which has caused due to the pandemic was three times worse than the 2008 financial crisis. Due to the multifaceted aspect of the crisis, its impact was on many sectors in every country. Hence, the pandemic made human beings adapt to changes and make decisions faster than never before. Especially, higher commodity prices and shipping costs and continued disruptions in Global Value Chains (GVCs) were the most amplified concerning issues when it came to export resilience during the VUCA world of COVID-19. Hence, the pandemic has resulted in huge, unexpected output losses as a consequence of higher global demand, rising food and fuel prices, supply chain disruptions and higher unemployment rate. Even though the pandemic certainly plunged the world economy into a deep recession, a green economy emerged during both pandemic and post-pandemic period (World Economic Forum, 2020).

As the green economy concept, organic agriculture was identified in the pandemic period. It is a sustainable form of agriculture both ecologically and economically. Organic agriculture is one such approach which is practiced attaining the goal of sustainable agriculture. In simple words, organic farming refers to the production of plants by avoiding the use of harmful synthetic additives such as fertilizers, pesticides, antibiotics etc. Nowadays, organically cultivated foodstuffs have become increasingly popular due to their numerous health benefits.

International trade has been one of the key major growth drivers in Asia countries specializing in economic activities or products which they have comparative advantage. It helps to boost productivity and investment alongside improving the linkage into GVCs and trade in intermediary inputs. It was crystal clear fact that the highest concern towards the healthy, nutritious and hygiene lifestyle led most of consumers to shift to organic products during the pandemic period.

Because of that, world organic retail sales were around 125 billion euros where the largest single market was the USA with 48.6 billion euros. Asia was able to record 13.7 billion euros organic retail sales. Even though the pandemic hit harder to the agriculture sector, the global

market grew to over 124.8 billion euros due to the increase of consumer demand towards the organic product. USA, Germany and France were the top three countries which have earned the highest income from organic products. Meanwhile, the highest organic product market growth was recorded by Estonia, Luxembourg and Canada recording 21.0 percentage, 15.3 percentage and 11.0 percentage respectively. Organic products imported into the European Union (EU) and the United States (US) was recorded as 4.7million metric tons where bananas, soybeans and sugar were the top three commodities imported into EU and US.

According to the FiBL report on Organic Agriculture Worldwide 2021, 191 countries were engaged in organic farming in total worldwide recording the growth of 1.7 percent for the term of 2020/2021 in the organic agriculture sector. The overall organic farmland utilized for organic agriculture was 76.4 million hectares globally. The number of organic producers engaged in the organic agricultural sector was around 3.7 million in 2021 and it was 4.9 percent growth compared to 2020. India was the top country which had a greater number of producers around 1,599,010. More than 91 percent of the organic producers were in Asia, Africa and Europe. Among them, 1.78 million organic producers were recorded in the Asia region.

Regional Economic Outlook of Asia and Pacific by International Monetary Fund (IMF) in its October 2021 report has emphasized that government policies should gradually focus on sectorial support programmes by reallocating labours giving proper training and adapting to the green and digital economy. In order to gear up the greener economy, laying foundation for it was essential and it should be pragmatic, equitable and flexible approach to have minimum carbon prices with lower global CO_2 emission for sustainable economic development. Many countries adhered to expenditure or fiscal policy frameworks such as concrete tax and subsidy reforms by Indonesia, strengthening countercyclical policies, Disaster payment Program by Australia and contingency measures by New Zealand to mitigate the uncertainty (International Monetary Fund, October 2021).

Compliance with the existing economic downturns and policy suggestions by respective authorities in the pandemic period, Sri Lanka and India as the pioneers of agricultural sector and its exportation in Asian region have gained strength by favorable external conditions and policy accommodations amidst the adverse effects of the pandemic on the agricultural sector. Meanwhile, export prices were remaining at relatively flat level avoiding the profit margins in tradable sectors from 2019 to 2021, both countries concerned on sustainable organic agricultural production and its exportation to the outer world as COVID-19 pandemic has led

consumers to demand more healthy, organic and nutritious food which were free from chemicals or any harmful artificial nutrients.

Sri Lanka and India as the major countries which follow sustainable organic farming and exporting its production in Asian region, less of studies have been done in order to analyze the policies applied in the pandemic period to mitigate the adverse effects on the respective export markets to maintain the performance without any disruptions. Based on the identified research gap, this study is carried out to identify the performance of both countries in the organic product export market in the world during the pandemic period, to analyze the sustainable agricultural policies that both countries implemented to mitigate the impact of the COVID-19 on organic product export market and to figure out whether the agricultural policies were successive or not to improve the organic product trade volume in the pandemic period in order to achieve the main aim of the study to compare the both Sri Lankan and Indian agricultural policies towards the exportation of organic product during the COVID-19 pandemic period which were formulated and implemented during COVID-19 period amidst the adverse effects in economy.

LITERATURE REVIEW

Sri Lankan Agricultural Policies towards the Organic Products Exportation

Sri Lanka being a tropical country rich in biodiversity is inherited with a rich legacy of agrarian civilization. In ancient times it was known as the Granary of the East in the Polonnaruwa era from 1153 to 1186. It has the full potential in organic agriculture to reap the benefits from the changing lifestyle and consumption pattern of human beings across the globe.

As a self-sufficient country in rice and other crops during the rule of King Parakramabahu, excess production was exported to other countries. Since ancient times, Sri Lanka has been at the forefront in organic agricultural exports ranging from spices, essential oils, herbs and rubber. They have practiced a sustainable agricultural production system. As per the data of Export Development Board (EDB) of Sri Lanka, indigenous knowledge and practices, diverse climatic conditions within the country enabling to cultivate a range of organic products from tropical to temperate, available supply local resources, compliance with the international standards and skilled labour act as the strengths in Sri Lankan organic agricultural market. Moreover, increasing global demand for Sri Lankan organic products, expanding new markets and releasing value added organic products for the market serve as the prevailing opportunities for the export market of Sri Lankan organic products.

Even the traditional Sri Lankan farmers have followed the eco-friendly agricultural methods based on four principles of organic agriculture namely Health, Ecology, Fairness and Care. Currently, it has re-embraced the best practices in agricultural production by stepping out from the conventional agricultural practices. Bio Foods, the organic-liquid and solid bio-fertilizer developer act as the converters of Sri Lanka's conventional farming methods.

By the 21st century, global demand for organic products is now being increased rapidly. Many countries are moving into organic production following the organic principles introduced by the International Federation of Organic Agriculture Movements (IFOAM) while some countries are developing their own national standards. Sri Lanka has also developed National Organic Standards considering the traditional agricultural knowledge, climate, cropping patterns and the current agricultural practices. For over a decade, Sri Lanka maintains its reputation in organic crop production and exports different varieties of organic products. For an instance, being the pioneer in the Asian region, Sri Lanka introduces organically certified tea and cinnamon to the world market ("Organic products," n.d.).

People's Organization for Development Import and Export (PODIE) helps to reclaim inheritance to a safe food culture where sustainability is assured. Worga Naturals is considered as a supplier and processor of premium quality organic certified fruit and spices to the export market. More than 36,000 farmers in five region of Sri Lanka who are registered under the Small Organic Farmers' Association (SOFA) produce organic raw material in compliance with accepted global standards in organic farming and fair-trade principles. The Sri Lanka Accreditation Board (SLAB) as the official agency provides the organic certification to farmers and processors in Sri Lanka as per the Sri Lanka Organic Standard-SLS 1324:2018 by assisting to the journey of embracing safer cultivation practices.

Emphasizing the ineffectiveness and improper coordination of policies and institutions, Malkanthi (2021) points out that even though Sri Lanka has a great deal of promise for organic agriculture however it is now in its infancy. Only a small part of Sri Lanka's organic products are kept in local markets; the majority are exported. Both domestic and international markets are seeing an increase in demand for organic products. There are only a few certified certifications available for goods on the domestic market, despite the fact that there are seven international food certification companies working in the nation as external inspection and certification authorities.

Considering the current trends and lifestyle patterns, Sri Lanka mainly focuses on organic agriculture to provide toxic-free products through toxin-free agricultural methods and practices

utilizing the great historical heritage and traditional irrigation technology to the global community. Based on the popularity and acceptance of aforementioned good agricultural practices, several companies produce organic certified agricultural raw material and finished products to the foreign market and also to the local market such as spices, tea, fruits and vegetables, herbs and oil so on. In addition to those, as the major Sri Lankan organic products exported to global market can be brought out tea, coconut based products, spices such as pepper, cardamom, cloves, nutmeg, cinnamon, ginger, vanilla and extracts, medicinal herbs, essential oils and extracts, tubers and vegetables, coffee, cocoa, fruits, pineapple, papaya, banana, lime, mango, fruit juice, rice, cashew, processed products, wild harvest, kithul treacle, jaggery and bee products so on.

With the COVID-19 pandemic, both local and foreign consumers demanded Food and Beverages products (F&B) especially for the products with the labels of Organic, Superfoods, Bio Foods and Vegan. Sri Lankan F&B products were captured the higher demand among the food product exporting countries due to its inherent quality, taste of raw materials used and standards of value addition process. Bio Foods plays a crucial role in the organic post-harvested food industry in Sri Lanka which is based on the values of sustainability, traceability, reliability and food security. SOFA, as a social enterprise of small-scale farmers grows organic certified tea, coffee, spices and vegetables for the market and home consumption. Most of the trading partners purchase and market its spices and tea for export in the global market by benefitting the farmers.

Connecting Sri Lanka's Organic Agriculture with the World (EDB 2022) has provided the certification process in the pandemic period to the farmers and processors to certify their products under the SLS 1324:2018 which can be used as a government endorsement for the genuineness of their products. Through certification, organic integrity is safeguarded at every stage and independently validated. Production, storage, handling, processing, and marketing operations are assessed to ensure that they adhere to certain requirements (standards) during the certification process before being certified as "organic" by a certifying authority. These several organic certification programs concentrate on certifying a wide range of items as organic, including crops, livestock, processed or multi-ingredient goods, and wild crops. SLS 1324 (Organic agriculture production and processing) is the national standard being produced in Sri Lanka by the SLSI (Sri Lanka Standards Institution). The standard lays forth the specifications for growing organic fruit and goods, as well as for wild harvesting, post-harvest management, storage, processing, transportation, packaging, labeling, and marketing. Various

organic produce and goods are currently certified in Sri Lanka by certification organizations using this standard.

The reliability, authenticity, and legality of products with an organic certification are unquestionably increased by the accreditation of a certification authority that conducts assessments of organic agricultural methods. It is a technique used by a National Accreditation Authority to determine if a certification body's staff and farms are qualified to certify organic products and procedures in accordance with various organic standards. The national organization in our nation that offers accrediting services to certifying bodies is The Sri Lanka Accrediting Board (SLAB). Organizations can display a mark of conformity on their products or issue certifications certifying the product's compliance with the organic standard by applying for product certificates or licenses from certification bodies that certify organic products.

To assist local enterprises and others impacted by the pandemic, the Government of Sri Lanka intervened and provided LKR 50 billion through the Central Bank of Sri Lanka (CBSL). This amount was later enhanced to LKR 150 billion under the Saubagya COVID-19 revitalization facility. The debt moratorium for loans and leases, overdraft facilities, the rescheduling of non-performing loans, and the issuance of fresh loans are examples of significant concessions. Small and medium-sized businesses (SMEs), tourism, businesses directly and indirectly involved in exports, self-employed businesses, and foreign currency earners are among the industries that qualify for exemptions.

However, many companies that serve the domestic market and rely on imported components are frantically searching for more affordable production alternatives. With minimal personnel at the height of the crisis in the nation, Sri Lanka Customs, the Department of Commerce (DOC), and Export Development (EDB) have been helping exporters in various ways to lessen the impact of COVID-19 on trade. With the assistance of Sri Lankan diplomatic posts and embassies across the world, EDB, for instance, has established a help desk to address urgent concerns faced by exporters and to provide information on best practices, state incentives, logistics, and rapidly changing international markets.

Indian Agricultural Policies towards the Organic Products Exportation

India is well-known for its history of practicing the indigenous method of organic farming in numerous rural areas. Hence, organic farming or agriculture is no more an alien concept for India. There are several states in India like Himachal Pradesh, Kerala, Karnataka, Gujarat, Maharashtra, Madhya Pradesh, Uttarakhand, Rajasthan, Sikkim and Tamil Nadu that practice

as well as promote organic farming among their farmers. It possesses immense potential for the cultivation of organic products with the availability of huge area under natural organic cultivation. Currently, India is one of the leading organic producers in the world. As per the Agricultural and Processed Food Products Export Development Authority and report of the Research Institute of Organic Agriculture, India ranks 8th with respect to organic agriculture land and holds 88th position in regard to fraction of organic crops to agricultural land**.**

According to Sonia et al (2022) referring to Gupta et al (2021) emphasizes that there are thirty sustainable agricultural approaches (SAP) in India and Organic farming is one of such vital SAP for addressing India's current agricultural snags. The organic food industry in India is fueled by a growing market for organic products as well as government policies to encourage exports. Endorsing organic farming or its components Indian government has proposed different schemes such as Mission Organic Value Chain Development for North Eastern Region (MOVCDNER), National Food Security Mission (NFSM), Capital Investment Subsidy Scheme under Soil Health Management, Paramparagat Krishi VikasYojana (PKVY), National Mission on Oilseeds and Oil Palm etc.

Willer et al (2023) study reveals that the "National Mission on Natural Farming (NMNF)" of the Indian government promotes natural farming practices during a four-year period beginning in 2022–2023 with an initial budget of 158 billion Indian rupees. More than 1.5 million farmers will live in the 15,000 clusters of 50 hectares each that NMNF plans to create. India witnessed a wider adoption of Participatory Guarantee Systems (PGS) in the growth of the organic industry throughout 2022. A total of one million hectares of agricultural land with a 0.8 million ton annual crop yield are certified by PGS. This is in addition to the certified wild collection and third-party organic sector. Support will be given for post-harvest value addition, boosting domestic consumption, and national and worldwide branding of millet goods.3 The Indian organic market is projected to expand between 2021 and 2026 at a CAGR of roughly 20.5 percent.

Many government and private organic e-commerce platforms have also been established to sell organic products directly to both retail and bulk buyers from local and foreign countries. They could be able to sell major organic products such as sugar, coffee, oils, tea, dry fruits spices, cereals so on. The Agricultural and Processed Food Products Export Development Authority (APEDA) under the Ministry of Commerce & Industries, Government of India has administered National Programme for Organic Production (NPOP) carrying out the major responsibilities of the accreditation of different certification bodies, marketing, setting

guidelines for the development of organic products, strengthening organic agriculture. Organic product certification is very crucial for establishing authenticity as buyers seek different logos like FSSAI (Jaivik Bharat), PGS organic India on organic items for determining their validity. During the pandemic period, Indian exports were 888179.68 MT in the year 2020-21 and organic food exports were around INR 707849.52 lakhs (1040.95 million USD) exporting processed foods such as soya meal, oilseeds, cereals and millets, plantation crop goods including tea and coffee, spices and condiments, dry fruits, sugar crops, medicinal plants, and others.

METHODOLOGY

Study Area: The study was mainly based on both countries of Sri Lanka and India as the main Asian countries which practice sustainable organic production.

Research Design: Mixed research design was employed in this study as it focuses to analyze, compare and evaluate the effectiveness of the agricultural policies which were followed by both countries of Sri Lanka and India towards the organic product exportation during the COVID-19 pandemic period.

Data Collecting Techniques: Secondary data was essential to employ into this study as the study was based on the agricultural policies of both countries. Policy reports, research articles, articles, statistics report and data derived from official and reliable websites such as Research Institute of Organic Agriculture FiBL and Sri Lanka Export Development Board were some main secondary data sources which were used for the study to extract the both quantitative and qualitative data from 2018 to 2021.

Data Analysis Techniques: A comparative analysis was carried out to identify the effectiveness of agricultural policies of both countries towards the organic product export market during COVID-19 pandemic period using qualitative data. Moreover, Excel and descriptive statistics such as line charts and bar graphs were used to analyze the performance of organic product exportation of both countries in the pandemic period.

RESULTS AND DISCUSSION

Global Aspect of Organic Product Exportation

COVID-19 pandemic has resulted in huge, unexpected output losses as a consequence of higher global demand, rising food and fuel prices, supply chain disruptions and a higher unemployment rate. Even though the pandemic certainly plunged the world economy into a

deep recession, a green economy emerged during both pandemic and post-pandemic period (World Economic Forum, 2020).

International Monetary Fund (October, 2021) reports that global economy was projected to grow by 5.9 percent and 4.9 percent in 2021 and 2022 respectively. Over the medium term, the growth rate was projected to 3.5 percent amidst the higher uncertainty towards the price fluctuations of commodities in the world. Where advanced economies were forecasted to grow 5.6 percent by first half of 2021 such as Europe and United States, Asia as one of the fast-growing regions in the world was hampered by the lockdowns due to the resurgence of pandemic. Nevertheless, Asia was able to record the fastest growth in the world with 6.5 percent in 2021 led by China and India where China was projected to grow by 8.0 percent and India by 9.5 percent after its sharp decline in 2020. After having all adverse effects on growth in 2019 and 2020, the economic activities in India have gained strength by favorable external conditions and policy accommodations. Moreover, export prices remained at a relatively flat level, avoiding the profit margins in tradable sectors.

Table 1: Growth Projections: Selected Asia (Percent, 2022-22)

Region/Country	2020	2021	2022
Asia	-1.3	6.5	5.7
Asia AEs	-2.7	3.7	3.4
Asia EMDEs	-0.7	7.2	6.3
Australia	-2.4	3.5	4.1
New Zealand	-2.1	5.1	3.3
China	2.3	8.0	5.6
Japan	-4.6	2.4	3.2
Korea	-0.9	4.3	3.3
India	-7.3	.5	8.5
ASEAN	-3.3	2.6	5.5
PICs and Small States	-8.5	2.0	5.5

Source: IMF World Economic Outlook

Note: AEs=Advanced Economies. EMDEs=Emerging Market and Developing Economies. PICs=Pacific Island Countries

As per the Table 1, it was projected that every Asian country except China has been predicted minus growth rate while increasing it in 2021 and 2022 adapting to the VUCA world of COVID-19.

Table 2: World Trend of Organic Production, 2018-2021

Criteria	2018	2019	2020	2021
Organic producers	2,778,531.97	3,149,151.00	3,497,122.00	3,669,201.00
Organic area (farmland)(ha)	70,984,478.89	72,069,769.47	75,100,264.80	76,403,778.32
Organic retail sales (Million Euro)	97,684.78	106,456.88	121,176.76	124,844.89

Source: Research Institute of Organic Agriculture FiBL, 2023

According to the FiBL report on Organic Agriculture Worldwide 2021, 191 countries were engaged in organic farming in total worldwide recording the growth of 1.7 percentages for the term of 2020/2021 in the organic agriculture sector. Even though the pandemic hit harder to the agriculture sector, the global market grew to over 124.8 billion euros due to the increase of consumer demand towards the organic product. USA, Germany and France were the top three countries which have earned the highest income from organic products. During the pandemic period, the highest concern towards the healthy, nutritious and hygiene lifestyle led most consumers to shift to organic products. Because of that, world organic retail sales were around 125 billion euros in 2021 where the largest single market was the USA with 48.6 billion euros.

Figure 1: Organic Producers in the World, 2018-2021
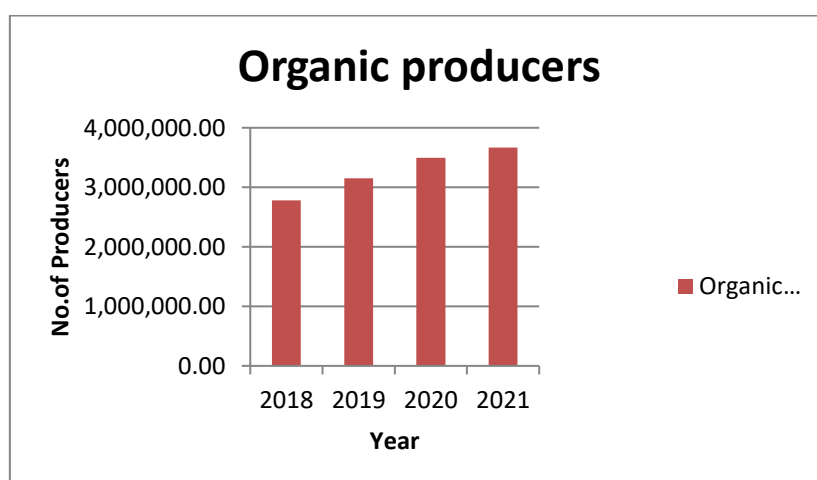
Source: Generated by Author using Microsoft Excel 2010

Organic Product Exportation in Asian Region:

The number of organic producers engaged in the organic agricultural sector was around 3.7 million in 2021 and it was 4.9 percent growth compared to 2020.

Table 3: Trend of Asian Region Organic Production, 2018-2021

Criteria	2018	2019	2020	2021
Organic producers		1,558,400.00	1,811,209.00	1,782,133.00
Organic area (farmland)(ha)		5,713,425.88	6,148,098.46	6,504,211.49
Organic area share of total farmland (%)		0.35	0.38	0.40
Organic retail sales (Million Euro)		10,792.29	12,540.14	13,747.17

Source: *Research Institute of Organic Agriculture FiBL, 2023*

India was the top country which had a greater number of producers around 1,599,010. More than 91 percent of the organic producers were in Asia, Africa and Europe. Among them, 1.78 million organic producers were recorded in the Asia region. Asia was able to record 13.7 billion euros organic retail sales relatively higher to previous years' retail sales as depicted in the following Figure 2.

Figure 2: Asian Region Organic Retail Sales, 2018-2021
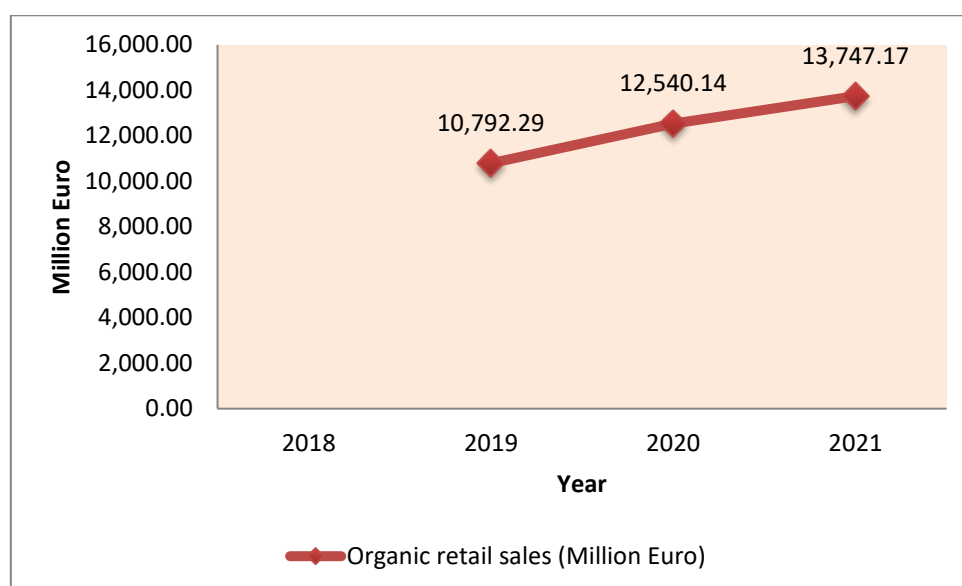
Source: Generated by Author using Microsoft Excel 2010

Considering the current trends and lifestyle patterns, Sri Lanka also mainly focuses on organic agriculture to provide toxic-free products through toxin-free agricultural methods and practices utilizing the great historical heritage and traditional irrigation technology to the global community. Based on the popularity and acceptance of aforementioned good agricultural practices, several companies produce organic certified agricultural raw material and finished products to the foreign market and also to the local market such as spices, tea, fruits and vegetables, herbs and oil so on.

Performance of Sri Lankan Organic Product Exportation

It was known fact that Sri Lanka has faced for the COVID-19 pandemic in 2019 and later it was faced by a severe economic crisis or downturn in 2022. Due to these economic and social hindrances, Sri Lankan organic product export was affected.

Table 4: Trend of Sri Lankan Organic Production, 2019-2021

Criteria	2019	2020	2021
Organic producers	2,338.00	1,990.00	1,940.00
Organic area (farmland)(ha)	70,436.38	73,392.54	66,622.75
Organic area share of total farmland (%)	2.51	2.61	2.37

Organic retail sales (Million Euro)			

Source: Research Institute of Organic Agriculture FiBL, 2023

Table 4 shows that the organic producers in 2019 were higher in numbers than 2020 and 2021 due to the impact of pandemic and economic crisis too. It was reported that considerable organic farmland were used to cultivate organic crops utilizing 70 percent hectares each year approximately. Small Organic Farmers' Association (SOFA) as a social enterprise of small-scale farmers grows organic certified tea, coffee, spices and vegetables for the market and home consumption. Most of the trading partners purchase and market its spices and tea for export in the global market by benefitting the farmers.

Table 5: Trend of Sri Lankan Organic Product Exports, 2018-2021

Criteria	2018	2019	2020	2021
Exports (Mn.Euro)	258.67	258.67	258.67	260.57
Imports				
Organic retail sales				

Source: Research Institute of Organic Agriculture FiBL, 2023

As the major Sri Lankan organic products exported to global market can be brought out tea, coconut based products, spices such as pepper, cardamom, cloves, nutmeg, cinnamon, ginger, vanilla and extracts, medicinal herbs, essential oils and extracts, tubers and vegetables, coffee, cocoa, fruits, pineapple, papaya, banana, lime, mango, fruit juice, rice, cashew, processed products, wild harvest, kithul treacle, jaggery and bee products so on. Table 5 shows that compared to 2018, 2019 and 2020, export of organic products has been increased from 258.67 Mn Euro to 260.57 Mn Euro.with the adaptability to the pandemic with proper measures.

According to Table 5, it is clear that organic products exportation has been static from 2018 to 2020 as per the reliable data from Research Institute of Organic Agriculture FiBL. It might be due to the impact of the pandemic. But, it should be noticed that in post-pandemic period total Sri Lankan exports have been increased with the health factors and concerns of people towards their consumption and life style. With the COVID-19 pandemic, both local and foreign consumers demanded Food and Beverages products (F&B) especially for the products with the

labels of Organic, Super foods, Bio Foods which and Vegan. Sri Lankan F&B products were captured the higher demand among the food product exporting countries due to its inherent quality, taste of raw materials used and standards of value addition process.

Performance of Indian Organic Product Exportation

Currently, India is one of the leading organic producers in the world. As per the Agricultural and Processed Food Products Export Development Authority and report of the Research Institute of Organic Agriculture, India ranks 8th with respect to organic agriculture land and holds 88th position in regard to fraction of organic crops to agricultural land. During the pandemic and in post-pandemic also India has expanded its organic product exportation with effective policy decisions implemented at correct time.

Table 6: Trend of Indian Organic Production, 2019-2021

Criteria	2018	2019	2020	2021
Organic producers	1,149,371.00	1,366,226.00	1,599,010.00	1,599,010.00
Organic area (farmland)(ha)	1,938,220.79	2,299,222.37	2,657,889.33	2,657,889.33
Organic area share of total farmland (%)	1.08	1.28	1.48	1.48

Source: (Research Institute of Organic Agriculture FiBL, 2023)

Data in Table 6 clearly brings pout that from 2018 to 2021, organic producers, organic area and organic area as a share of total farmland have been increased significantly owing the higher rank in the organic export product market in the globe.

Table 7: Trend of Sri Indian Organic Product Exports, 2018-2021

Criteria	2018	2019	2020	2021
Exports (Mn.Euro)	641.39	613.30	911.35	880.15
Imports				
Organic retail sales	-	185.89	185.89	185.89

Source: (Research Institute of Organic Agriculture FiBL, 2023)

But, Table 7 shows that India has well performed in export market of organic products in 2018 and 2020 with sudden decline in it in 2021. This emphasizes that the policies implemented in the pandemic period would not be further considered or overlooked to enhance the performance of the market continuously. Because of that, export earnings in 2020, 911.35 million Euro has been declined up to 880.15 million Euro in 2021.

DISCUSSION

Even though, Sri Lanka is a fertile tropical land with high potential for the cultivation, issues of productivity and profitability hamper the growth of that sector. Increasing the productivity of agriculture sector has been one of the top concerns of the Sri Lankan government but its slowness too adapt mechanized farming is the major policy hindrance. To solve that, the government is needed to increase the mechanization and grow higher value cash crops and other export oriented crops.

Due the uncertain policies in Sri Lanka, the lack of private investment in agriculture was one of the top issues since a long time. In 2021, the total agriculture, food and beverage imports have reached USD 1.6 billion (International Trade Administration/Trade.gov, n.d.). Since Government of Sri Lanka placed restrictions on many agricultural imports at the beginning of the pandemic, trade volume was significantly decreased. Moreover, government expanded the restrictions and increased import tariffs in order to preserve foreign currency reserves. In addition to that, agricultural crops output were decreased due to the immediate ban implemented on April 26ᵗʰ of 2021 on all chemical fertilizer and pesticide imports especially on tea and rice production with the consequence of sharp price increases in the domestic market. It was repealed in November 2021 due to the ineffectiveness and impracticability (International Trade Administration/Trade.gov, n.d.).

Analysis of the country's organic agriculture's strengths, weaknesses, opportunities, and threats (SWOT) helped to pinpoint the main issues facing policymakers when balancing the supply and demand sides of organic products. Additionally, it is essential for the development of organic agriculture for government and private actors to join up and coordinate effectively. So, Sri Lanka has to strategically focus on policy support for organic agriculture. In order to fairly provide the advantages of organic agriculture to farmers, marketers, and consumers, current organic farming programs need to be altered in order to develop policies encompassing all areas relating to production, handling, processing, certification, labeling, and marketing.

Government plans for organic agriculture are not as robust in Sri Lanka as they are in other nations, despite the need for an effective institutional system with both short- and long-term activities that recognize and encourage the organic sector. The Sri Lankan government currently lacks a clear strategy or policy for the growth of the organic agriculture industry. A number of government agencies have a big part to play in this. Therefore, it is necessary to strategically focus on policy support for organic agriculture. In order to spread the advantages of organic agriculture to farmers, marketers, and consumers, it is also necessary to revise current plans for organic farming in order to create policies relevant to the modern context covering all areas related to production, handling, processing, certification, labeling, and marketing. Because of the lacuna in effective policy strategies in the organic export product market, Sri Lankan organic product exportation has been slightly performed in world organic export product market compared to the Indian organic product export market as per the comparison of data in Table 5 and Table 7 as discussed above.

In Sri Lanka, there are several different types of organic agriculture policy instruments. For sustainable agriculture and greater economic growth, it is essential to include them in the production, promotion, and trading of organic products. An efficient connectivity and coordination between players in the public and commercial sectors is required for such execution. A clear enforcement of the law and explicit rules, norms, and standards pertaining to organic goods would create a strong connection between them. It is crucial to foster organic farming through suitable policies, plans, and assistance programs in order to boost the supply of secure foods for domestic and worldwide markets.

As per the research of Soni et al (2022), even though India performs well in organic market it is being faced for several constraints such as lack of good marketing, proper agricultural policies and guidelines, complexity in certification process, lack of proper education and research among small scale producers, lack of awareness, scarcity of biomass, difficulty in soil nutrients management, failure of achieving desired quality of organic products, insufficient infrastructure and less effectiveness of organic pesticides so on.

Paramasivam et al (2022) also emphasizes the need of simplified certification process for Indian producers. Most farmers had to go through a lengthy process, and the length of time needed to obtain organic certification was a significant hurdle. The government can therefore take action to streamline the certification process by putting in place necessary procedures. It can be thought about digitizing the certification procedure for organic farming so that farmers can receive certificates with fewer barriers in the certification process. For farmers and other stakeholders to ensure the quality of the products, it is crucial to organize need-based organic

certification training programs. It will make becoming certified as organic much simpler for them. In terms of presenting new programs from an organic farming approach, this model acts as a wakeup call for legislators and concerned officials.

Hence, Indian government needs to invest to provide financial incentives, bring out more schemes cooperating with non-government agencies, help in certification process, make them aware about the new technologies, provide enough training and enhance knowledge so on.

CONCLUSION

It can be concluded that both Sri Lankan and Indian organic product exportation have been taken significant place in the world export market of organic product during COVID-19 period. But when analyzing the government policies regarding to the organic export market in both countries, it is crystal clear that Indian governmental policies towards the organic product export market in the pandemic period were effective than Sri Lankan policies as Indian export earnings from organic product exportation was higher than Sri Lankan earning of organic product exportation. With the time period, policies of both countries have become weak in a way that export of organic product has been declined or static by 2021 due to structural, functional and administrative issues. Hence, it is recommended that by providing better organic market facilities, adequate funding, training, education and awareness programs would facilitate in production of more organic products in sustainable way in both countries.

FUTURE RESEARCH

Researchers who have the interest in organic export market are suggested to study on the effectiveness level of the government agricultural policies of India and Sri Lanka in pandemic period towards the organic product exportation market using primary data in order to have clear idea.

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Blended Learning Praxis in Delivery of Teacher Development Programmes: A review

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ABSTRACT

Blended learning is widely accepted as an effective mode of course delivery in higher education. As it has been pragmatically tested to see the effectiveness in the delivery of professional courses, the use of blended learning in the delivery of teacher development programmes needs an inquiry into empirical literature to see the applicability. The review was set with three questions, identifying appropriate instructional strategies for blended learning, finding instructional strategies and activities employable for blended teacher development programmes and deciding the appropriate blended learning model for teacher development programme delivery. Review articles were searched via five online databases (Google Scholar, ScienceDirect, scinapse, ERIC and ProQuest) and paper selection criteria guided to select of sixty-three papers from peer-reviewed journals. Thematic review findings show that self-directed learning, self-regulated learning and self-paced learning strategies are commonly used in both general and blended teacher development programmes. Self-directed learning strategy has been the preference in the delivery of blended teacher development programmes. Asynchronous forum discussions, providing self-reflective materials and group activities are highly preferred in blended teacher development programmes. The flipped classroom model is preferred in blended teacher development programmes as it facilitates to improvement of teacher professional skills with the presence of peers and mentors.

Keywords: Blended learning, Teacher development programmes, Instructional strategies, Instructional activities, Flipped classroom

INTRODUCTION

One major change brought about by technology is that academic communities now extend beyond the classroom walls and continue to grow virtually by means of new and innovative technologies. Efficacy of technology decides the success of the educational programmes (B.Ed. PGDE, M.Ed.) despite the level that they focus on. One of the benefits of technology integration is that technology opens up new avenues for educational programme design and delivery. Blended learning is contextual (Garrison and Kanuka, 2004). It means different things to different people (Driscoll, 2002). Effectiveness of what "Blending" is and what is to be "Blended" are preliminary questions that have been discussed in blended learning literature

over the past years (i.e. Kaur, 2013, Tayebinik & Puteh, 2013). As literature suggests, Blended Learning facilitates learner centered learning activities which take place inside and outside the classroom while combining the advantages of different learning modes - i.e. face-to-face and online (Rossett, Douglis & Frazee, 2003, Driscoll, 2002). Garrison and Kanuka (2004, p. 96) defined blended learning as "*At its simplest, blended learning is the thoughtful integration of classroom face-to-face learning experiences with online learning experiences*". Based on the above definition, it can be affirmed that blended learning is a synergistic combination of traditional teaching methods with the tactics of distance teaching and learning (Donnelley, 2010, Kenney and Newcombe, 2011, Drysdale et al, 2013,   Owston, York and Murtha, 2013, Graham, Woodfield and Harrison, 2013, Tang and Chaw, 2013, Chang et al, 2014).

Usually, blended learning supports to combine the face-to-face and online learning experiences. What is not easily possible in face-to-face learning can be effectively practiced in the online learning (ref).   Online learning opens up more opportunities for learning. Additionally, it has lots of advantages over face-to-ace learning such as, timely feedback can be provided by the trainers (Smyth et al, 2012), learner to learner interactions can be maximized and knowledge sharing and construction of new knowledge can be heightened. Garrison and kanuka (2004) stated that one of the greatest benefits of blended learning is providing a sense of community amongst the learners. Evidently, blended learning facilitates use of information communication technology, more specifically, the web technologies (Concannon, Flynn & Campbell, 2005). Instructional design and delivery capability goes up with the proportionate combination of face-to-face and online modes (Picciano, 2006).

It is evident that blended learning is widely used in the delivery of higher educational programmes (i.e. university degree and diploma programmes) over the past two decades. Hence, many theoretical and practical developments can be seen since 1990s. Research literature further informs that blended learning and its applications can be differently adapted to meet the diverse needs of the learners (Singh, 2003).

Blended learning is not new. It is convinced in every means (Garrison and Kanuka, 2004, Graham, 2006). Considerably, less number of studies is found in blended teacher training and its success (Keengwe & Kang, 2012, p.82). Keengwe and Kang in 2012 forwarded two reasons for being the number of papers limited in blended teacher training: firstly, educators trust only the face-to-face delivery methods for professional teacher training courses; and secondly, the

methodological limitations being employed in the evaluations of available blended teaching courses (Keengwe & Kang, 2012, Owston, Sinclair & Wideman, 2008).

As Google Scholar and ScienceDirect do not provide any papers for blended approach in educational technology courses, field of educational technology teacher training is still an area to be researched with blended learning. Conversion of educational technology courses into blended mode may open up a new dimension of blended learning and uncover an untapped potential of blended learning as well.

Review Questions

The present review meets three questions: (1). What instructional strategies support to deliver blended programmes? Primarily, the paper discusses which instructional strategies support the delivery of blended programmes; (2). Do instructional strategies and activities in blended teacher development programmes differ from the other blended programmes? The review attempted to find which strategies and activities are used in blended teacher development programmes (B.Ed. PGDE, M.Ed.) and there could be any difference in this respect; (3). What blended models/approaches support to deliver the blended teacher development programmes (B.Ed. PGDE, M.Ed.)? Finally, this paper inquires the appropriate blended models to deliver the teacher development programmes.

Problem Statement

Usually in teacher education courses, skills mastery and knowledge dissemination are handled via instructor-led methods, i.e. lecture method and demonstration, which ultimately caused for student anxiety and frustrations (Kottasz, 2005). Further, it limits learner-to-learner and instructor to learner interactions, individual attention and knowledge sharing and building. For some training aspects of the course, face-to-face meetings cannot be neglected (i.e. micro teaching) but for the rest, the distance mode of delivery might be more effective than the face-to-face delivery (Simonson, Smaldino, & Zvacek, (Eds.). 2014). Many educational programmes are converted into blended mode or online delivery to mitigate the issues faced by the programme designers and learners (Graham, Woodfield, & Harrison, 2013, Picciano, 2006). This has been a common practice in teacher training (Wang, 2009, Caner, 2010, Kundra, 2018).

Many Local and international universities and higher academic institutions offer teacher training courses for both In-Service and Pre-Service teachers. Yet, the common practice has

been they are designed for face-to-face delivery. Curriculum design, methods and delivery approaches are yet to be revised (Grossman, Hammerness, & McDonald, 2009). These courses involve theoretical and practical aspects of pedagogy to be mastered by the teachers (Darling-Hammond, 2006). Yadav (2011) pointed out, in a comparative study, that the teacher training programmes conducted in India, Sri Lanka, Bangladesh and Pakistan (Bachelor of Education - B.Ed.) have not been revised for a long time, and course design and delivery is conventional (Yadav, 2011, p.1047-1048).

As blended learning has been one of the options for the practitioners to meet the aforementioned challenge in teacher development programmes, the core issues of the present review derived thereof, which instructional strategies and blended activities can be used and which blended models are supported for the delivery of them. To have an insightful understanding on the above aspects, it needs a purposeful reflection on the existing literature.

LITERATURE REVIEW

There is lack of research in blended learning in the field of teacher training and education. Many studies can be found in literature dedicated to studying blended learning experiences in other disciplines (i.e. Management, Engineering, Nursing & etc...) while a limited number of studies are conducted in teacher education and related aspects (Keengwe & Kang, 2012). Two reasons have been forwarded by Keengwe and Kang in 2012 for having limited number of studies on blended learning in teacher education, (1) Not all teacher educators agree that the blended or online learning approach is effective in teacher training because of the limitations of technology to improve teacher trainees' learning and authentic field experiences, (2) Even though some teacher training programmes provide blended learning approach for their teacher trainees, it is not easy for researchers to evaluate the effectiveness of the programmes because of limitations in the methodology being used (p.82).

There is an ambiguity over the terms *'instructional methods'* and *'instructional strategies'*. The terms have been used interchangeably (i.e. White et al, 2019, Zeichner, 1987).

Here we argue that instructional strategy is not equal or similar to instructional methods or activities in the teaching-learning process though there seems to be an inseparable relationship between each other (See Figure: 1). Necessarily, the instructional methods derive from the

instructional strategies (Petrina, 2004, p.127[2]). Instructional Strategy is the overall plan for teaching (Meador, 2018, Akdeniz, 2016). It is neither a method nor an activity. There are a few strategies, basically five in number, but number of methods and activities exist for teachers to achieve the instructional goals and objectives in the class (Petrina, 2004, Alberta Learning, 2002, Saskatchewan Education, 1991). Petrina (2004) has summarized types of five instructional Strategies (i.e. *Direct, Indirect, Interactive, Experiential and Independence Study*) and *forty one teaching methods* (p.127-131). Further, she reported that instructional methods can be limited to three as Transmissive, Transactive and Transformative. Joyce and Weil (2000) introduced four families of teaching methods (i.e. Social interaction, Information Processing, Personal and Behavioral Modification).
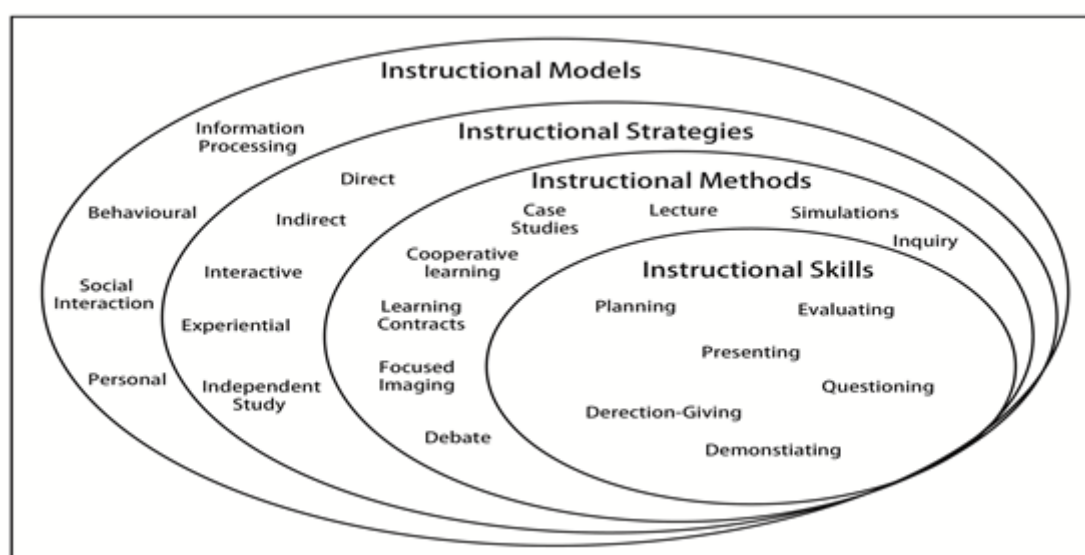
Figure: 1 - Instructional Framework (Saskatchewan Education, 1991, p.12)

Transition of knowledge and field experiences via classroom activities are considered to be important in teacher training programmes. By having implemented such a system could be effective for the formation of teacher identity, the development of professional learning and professionalism. Further, they suggested that to tackle the success of teacher training programmes, new or different research methods are necessary (Keengwe & Kang, 2012, p.82).

Many blended approaches are found in the literature. There is no perfect model which frames all the learning requirements, even the available models continue to grow (Christensen, et al., 2013). Depending on the elements such as contextual, institutional, course-wise, curricula and student requirements, level of the technology integration, educational theoretical underpinning

(i.e. Behaviorism, constructivism & etc…), and instructional methods, techniques and activities used, blended approaches have been defined (Valiathan, 2002, Graham, 2006). Chew (2009) has summarized five Blended learning models (p. 37 – 54): (a) E-Moderation Model emerging from the Open University of the UK (Salmon, 2000, 2002); (b) Learning Mix from the Open University of Malaysia (Kaur and Ahmed, 2005) (c) Learning Ecology Model by Sun Microsoft System (Wenger and Ferguson, 2006); (d) Blended Learning Continuum from the University of Glamorgan (Jones, 2006); (e) Inquiry-based Framework by Garrison and Vaughan (2005, 2008) Except the Inquiry-based Framework of Garrison and Vaughan (2005, 2008), the other models are contextual in comparison to the models proposed by Horn and Staker (2011), Staker and Horn (2012) and Christensen, et al. (2013).

Considering the blended learning trends in K-12 school context, Staker and Horn in 2012 classified blended learning models into four as Rotation Model (Station-Rotation, Lab-Rotation, Flipped Classroom, and Individual-Rotation Models), Flex-Model, Self-Blend Model, and Enriched-Virtual Model (Staker, & Horn, 2012, p.8). These blended models show how online and face-to-face components are organized and delivered. It seems that flipped classroom model has been the priority in many blended programmes today (Vaughan, 2014, Kurt, 2017), but, it needs further reflection to verify the assertion.

METHODOLOGY

An extensive literature review was conducted to locate research papers on blended learning in educational technology teacher education fields using search engines Google Scholar, ScienceDirect, scinapse, ERIC and ProQuest. The keywords used were "blended learning or hybrid learning", "teacher development programmes", "instructional strategies" and "instructional activities". And, these keywords were combined aiming to find the most relevant review papers.

As many papers are loading with the keyword "blended learning", papers were further scrutinized based on the criteria that (a) only the papers produced based on empirical studies were selected (Surveys, Quasi-Experimental and Experimental, Case Studies, and Descriptive research studies), (b) only the papers published in peer-reviewed journals were selected, and (c) conference papers, concept papers, thesis and dissertations were not included. At the end of routinization process made via the criteria, 18 papers were reviewed related to the blended teacher education programmes and 45 papers were reviewed from the general blended literature. Findings were analyzed in the content quantitatively and qualitatively.

RESULTS

Review results are mainly presented under the three review questions and the general findings are given at the end of this section.

(1). What instructional strategies support to deliver blended programmes?

Instructional strategy can be simply defined as the approach that the instructor uses to transfer the cognitive content, to develop the attitudes and to generate expected skills in students aimed at the attainment of educational goals and learning outcomes in a course of study (Soyemi, Ogunyinka and Soyemi, 2012, Azevedo et al, 2008, Akdeniz, 2016, p. 61, Shinn, 1997, p. 11). Materials development (Learning aids/Instructional media design and development), selection of content for teaching - curriculum development (Haung, Ma and Zhang, 2008), and assessments are planned based on the selected instructional strategy. Table 1 and Figure 2 illustrate the review findings in respect to the review question – 1.

Table 1: Instructional Strategies in Blended Programmes

Strategies	No of studies	Mean	SD	%
PBL	5	0.11	3.46	9.4
Collaborative Learning	4	0.09	2.77	7.5
Cooperative Learning	4	0.09	2.77	7.5
Self-Regulated Learning	12	0.27	8.30	22.6
Self-Directed Learning	15	0.33	10.37	28.3
Self-Paced Learning	7	0.16	4.84	13.2
Activity based learning	3	0.07	2.07	5.7
Project based learning	2	0.04	1.38	3.8
CSCL	1	0.02	0.69	1.9
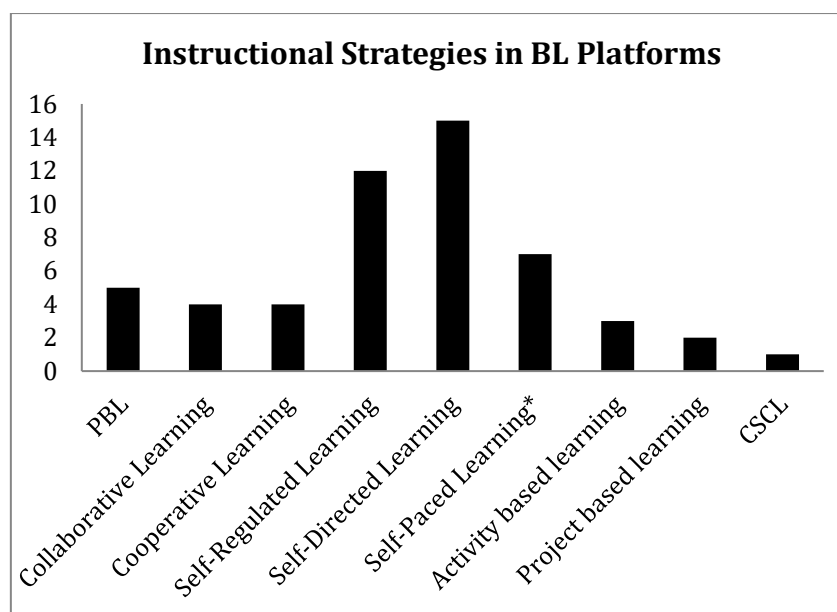
Figure 2: Instructional Strategies in Blended Programmes

Table 1 and Figure 2 report which strategies are generally used in blended programmes. Among them, Self-Directed Learning (SDL), Self-Regulated Learning (SRL), and Self-Paced Learning (SPL) have been selected in many of the programmes in comparison to the other strategies. Problem-Based Learning (PBL), Collaborative Learning (COL), and Cooperative Learning (CL) are comparatively less preferred. In some instances, two or three of these strategies have been used (i.e. Woltering, Herrler, Spitzer & Spreckelsen, 2009, Verkroost, Meijerink, Lintsen & Veen, 2008, Collis, Margaryan & Kennedy, 2004). It cannot be exactly decided which strategy is most appropriate or effective for blended learning. It might be contextually decided. But, in general, research findings support to make some valid inferences about the strategies. As SDL, SRL and SPL are widely used; the following section is dealing with some research recommendations particularly made on the use of these three strategies in blended programmes.

SDL is effective in delivery of blended programmes and it has been a strategy which support achievement of learning outcomes in blended programmes (i.e. Akgunduz & Akinoglu, 2016, Verkroost, Meijerink, Lintsen & Veen, 2008), Ausburn, 2004). SDL is better for the achievement of learning objectives when different types of learning are provided based on the student different learning styles and learning requirements (Hendricson et al., 2006, Denis, 2003). Conradie (2014) also concluded that SDL is effective in e-learning environments and supporting the students to achieve higher level of academic achievements. One key implication is that more academic guidance is needed on what and how to use the

technology effectively for independent learning, even where ICT skills levels are high (Deepwell & Malik, 2008).

It is not the role of the teacher to prescribe the nature of the blend but to develop courses with multiple means of representation, expression and engagement, and to scaffold and support students in the creation of their own individualized blend. In this way, students will engage and also develop their skills as reflective, self-directed, and self-regulating and indeed, self-determined learners (George-Walker & Keeffe, 2010). SDL is the ability to direct and regulate one's own learning experience and it underlies many of the dispositions needed for critical thinking. Exactly the same educational strategies can be used to develop critical thinking and self-directed learning (Hendricson et al., 2006). When designing a self-directed e-learning system it is important to think of ways of supporting students in the new competencies they need for self-directed learning (Verkroost, Meijerink, Lintsen & Veen, 2008). Self-directed learning could be empowered through learning tasks that support constructivist collaboration in both physical and virtual learning spaces. The learners inquire new skills, knowledge and attitude through self-directed learning in a blended learning environment. Web technology platforms such as Moodle online discussion forums, Google Docs and Wikispaces empowered self-directed learning among the adult participants (Sze-Yeng & Hussain, 2010, Oravec, 2003, Akgunduz & Akinoglu, 2016).

Verkroost et al in 2008 pointed out some weaknesses of SDL in online environment as follows: (a) The Internet as a source for content is easily accessible but its use does not always lead to a good and useful results because it is a highly unstructured environment; (b) Support for the search on the Internet can be offered using (online) instructions and a list of resources. Students value these kinds of support more when they address the personal information needs of the students as an individual (Verkroost, Meijerink, Lintsen & Veen, 2008).

SDL setting does not match with all the participants and cannot be concluded that those who do not participate in online activities are not self-directed (Schwier, Morrison & Daniel, 2009). Blended-teaching method could better suit some students, depending on their degree of motivation and level of self-directed learning readiness (Gagnon, Gagnon, Desmartis & Njoya, 2013, Simmering, Posey & Piccoli, 2009).

Jossberger, Brand-Gruwel, Boshuizen & Van De Wiel in 2008 distinguished between the concepts self-directed learning and self-regulated learning placing self-directed learning in the adult learning domain and self-regulated learning in the educational psychology domain. Self-

directed learning can be viewed at the macro level (i.e. planning of learning trajectory), while self-reflected learning is placed at the micro level (i.e. learning task level, self-controlled learning activities) (p.1). Thus, with self-regulated learning, specific learning activities required to reach learning goals are managed by the learner, while with self-directed learning, the learner is also responsible for creating their own learning goals (outcomes). Important to note, self-directed learning automatically implies that self-regulated learning takes place, but the reverse is not true (Conradie, 2014). It is possible to have self-regulated learning without self-directed learning. Additionally, self-direct learning and self-regulated learning refer to both an instructional design or method and a personal characteristic.

SRL is also effective in blended platforms with respect to the achievement of learning objectives and satisfaction of needs of learners (i.e. Lynch & Dembo, 2004, Shea & Bidjerano, 2010, Broadbent, 2017, Shen, Lee & Tsai, 2011). Schraw (2007) has suggested that self-regulatory learning skills can be enhanced by computer-based instruction found in the online and blended learning environments (Schraw, 2007). Barnard et al., in 2009 stated that SRL increases the learner performances in both online and blended platforms (Barnard, Lan, To, Paton, & Lai, 2009, Schober, 2008, Tsai, 2011, Ting & Chao, 2013).

Self-Paced Learning (SPL) is an extension to the conventional classroom teaching (Soyemi, Ogunyinka & Soyemi, 2012). SPL was initially used in *VET* (Vocational Education and Training) as an alternative method of delivery. It has been advantageous to the *VET* students and their employers as being less resource intensive than face to face teaching (Inkson & Smith, 2001). *"Self-paced or individualized learning is defined as learning directed by the individual in order to meet personal learning objectives."*(Soyemi, Ogunyinka & Soyemi, 2012, p. 130)

It is evident that SPL can be used in online blended learning environments as a supporting strategy to SDL and SRL (Russell, Kleiman, Carey & Douglas, 2009, Kocdar, Karadeniz, Bozkurt & Buyuk, 2018, Boutell & Clifton, 2011, DeVore, Marshman & Singh, 2017, Al-Malki, Almasre, Al-Malki & Al-Harbi, 2015). Rhodes (2009) confirmed that not only the formal interactions but also the informal interaction are equally important in determining the online learning via SPL (Rhodes, 2009). But proper guidelines should be given for student interaction. Student interaction is very low in SPL (Collis, Margaryan, & Kennedy, 2004). To develop SPL skills in online learning environments, five factors are needed: goal setting, help seeking, self-study strategies, managing physical environment, and effort regulation (Kocdar, Karadeniz, Bozkurt & Buyuk, 2018). When the students enjoy the flexibility which SPL

affords, it affects the student learning outcomes and higher academic achievements (Inkson & Smith, 2001, Tullis & Benjamin 2011, Bautista, 2015 Bele, & Rugelj, 2007).

(2).   Do instructional strategies and activities in blended teacher development programmes differ from the other blended programmes?

Instructional strategies of blended teacher development programmes are indistinguishable from the other blended programmes. SDL, SRL, PBL and other strategies noted in the above section of the review can also be seen in blended teacher development programmes (i.e. Chong, Cheah & Low, 2010, Mouzakis & Bourletidis, 2010). Related literature does not provide a clear cut inference to say which strategy is effective in the delivery of blended teacher education programmes. It is interesting to note that SDL has given lack of teacher knowledge when it was tested in a blended teacher educational programme by Mouzakis and Bourletidis (Mouzakis & Bourletidis, 2010). Chong, Cheah and Low stated that the learners have positive perspective towards the blended learning under PBL (Chong, Cheah & Low, 2010). It seems that the effectiveness of instructional strategies in blended teacher development programmes has to be further tested in research studies.

Instructional activities are different by the intended purposes of being used in instructional process. Mainly, they could be individual or group; the group activities might be designed for pairs or more than two member students to collaborate for learning. Instructional activities generally show how a novice or an apprentice could deal with the content to be learned or practiced (Lampert & Graziani, 2009, p.493). Psycho-social, cultural and philosophical presence of learning can only be ensured via instructional activities used in the instructional approaches. Particularly, activities might be contextual, learner specific and outcome-based (Lampert & Graziani, 2009).

It could be a challenge for the practitioners to get traditional classroom stuff worked in new scenario so as to ensure effective learning. Therefore, the review findings will be much supportive for the blended learning practitioners to see how the aforementioned challenge has been met in the blended contexts. Table: 1 reports instructional activities being used in blended platforms. Instructional designer or the instructor is not restricted to use any specific activities for blended learners by any philosophical or pedagogical doctrine in education. Online phase might be an advantage for both learners and instructors to perform better (i.e. Heba & Nouby, 2008, Shand & Farrelly, 2018). Therefore, it is apparent from the Table: 1 that almost the same normal classroom activities have been used in blended platforms as well. Essentially, face-to-

face meetings and discussions exist in blended modality (100%); partly the other instructional strategies are coupled with online technologies. Frequently, in blended programmes, students are provided self-study texts (58%) aimed at self-reflection and continuity of learning. Asynchronous discussions (78%) and group assignments (42%) have been the popular preferences in blended courses as shown in the table: 1. The rest of the activities shown in the table are comparatively less preferred.

Table 2: Instructional Activities in Blended Programmes

Instructional Activities	No of Studies	Mean	SD	%
Lab Activities	1	-	-	-
Self-study texts and reflections	26	0.58	17.98	57.8
Asynchronous Discussions	35	0.78	24.20	77.8
Synchronous Discussions	11	0.24	7.61	24.4
Group Assignments (online)	19	0.42	13.14	42.2
Think pair & share	1	-	-	-
Individual Assignments (Online)	13	0.29	8.99	28.9
Student group projects	5	0.11	3.46	11.1
Learning Contracts	1	-	-	-
Student Presentation	3	0.07	2.07	6.7
Discussions & Meetings (F-to-F)	45	1.00	31.11	100.0

Instructional Activities in BL platforms
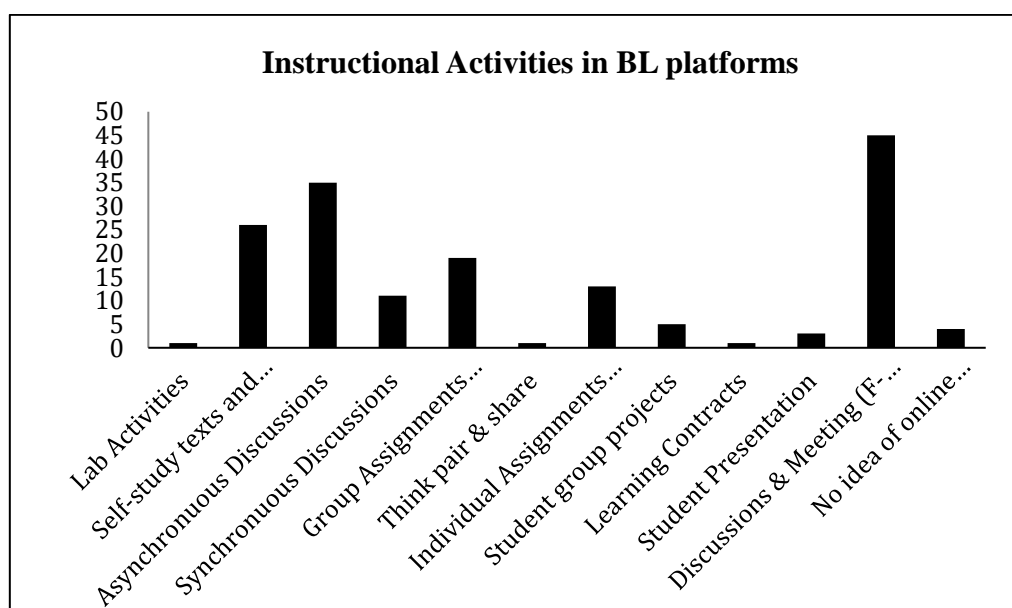
Figure 3: Instructional Activities in BL platforms

In 2006, Hendricson et al identified seven elements associated with effective learning: 1. Communication of learning objectives for each class session; 2. Organization of the subject matter in a manner that makes sense to the learner; 3. Frequent in-class activity such as writing notes, analyzing problems, or answering questions; 4. Use of mnemonics to aid memorization of factual information; 5. Frequent in-class quizzing with immediate feedback on response correctness; 6. Total amount of "time on task" including in-class activities and personal study time; and 7. Summary of key points to remember ("take-home messages") at the end of each lesson (p.929). It is seen that these elements are supporting declarative knowledge construction. Development of reasoning ability, logical thinking, insightful learning and learner motivation will be the focus of instructional activities. Self-learning is ensured only if the students are provided opportunities to get involved in their learning via appropriate instructional activities but not just by giving unintentional and unplanned activities (Hendricson et al., 2006, p.929, Mouzakis & Bourletidis, 2010). Online activities should be linked to the face-to-face activities taken place inside the classroom (Shand & Farrelly, 2017, Abdelraheem & Ahmed, 2015, Lin, 2008).

It is not a need of the context to discuss about why the face-to-face meetings and discussions are scheduled in every blended platform because it is a need of blended mode itself (Garrison & Kanuka, 2004, Graham, 2005, Means et al., 2013). Online activities are combined with the face-to-face activities to get benefitted by both the worlds, online and face-to-face, aimed at the satisfaction of learners' diverse needs (Garrison & Kanuka, 2004, Graham, 2005).

The review noted that online asynchronous discussions (forum discussions) are highly preferred in blended programmes other than the online synchronous discussions. The following research findings confirm the assertion.

"The asynchronous computer-mediated 'Discussion' forum of WebCT provides an additional learning opportunity as an adjunct to other activities that are held within the framework of teaching Practice course." (Caner, 2006, p.88)

"Discussion forums are a good way to promote peer interaction and objectively measure peer interaction." (Broadbent, p.23).

Alayyar, Fisser and Voogt in 2012 noted that through the online discussion forum student can post questions, answer questions, or reflect on discussion online, and thus could increase the

participation rate in the discussion and foster deep thinking because writing message requires thoughtful thinking. This in turn would lead to the development of complex perspectives on the addressed topic (p.1301). On the other hand, forum discussions could work as a tool which facilitates for interpersonal closeness, peer collaborations and interactivities within the group members (Caner, 2010, Chen et al., 2009). Holmes and Prieto-Rodriguez in 2018 found that synchronous discussions provided in the LMS are useless; the students are much interested in social media chatting instead. The face-to-face meetings would be much beneficial than any of the online interactive tools used in blended programmes (Holmes & Prieto-Rodriguez, 2018, Lin, 2008). Though this assertion seems reliable, but it would be contradicting with the findings of Chen and Looi in 2007. They pointed out that online discussions set via LMS in blended learning environments are more effective and useful because it encourages deeper learning, sharing knowledge and reflective thinking (Chen & Looi, 2007). Depending on the above contradiction, it could be said that using either online asynchronous or synchronous discussions could have contextually different results.

Use of group activities (assignments) has been one of the significant instructional activities in blended learning programmes. Group activities are designed for collaborative knowledge construction and to maximize knowledge sharing and interactions among the peers (Caner, 2010, Gudmundsdottir & Vasbø, 2017). By flipping online technologies available in LMS with group activities, the depth of the group activities could be increased (Vaughan, 2014). The group learning is crucial since it will help learners share their experiences, opinions, thoughts and feelings, accumulate skills for analyzing and solving problems, and make better inferences about strategies for using technology and fostering better instructional design. Learners can constantly improve their understanding in course concepts using discussion and communication, and as a result, students are equipped with sound understanding about theory and how it is practiced (Huang & Zhou, 2006, p.304).

Online individual assignments have also been used in blended programmes to ensure an environment for self-learning and to establish own learning efforts (i.e. Demetry, 2010, Seleka, Mgaya, & Sechaba, 2009, Shen, Lee & Tsai, 2011). When compared to the online group assignments, online individual assignments have been less effective in terms of knowledge construction (Heba & Nouby, 2008).

Face-to-face meetings and discussion have been commended by the blended course participants in many learning contexts (i.e. Lin, 2008, Shand & Farrelly, 2018). Inactive students in online

phase were much benefitted in face-to-face sessions and they could get their problems solved when they meet peers and instructors face-to-face (Alayyar, Fisser & Voogt, 2012, p.1300, Borup, West, Thomas & Graham, 2014). Therefore, the most striking result to emerge from the review is that face-to-face interactions and meetings have been the most effective means of knowledge sharing and construction in blended programmes.

Table 3: Correlation of instructional activities between selected instructional strategies

		SDL	**SRL**	**SPL**	**COL**
SDL	Pearson Correlation	-	.981**	.986**	.906**
	Sig. (2-tailed)	-	.000	.000	.000
SRL	Pearson Correlation	.981**	-	.978**	.871**
	Sig. (2-tailed)	.000	-	.000	.000
SPL	Pearson Correlation	.986**	.987**	-	.890**
	Sig. (2-tailed)	.000	.000	-	.000
COL	Pearson Correlation	.906**	.871**	.890**	-
	Sig. (2-tailed)	.000	.000	.000	-
Activities	Pearson Correlation	-.204	-.243	-.155	-.241
	Sig. (2-tailed)	.524	.446	.631	.450

**Correlation is significant at $\alpha=0.01$ level (2-tailed).

As noted in the review, mainly there are about eleven instructional activities have been used in blended programmes. The above table 3 shows that, with reference to the selected instructional strategies (SDL, SPL, SRL, and COL) employed in the delivery of blended programmes, the frequencies of using instructional activities are highly correlated each other (i.e. in between SDL and SRL =0.981 correlation with respect to $\alpha=0.01$ significant level). It says that frequency of using the instructional activities positively correlate in SDL and SRL (See: Table 3). The table shows further that the frequency of the use of instructional activities between SDL and other strategies (i.e. SDL and SPL = 0.986, SDL and COL=0.906) are highly correlated. Significantly, though statistical analysis shows that there is a significant difference in the frequencies of selecting instructional activities between each pair of strategies with $\alpha=0.01$ of significance in 2-tailed test (i.e. between SDL and SRL =1.6755E-8, SDL and SPL=3.6897E-9, SDL and COL=0.000049) but the overall statistical comparison shows that there is no such significance difference when SDL is compared to the other three instructional strategies (SRL,

SPL, and COL). The correlated statistical significance of SDL is 0.524 in 2-tailed test. This is above α=0.01 significant level (0.524>0.01). It suggests that the frequencies of using instructional activities in SDL do not differ greatly from the other three instructional strategies (SRL, SPL, and COL). Consequently, the significance values of SRL, SPL, and COL are SRL = 0.446, SPL = 0.631, and COL = 0.450. As all these values are above α=0.01 significant level in 2-tailed test, it can be concluded that tendency of using the identified instructional activities in the selected four instructional strategies is similar and unique and no significant difference exists among the strategies as per the correlated significance.

Instructional Activities in Teacher development programmes (TDP)
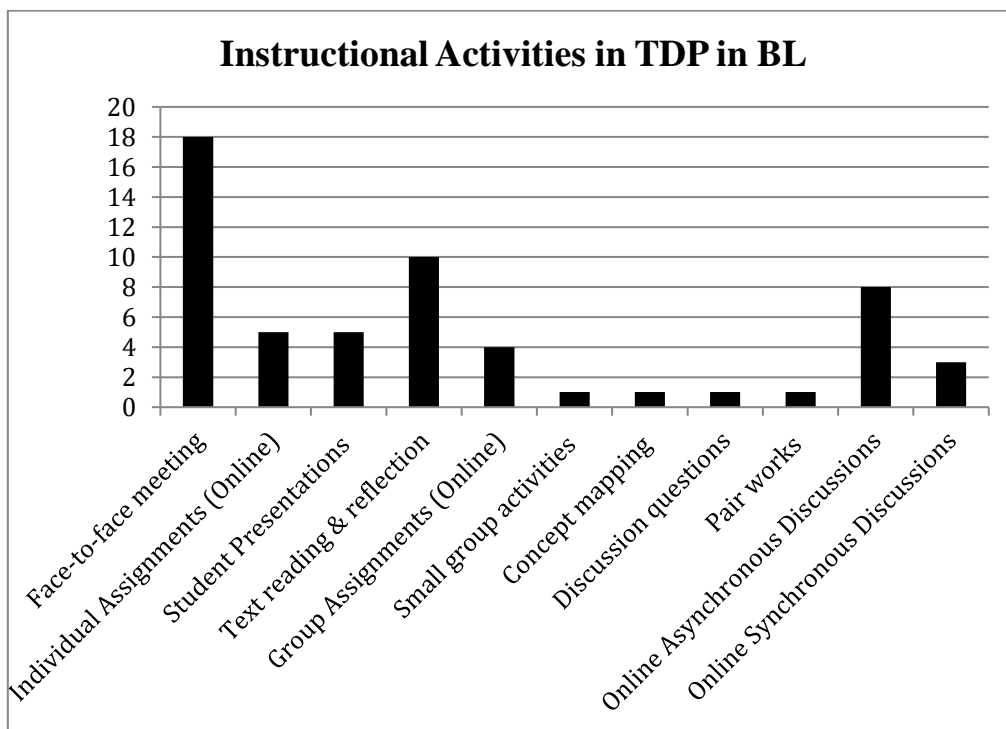
Figure 4: Instructional Activities in TDP in BL

Figure 4 shows instructional activities in teacher development programmes. Exactly the same activities can be seen in blended contexts, TDP and other blended programmes. The most preferred activity has been "*Online Asynchronous Discussions*" as in the other blended programmes. Holmes and Prieto-Rodriguez (2018) found out online synchronous discussions are useless. They recommended having face-to-face discussions instead (p.31). Further, as a means of interactivity and assessment, they recommended online quizzes or tests due to on time feedback for the students; conversely the staff members were not much interested in online quizzes (p.32). They suggested using Anderson's (2003) *Interaction Equivalence Theory* as a means of explanatory mechanism for students' behavior in blended learning platforms (p.32).

Forum discussions, as an interactive discussion tool among the peers and instructors, have been most effective in blended platforms (Popa et al., 2015, p.279; Bicen, Ozdamli and Uzunboylu, 2014, p.537; Caner, 2010, p.92). Alayyar, Fisser and Voogt (2012) commended discussion forums as "*The online discussion forum was found to be very helpful, because the pre-service teachers could exchange their ideas and opinions and get instant feedback from team members, peers, or experts*" (p.1310).

Blended activity design in teacher development programmes has been done based on certain norms. The first is *prospective teachers' professional development and building a professional identity*. Since teaching is a profession the aim of course design and delivery has been to exemplify how particular type of learning could support for them to practice in their career (Alayyar, Fisser, & Voogt, 2012; Shand & Farrelly, 2018; Popa et al., 2015). Alayyar, Fisser and Voogt (2012) argued as follows.

> *"...........a teacher preparation program should provide students with the knowledge, skills, and experience needed to integrate ICT effectively in their future practice, taking into account the interactions between pedagogy, content and ICT."*
>
> (Alayyar, Fisser & Voogt, 2012, p.1298)

The second is *maximization of student-student and student-instructor interactions and student engagement in learning.* In blended platforms, as the students are away from the classroom walls, possible measures should be taken to keep the student engaged in learning process and to maintain continuous feedback and instructor supervision (Shand & Farrelly, 2018; Borup, West, Thomas & Graham, 2014; Lin, 2008).

> *".........dialogue between students was required in the online component of the course as an online communication activity. Discussions, both face-to-face and online, provided students with opportunities to engage dynamically with the course instructor and peers over difficult content matter and reflect on their learning ……... It also helped students feel they were part of the course learning community, and it encouraged socialization, an important part of the learning process."*
>
> (Shand & Farrelly, 2018, p.7)

Many instances were found which recommend the significance of interactions among the students and instructors (i.e. Lin, 2008; Holmes & Prieto-Rodriguez, 2018; Mouzakis & Bourletidis, 2010; Abdelraheem & Ahmed, 2015). One of the drawbacks of online component

might be *'feeling isolated or abandoned in the learning environment'*. To avoid such circumstances, maximization of interactions and engagements is utmost important as stated by Mouzakis and Bourletidis (2010)

> *"the opportunity given to teachers to participate in an active and meaningful training process presupposes reliable network access, adequacy of links, pleasing and attractive layout, hyperlinks and hyper media options and synchronous and asynchronous communication tools that enhance various forms of interaction"* (p.19).

The third is *interactivity*. Blended learning accompanies characteristics of distance education (Mouzakis & Bourletidis, 2010). Fairly less amount of time is allocated for face-to-face meetings in blended platforms (i.e. Bicen et al., 2014; Holmes & Prieto-Rodriguez, 2018). As the knowledge is built via social interaction, there should be opportunities provided for the students to engage in interactive activities aimed at knowledge sharing and building (Caner, 2010; Holmes & Prieto-Rodriguez, 2018). As the students spend much time outside the classroom, instructional activities organized in blended platforms tend to be interactive. Caner (2010) stated that as the teacher education programmes are professional, the students ought to have opportunities to see what the peers do and think on what they are being taught and learnt (p.92-93).

The fourth is *nature of target group (i.e. age, training needs, experience, ICT knowledge etc..) and programme content*. The complexity of the technology and types of activities to be included has been decided upon two factors: the target group, which is the imperative factor in activity design; and programme content, which has to be mastered by the students. Researchers have inquired into student background and how the programme content design and delivery could be aligned to the background (i.e. Chong, Cheah & Low, 2010; Caner, 2010; Popa et al., 2015). Shand and Farrelly (2018) concluded that *"The blended course design seemed to effectively meet the objectives of the course and the needs of the students. It also provided several benefits to those enrolled in the course. The online components were appropriate and productive and provided students with the flexibility to engage with the content when they were able."* (p.11).

The fifth is *amalgamation of learning theory and principles of adult learning*. Learning theory is necessarily to be considered in any educational platform. Despite the fact what the educational theory says, effective instructional activities cannot be designed. Except only three studies (i.e. Bicen, Ozdamli & Uzunboylu, 2014; Mouzakis & Bourletidis, 2010; Heba &

Nouby, 2008), the other researchers have not specifically highlighted the underlying theory of activity design. Mouzakis and Bourletidis (2010) elaborated the value of both learning theory and principles of adult learning in blended platforms - *"Main principles of adult learning (work-related activities, activities that reflect teacher's interest etc.) and the learning theories (behaviorist, cognitive and constructivist strategies) should be taken into account to promote active learning and to foster higher-order thinking and meaningful knowledge"* (p.17).

(3). What blended models/approaches support to deliver the blended teacher development programmes?

Blended models or approaches simply say how technology presence (i.e. ICT, web, internet and so on) and face-to-face presence are blended (Picciano, 2006, p.97-98). The blend could be either technology-rich or face-to-face dominant. Based on contextual demands, the appropriate blend has been defined (i.e. Demetry, 2010, Derntl & Motschnig-Pitrik, 2005, Bianco, Collis, Cooke & Margaryan, 2002). Mostly, blended approaches differ greatly in par with what the intended programme to be achieved; either if the programme is looking at technology impact or social impact on leaner performance and leaner attitudes towards the particular blend which is tested (i.e. Mellema, Smart, Shull & Salmona, 2009, Donnelly, 2010, Greener, 2008).

The present review noted that the blended experiences reported in the studies cannot be categorized under the models suggested by Horn and Staker (2011), Staker and Horn (2012) and Christensen, et al. (2013). Most of the blended experiences are partially related with the four models proposed by Staker and Horn in 2012 (p.). For such instances the best appropriate classification would be the *"blended frameworks"* but not the "blended models or approaches". It is observed in some situations that the roots or origins of blended frameworks derive from the models but eventually the frameworks deviate largely from the models in practice (i.e. Demetry, 2010). Flipped classroom model has been one of the popular concentrations in blended platforms. Usually flipped model says that lecture content is delivered online and instructional activities are conducted face-to-face in the classroom (Staker and Horn, 2012. p.). It is noted in the review that this model requirements have not been met fully in the blended programmes (i.e. Demetry, 2010, Strayer, 2012). Not only the content is delivered online, in addition, warm up activities such as online quizzes and assignments have also been assigned for the students online and face-to-face sessions have been used to solve the learner issues related to the content delivered (Demetry, 2010, p.1).

Further, the review noted that blended settings differ in response to the subjects being targeted. If the subject is information technology focused or language focused, blended approach has been adapted accordingly (i.e. Ting & Chao, 2013, Akgunduz & Akinoglu, 2016, Sriarunrasmee, Techataweewan & Mebusaya, 2015). Technology presence could be higher when the blended mode is used in technology related subjects such as science, ICT and medical science (i.e. Gagnon, Gagnon, Desmartis & Njoya, 2013, Woltering, Herrler, Spitzer & Spreckelsen, 2009, Derntl & Motschnig-Pitrik, 2005). Simulations, animations, audio-video conferencing (i.e. Avatar) and high-end software have been used to deliver the content in technology-rich subjects in comparison to social science subjects such as education and languages (i.e. Shen, Lee, & Tsai, 2011). Social presence has been significant in blended social science programmes. Instructor and tutor support, peer collaborations and interactions, instructor supervision and face-to-face meetings have been more significant than the technology presence in blended social science programmes (i.e. Ausburn, 2004, Ting & Chao, 2013).

One of the common constituents of two types of blended programmes, science and social science programmes, was *"pedagogical presence"*. Pedagogical presence is for the assurance of the quality of the educational programmes. When technology is combined with teaching and learning, pedagogy provides theoretical, philosophical, psychological and phenomenological foundation for the process. Pedagogical presence can be used for instructional design, curriculum design, technology adaptation, learner motivation and assessment. Though this has not been much emphasized in the blended approaches but blended learning could not happen if the pedagogical presence is lost. It is interesting to note that though the blended models emphasize technology presence and social presence as significant constituents, pedagogical presence has been behind blended learning (i.e. Huang & Zhou, 2006, Bianco, Collis, Cooke & Margaryan, 2002, Denis, 2003). Instructional strategies and activities derive from the instructional modes (i.e. behaviorism, constructivism) (Saskatchewan Education, 1991). To apply pedagogical concepts and theories in blended learning, practitioners could get the support of pedagogy. Significantly the review noted that blended models consist of three constituents, technology presence, social presence and pedagogical presence. This deal is seen in each blended programmes in varying degrees.

Blended teacher development programmes do not differ greatly from general blended trends in respect of model selection. But one important observation could be made in the review. The

flipped classroom model (Inverted Classroom) has been much popular in TDP (i.e. Shand & Farrelly, 2018, Popa et al., 2015, Vaughan, 2014, Caner, 2010). Flipped model supports to increase the sense of community as it opens up an environment where the learners could interact, share knowledge, build study groups and encourage informal learning online (Shand & Farrelly, 2018). In online phase students have their own pace and classroom phase clears the misconceptions about the materials. Vaughan (2014) stated that flipped classroom models is best fit for teacher preparation courses because it encourages student ownership over their own learning, and simultaneously frees up class time to expose teachers to myriad instructional strategies during the application of the content they have learned. Flipped classroom model gives enough time for the leaners to get ready for their learning prior to the classroom meeting; the challenges emerge as a result for the instructor are how to manage new learning experiences, keeping contacts, building rapport and giving feedback when they are outside. To overcome such challenges instructor possesses enough time before the next meeting. The success factors of flipped model are, therefore, planning and management of instruction (Vaughan, 2014). In this sense, technology plays a critical role in flipped classroom model.

As teacher preparation programmes are focused on professional development, managing application of the new knowledge would be an issue. To make the model fruitful in this aspect, careful planning of activities and revisiting of the strategies are needed (Vaughan, 2014). Vaughan (2014) further emphasized that instructors need training on how to handle the different technology tools activities. Then, instructors get more advantages of online phase (Popa et al., 2015). Findings of Vaughan (2014) tally with the findings of Popa et al., 2015 about the implementation flipped classroom model in teacher development programmes. They also recommended that instructor professional development is a must in flipped model of blended learning.

CONCLUSION

It is noted that blended learning accumulates recognition and acceptance of scholars in the field of teacher development programme delivery since it supports the academic institutions to programme outcomes. Selection of instructional strategies of the two types of programmes, general blended programmes and blended teacher development programmes, is indistinguishable due to the same instructional strategies are used in the programme delivery and self-directed learning has been preferred. Instructional activity selection in blended teacher

development programmes is focused on mastery of professional skills, therefore asynchronous discussions; individual and group activities and text-reflection have been highly preferred.

Eventually, it seems that flipped model fits with blended teacher development programmes once the proper instructional planning and implementation measures are introduced into flipped model of blended learning in TDP. There could be variations even within such contexts as blended learning means different thing to different people.

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Factors Influencing the Behavioral Intention of Online Learning Education of Military Training

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ABSTRACT

Training is a pillar of the success of military operations in the country. It was badly affected by COVID-19 and had to choose virtual learning for military professional courses. Behavioural intention of the student officers towards these courses is a critical factor in achieving the purpose of these courses. Behavioural intention can be identified as believing to use online learning and keeping with this system. It was affected by many factors during this period. COVID-19 caused Naval and Maritime Academy to close their doors and compelled the switch toward online education. This study aims to investigate factors that impact on the behavioural intention of student officers at the Naval and Maritime Academy on e-learning. An online questionnaire was utilized to gather data from 100 student officers enrolled in the Naval and Maritime Academy, Trincomalee during 2021–2022. The Unified Theory of Acceptance and Use of Technology (UTAUT) was the primary framework employed for analysis, in which system quality and e-learning experience were included as external constructs to seek out a much better model to improve the understanding of students' intention to adopt e-learning. The UTAUT model has been recently used to identify the factors impacts to acceptance of the academic online learning. It was developed and tested in this study. The model consists of five constructs: performance expectancy, effort expectancy, social influence, facilitating conditions, and behavioral intention. For data analysis, SPSS version 20.0 (Statistical Packages for the Social Scientist) statistical package was applied for data analysis. Results showed that social influence and facilitating conditions have a greater positive and significant effect on student intention towards online learning. This study highlights the requirement of the upgrading of infrastructure facilities towards online learning. And social acceptance influences improving the perception of student officers. Acceptance is more effective towards the perception of students if subjective norms, social factors, and image are positive about online learning. Finally, this study offers recommendations that have major implications for future researchers, policymakers in the military, and practitioners in developing an effective online learning system for educational institutions in the context of military training.

Key Words: Military Training, E-Learning, Behavioural Intention, Factors of Behavioural Intention, UTAUT model

INTRODUCTION

COVID – 19 has been impacting to various industries in the world: education, shipping, manufacturing, agriculture etc… According to UNESCO, (2020) more than 1.5 billion students from the primary school to university have been studying at home through e-learning platforms

during COVID – 19 period. Meanwhile, internet based learning and related innovations have created variety of approaches and forms for the development of learning programs (Shawar, et al., 2007). Sri Lanka Navy (SLN) had to adopt these changes in the education process as an important channel due to the limitations of the movement.

Sri Lanka is struggling with a worse economic condition at this moment. Long-term budget deficit, high debt repayment, low-level foreign reserves, depreciation of foreign currency, and skyrocketing inflation are major economic resistance in the country. According to the Central Bank of Sri Lanka, those were marked in high place after COVID-19 pandemic situations while international sources are emphasizing inefficient management of loans and public finance, highly depending on imports and inefficient public management. Under this situation, the government is facing a struggle when financing government organizations and allocating the budget for the defense sector to achieve security and territorial integrity in the country. In 2022, the Government of Sri Lanka (GOSL) has allocated Rs. 308.1 billion from the national budget for tri forces including 63.9 billion for SLN. Among this allocation, Rs. 440,000 million was allocated for training (Table 1).

Table 1: Budget Allocation for Capital Expenditure of SLN For 2022

Capital expenditure	Amount (Rs.) Million	Percentage (%)
Rehabilitation and Improvement of Capital Assets	3,050,000	32.99
Acquisition of Capital Assets	4,400,940	47.61
Capacity Building	440,000	4.76
Other Capital Expenditure	1,353,540	14.64
Total	9,244,480	100

Source: Budget Estimate 2022

The second largest armed force in the country is Sri Lanka Navy (SLN) which was established in 1937 as Ceylon Naval Volunteer Force (CNVF) from Royal Navy. SLN has been growing since then with the upholding as first defense line of the country with playing their role, vision and mission, upgrading operation capability, cooperation with regional navies and improving professionalism of the naval persons. In sense, Naval and Maritime Academy (NMA) play a

pivotal role through officer training to achieve the vision and mission of the Navy. Because NMA's mission reflects their dedication to creating a complete naval officer with all the capabilities.

Sri Lanka Navy's prestigious training academy is Naval and Maritime Academy which was founded on January 15, 1967. NMA has been fulfilling the training requirements of officers and sailors since then. Through various training and development programs, it specifically develops officers from the initial stage to the middle career officer stage. Online learning has been introduced under the COVID-19 pandemic situation for officers' training courses for the Long Logistics Management Course (LLMC), the Long Course (Executive), the Junior Naval Staff Course, and Sub Technical Courses (Logistics, Executive, and Infantry/Provast) since 2020.

In the military training context, it is essential to identify students' acceptance towards online education. Therefore, research has used the Unified Theory of Acceptance and Use of Technology (UTAUT), which facilitates identifying students officers' acceptance towards the online learning in the NMA (Venkatesh V. , Morris, Davis, & Davis, 2003).

Problem Statement

Student's acceptance is impacted by various factors and it's very important to identify the success of education process which is implemented using e-platform. Their acceptance is a key cornerstone for the Directorate of Training, including administrators and educators, when implementing and making decisions on the online learning system in the Navy. Furthermore, online learning is more adaptable, provides a diverse range of programs, is accessible, provides a personalized learning experience, and is less expensive than traditional education (Josep, 2022). Therefore this research gives directions for the purpose of training planning in the military to engage with the e-learning.

COVID – 19 has converted and changed the channel of training courses in the NMA with the help of online learning. During 2020 and 2021, all the officers' training courses followed this for some subjects of their courses. However, no research or analysis can be found to identify the student officers' acceptance of online education. This research mainly focuses on what extends officers' acceptance towards the online education of sub-technical courses, Junior Naval Staff Course, and long courses. Because willingness is one of the major factor impact to

success for the online education. This willingness depend on several factors and it help to identify the officer's intention towards e-learning in the navy.

Research Questions

Mainly followings can be consider as research questions:

o What are the determinants affecting to student officers' acceptance on e-learning in the NMA?

o What is the relationship between factors affecting student officers' acceptance and behavioural intention on officers' online learning education courses in NMA?

o What demographical factors corresponding to study population of student officers in NMA?

o How does the behavioural intention of the student officers in the NMA positively change towards online learning?

Objectives

The objectives can be identifying as follows:

o For recognizing the determinants affecting student officers' acceptance on online learning education.

o To investigate the relationship between factors affecting to student officers' acceptance and behavioural intention on officers' online learning education courses in NMA.

o To identify the demographical factors corresponding to study population of student officers in NMA.

o To change positively behavioural intention of the student officers in the NMA towards online learning.

Significance of the Study

Research creates following importance:

o Help to improve the service delivery of the education system in Navy.

o Benefits to improve student success in the naval carrier and professionalism.

o To gives the understanding of the usage of online education through UTAUT

o To identify in-depth of factors affecting to accept the online learning

o To gives the implications for strategies in view of the efficiently promulgating the online learning

LITERATURE REVIEW

Relevant Concepts and Research

E-Learning: Internet is one of the exciting way helping for learning and research for both teachers and students. Because it facilitate to acquire information and share (Arkorful & Abidoo, 2014). Abed, (2019) stated that E-learning mainly depends on latest technologies, exchange of information, global connectivity of the information and multimedia, conversation and computer-generated classes. According to Abdelazizl, et al., (2014) electronic learning is an outcome of the combination of various technologies. Multimedia could modified the customary education system and education environment with the help of information. It help to conduct lecture at anytime and anywhere students. This opportunity make more comfortable in the education process while giving better knowledge through the internet.

Behavioural Intention: The view of Mamman, et al., (2016) highlight that degree of their willingness applies and resolve for people's behavior which is called intention. Venkatesh, et al., (2012) mentioned that behavior intention is some person's willingness to apply and remain the usage of technology and related components that governs that utilization. Aditia, et al., (2018) claim that using information technology is a behavioral predictor.

Raman and Thannimalai, (2021) stated that social influence and tradition, practice strongly impact the changing of person's behaviour to use the e-learnning. However, other factors such as performance expectons, job fitness, rosourcess availability, external motivation and value of the price are quite at the time. The best predictor of behavioral intention toward e-learning was determined to be habit. According to Mouloudj, et al., (2021) pandamic situation offers the selection of the e-learnning. But factors which are influencing to e-education identification is crucial in the education management.

The Factors Influencing Students' Behaviours Intention to Use Online Learnning

Martin, et al., (2018) looked into how students felt about digital learning and how it affected their daily lives, but they also considered how students felt about online learning during the epidemic. Table 2 illustrates the elements affecting students' decisions to use technology.

Table 2: Factors affecting to students' behaviour intention to use e-learnning

Authors	Determinants	Findings
Davis, (1993)	Perceived usefulness and perceived ease of use	Looking into how technology impacts consumer behaviour
Liu, et al., (2010)	Social influence, self-efficacy for e-learning and cooperation of the system link with the past experience, design, and compatibility of the interaction	Looking into how technology impacts consumer behaviour
Al Kurdi, et al., (2021)	Computer anxiety, technical assistance, supposed utilization, easiness, attitude, and perception of the behavior. For the e-learning, important factors are social influence, satisfaction, self-efficacy, usefulness and ease of use	Improving the interest of university students and absorbing e-learning
Mailiar,et al.,(2020)	Experience with online learning, supposed usability, and its perception, approach to use	Understanding of the students intention in view of adapting e-learning in better way

It was difficult to suddenly switch from the old education system to online learning during the pandemic. Table 2 outlines the key areas for improving online education in order to increase student acceptability.

Technology Acceptance Model:

According to Shroff, et al., (2011) TAM as a reliable theoretical model whose applicability can be expanded to an e-portfolio setting. It looks at students' behavioral intentions to utilize an electronic learning environment, which shows how they use and adapt it within the particular parameters of a course. Mailizer, et al., (2021) claim that this model considerbly more effective due to enhancing the perception of students to e-leanning modifications, analysing the quality of system and improve e-learnning experience. Phuaa, et al., (2012) investigate the approches of internet, supposed utilization and easy usage, satisfaction through this model. Such four

factors were used to identify the inention of economics teachess to online learnning as a learnning mode.

The Unified Theory of Acceptance and Use of Technology:

UTAUT model is used to forecast the acceptance and behavioural use of information technology systems. This idea initially was proposed to review eight factors (Kolog, et al., 2015). These eight models were empirically tested and evaluated by Venkatesh, et al., in 2003. Among them, seven factors are more prominent drivers to identify the intention (Figure 1): performance expectancy, effort expectancy, facilitating conditions and social influence are major four drivers while gender, age, and related experience are considered as moderating factors. (Table 3) These moderators are increasing and reducing of the major impact of main determinants influence towards the behavioural intention or acceptance of the usage.
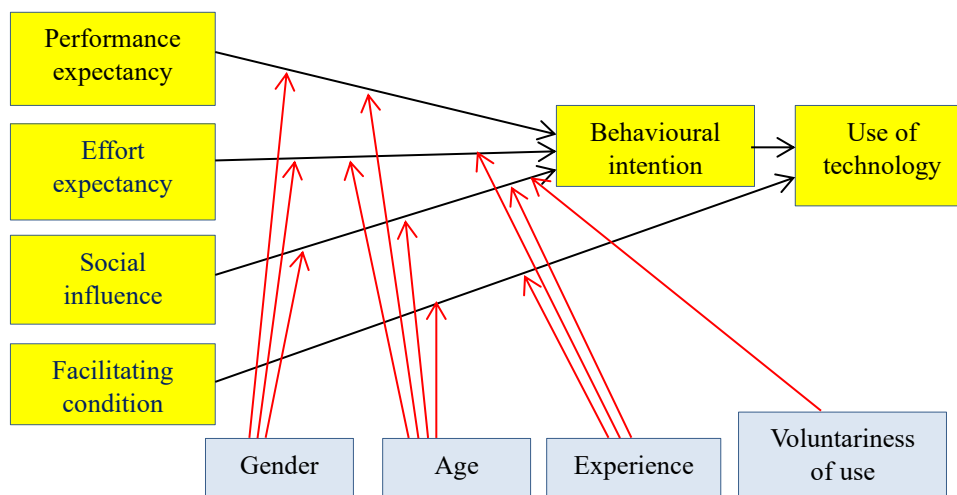
Source: Venkatesh, et al., 2003

Figure 1: UTAUT model

Table 3: Factors, Definition and Variables Related to UTAUT Model

Factors	Definition	Variables
Performance expectancy	System will support to improve their work performance	Perceived utility, fit with the work, and expected results
Effort expectancy	Usage of the system will provide more comfortable use	Perceived simplicity, complexity, and usability

Social influence	Usage of the system will provide value which felt by the user due to people influence	Social context, subjective norm, and image
Facilitating conditions	Availability of physical and human resources which facilitate the system usage	Perception of behavioural control, favorable circumstances, and compatibility
Behavioural intention	Person believe to use and keep the system	Technology usage and determination of the requirement

Source: Venkatesh, et al., 2003

Relevant Research Studies

The UTAUT model has been recently used to identify the factors impacts to acceptance of the academic online learning. Such as system quality, experience of e-learning, easy of the usage, supposed usefulness, approaches to usage and behavioural intention are major elements examined by the Mailizar, et al., (2021). He was obtaining support from TAM model for the better understanding of the student's intention towards the online learning. Meanwhile, he found that students' approaches towards the online learning is given greater influence to predict their intention during the COVID – 19 situation. Jameel, et al., (2021) has evaluated all seven factors of the UTAUT model for the purpose of identifying the impact on students' perception towards the e-learnning. According to that study, he found positive correlation between factors: performance expectancy, effort expectancy, conductive environment and habit with the behavior intention.

Further, researchers have been looking to change the determinants of the UTAUT model for the better findings. Ugur and Turan, (2018) have added system interactively and scientific expertise as new factors to fundamental UTAUT model. However, research found that weather expertise expect to use online learning, a person's field of scientific competence does not directly impact for the intention to use online learning. New moderating variables were being added by Altameemi and Al-Slehat, (2021) with dropping UTAUT original model. Both study qualification and scientific disciplinary have been considered as moderating variable through

their study. Final findings show that scientific discipline is a more important moderating variable when adapting e- learning in the new situation with behavioural changes.

Findings and results of this kind of research facilitate to universities, teachers and decision makers for designing and implementing the online system in the organizations (Jameel, et al., 2021). Additionally, Hofmeister and Pilz, (2020) stated that this approach supported the design and development of online education formats for teachers. UTAUT model is a more reliable and effective model to study how people behave when it comes to online learning education because it is more sensitive to the effects of social cues.

Venkatesh, et al., (2003) mentioned that the factors of performance expectancy are perceived efficacy, fit for the job, and meet the supposed results. Those impact to change the persons believe through facilitating their work and enhance the performance. Also Davis and Davis, (1989) founded that believes about the usefulness help to improve the performance or efficiency through the new system.

The variables which are influencing to effort expectancy are complication, user friendliness and supposed accessibility (Vankatesh, et al., (2003). According to meaning of the supposed accessibility which is the idea that, system should give easy way to use without doing more effort. The incapacity of the user to understand how to use the system is what is meant by complication. User friendliness or ease of use mean that without any complication, user can use the system straightforward way according to their perception. Also they declared that those variable drown positive implications for performance expectancy. Davis, (1989) agreed this opinion while mentioning that easiness of the system help to improve the performance. Further easiness bring the better performance and impact straightly on the expectations of performance and the intention to workers e-learning process (Carlsson, et al., 2006). Additionally, gender, age, and experience change the expectations of performance on behavioural intention and women have more effort expectation than men (Venkatesh, et al., 2003).

According to Venkatesh, et al., (2003) another direct predictor behavioural intention is Social influence which embraces the acceptance towards the technology. It can be defined as "the extent to which a person believes that it is vital that others believe he or she should utilize the new system". They introduced the variables related to social influence as, subjective norm, social circumstances and image. Further social circumstances change person's opinion and perception which greatly impact to change of the people behavior.

Comparison with particular culture and Social factors of the modified reference group is very important for behaviouaral changes. Thompson, et al., (1991) mentioned that persons' behavior can be affected by subjective social situations, interpersonal relationships: coworkers and leaders. Another important variable is image which can be identified as using new technology can uplift individual social recognition, standing or image, potentially enhancing reputation and visibility. The moderating variables which are mentioned by Venkatesh, et al., (2003), gender, age, voluntariness and experience change the social influence factors on behavioural intention.

Venkatesh, et al., (2003) define the facilitating conditions as the persons believe that the organizational and technological infrastructure which assist for system functioning. This is influence by few elements such as control of the supposed behaviour, enabling circumstances and compatibility. Control of the perceived behaviour is a person's assessment that personally carryout behavior in simply or difficulty (Ajzen, 1991; Taylor and Todd, 1995). A "facilitating condition" is an objective environmental factor that increases people's propensity to use technology, such as prompt assistance when utilizing a difficult system or advice when selecting a system (Thompson et al., 1991). Time and money can be identified as the resources which help to facilitative condition. Also perception can be increase by providing learning resources, functionality of the existing devices, and other equipment and instruments which help to make the learners decision and change the behaviour (Concannon, et al., 2005)

Recent empirical studies have shown that student intentions are influenced by the perceptions of online learning, which is a theory and argument that predates the COVID 19 pandemic. Following the pandemic, these characteristics' relationships with students' intentions have shifted, with some potentially having a significant impact while others have seen their importance decline. Additionally, it can present a different picture in the setting of military training than in the conventional educational system.

METHODOLOGY

Research Design: This research has used descriptive design as the main research design. In particular, it uses the officers, training courses at the NMA in Trincomalee to gather data from respondents on their views and opinions in connection to aspects affecting the acceptability of online training instruction.

Conceptual Framework: The UTAUT model and a literature review served as the foundation for the model of this study, which is shown in Figure 2. Major factors have been empirically found to have a favorable link with behavioral intention. This model has not considered the demographic variables of Venkatesh, et al., (2003) due to the fact that most respondents are placed in the same age range, experience, gender, and usage of technology, which influence the unreliable output of the results.
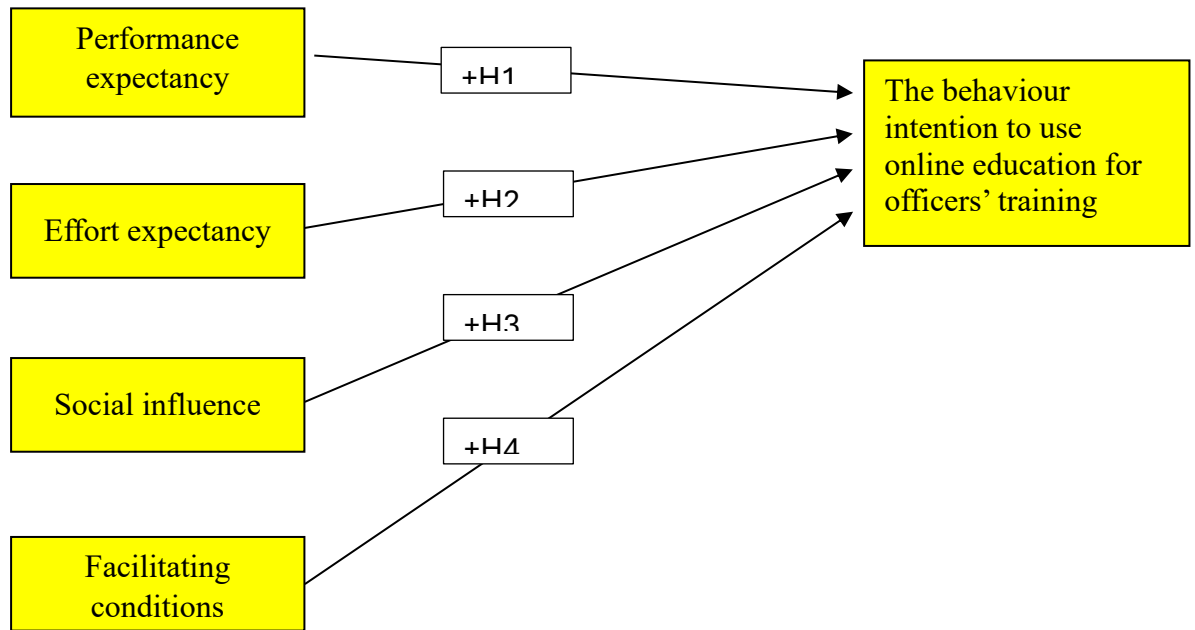
Figure 2: Conceptual Framework

Source: Developed by author

Variable Definitions

Table 4 reflects the definitions of variables.

Table 4: Definition of Variables

Variable	Definition
PE : Performance expectancy	Users' perceptions of how much online education can boost their performance
EE : Effort expectancy	Simplicity of the online learning
SI : Social influence	Believes about social environment impact for changing of individual intention towards online learning
FC : Facilitating conditions	Functionality of the Resources provided by the institution
BI : Behaviour intention	Students' plan to follow online learning

Source: Venkatesh, et al., 2003

Operationalization

Independent and dependent variable could be converted to measurable as illustrated in Table 5, Demographic factors: gender, age, experience and working hours have been evaluated separately.

Table 5: Operationalization of the Behaviour Intention to Use Online Education

Concept	Variables	Indicators	Source
The intention of behaviour on usage of online learning	*Performance expectancy (PE)*	a. Perceived Utility b. External Motivation c. Job-Fit d. Relative Benefit e. Result Anticipation	(Venkatesh V. , 2000), (Davis, 1993), (Mailiar,et al., 2020), (Liu, et al., 2010), (Al Kurdi, et al., 2021)
	Effort expectancy (EE)	a. Suppose to easy usage b. Simplicity c. Easy usage	(Venkatesh V. , 2000), (Al Kurdi, et al., 2021), (Davis, 1993)
	Social influence (SI)	a. Traditional norm b. Social factor c. Image	(Venkatesh V. , 2000), (Raman & Thannimalai, 2021), (Liu, et al., 2010), (Al Kurdi, et al., 2021)
	Facilitating conditions (FC)	a. Control of conscious behavior b. Facilitating circumstances c. Compatibility	(Venkatesh V. , 2000), (Mailiar,et al., 2020), (Al Kurdi, et al., 2021), (Liu, et al., 2010)
	Behaviour Intention (BI)	a. Preference b. Acceptance c. Intention	(Mamman, Ogunbado, & Abu-Bakr,2016), (Venkatesh V. , 2000), (Mailiar,et al., 2020), (Al Kurdi, et al., 2021)

Source: Developed by author

Hypothesis

Considering the empirical analysis, this Research plan to test following relationship:

H1:   Behaviour intention to use online officer's training courses is positively impacted by performance expectancy.

H2:   Behaviour intention to use online officer's training courses is positively impacted by effort expectancy.

H3:   Behaviour intention to use online officer's training courses is positively impacted by social influence.

H4:   Behaviour intention to use online officer's training courses is positively impacted by facilitating condition.

Study Population and Sample Size

The NMA student officers in 2021/2022 were the study's target population (Table 6). 133 student officers who were enrolled in their studies at the time made up the population. Yamane's formula was used to determine the sample size. Here **n** is the size of sample of the study, **N** is the total population and **e** is the standard error (0.05).

$$n = \frac{N}{1 + N(e)^2}$$

Table 6: Target Population and Sample Sizes

Sr. No	Name of Student officers' course	No. of students	Sample size
01	6th 2021/2022 Long Logistics Management Course (LLMC)	16	12
02	2021/2022 Long Executive Specialization Course (G, N, ASW, C)	40	30
03	28th 2021 Junior Naval Staff Course	19	14
04	26th 20/21 Sub Lieutenant Technical Course (Logistics)	22	17
05	02/2020 Sub Lieutenant Technical Course (Executive)	19	14
06	21st 2020/2021 Sub Lieutenant Technical Course (Provast and Infantry)	17	13
	Total	**133**	**100**

Source: Developed by author

Sampling Procedure

This study had used stratified sampling. The Stratified random sampling is often more convenient than other sampling techniques. Total population was included six types of officers' courses. Therefore it is essential to all the students needed to represent the survey. Stratified sampling gives highest representative opportunity for all students under the six strata. Officers are consisted in six strata. Individuals are selected using simple random sampling method in the different strata. Out of 133 officers, there were selected 100 officers as the sample.

Data Collection Techniques

To gather data for this study, Google form was used as a questionnaire. Table 7 illustrate the structure of the questionnaire.

Table 7: Questionnaire Structure

Section	Description	Variables	Questions
I	Demographics	Gender, online study hours, course, experience	1, 2, 3, 4, 5
II	Independent Variable	Performance Expectancy	6, 7, 8, 9, 10
		Effort Expectancy	11, 12, 13, 14, 15
		Social Influence	16, 17, 18, 19, 20
		Facilitating condition	21, 22, 23, 24,25
III	Dependent Variable	Student Behaviour Intention	26, 27, 28, 29,30

Source: Developed by author

Data Analysis Techniques

The students who make up the entire population will be described using descriptive statistics. On the basis of the research questionnaire pertaining to four characteristics, the student behavior intention to use online education will be analyzed. For the purpose of analysis, all independent variables will be assigned marks on a Likert scale: strongly disagree, disagree, neutral, agree and strongly agree ranging from one to five (1-5) points.

Correlation and regression analysis were performed using SPSS version 20.0. Correlation

coefficient gives the numerical value for the relationship among factors and behavioural intention while regression analysis giving the impact of the factors on intention.

DATA ANALYSIS, PRESENTATION AND DISCUSSION

Response Rate: Sample size of the study is 100 student officers of the officers' course in NMA during the period of 2021-2022. Among, 99% students' respondents positively for data collection and it give worthy analysis.

Demographic Factors: This section identifies the demographical factors affecting to behavioural intention of student officers. Such as gender, age, online learning experience, and online learning time period have been considered the major demographical factors in this study.

Gender and Age: In this study, In particular 98% of the respondents are male student officers (Figure 3). This research mainly found relationship regarding with the Factors Affecting Student Officers' Acceptance which mainly impact for male student officer's perception about online learning. Also 70% of the respondents are within 26 to 35 age groups (Figure 3). It means majority of the students are belongs to Millennium generation. Only 3 percent are 41-45 age groups. Therefore many of the students are consider as young officers.
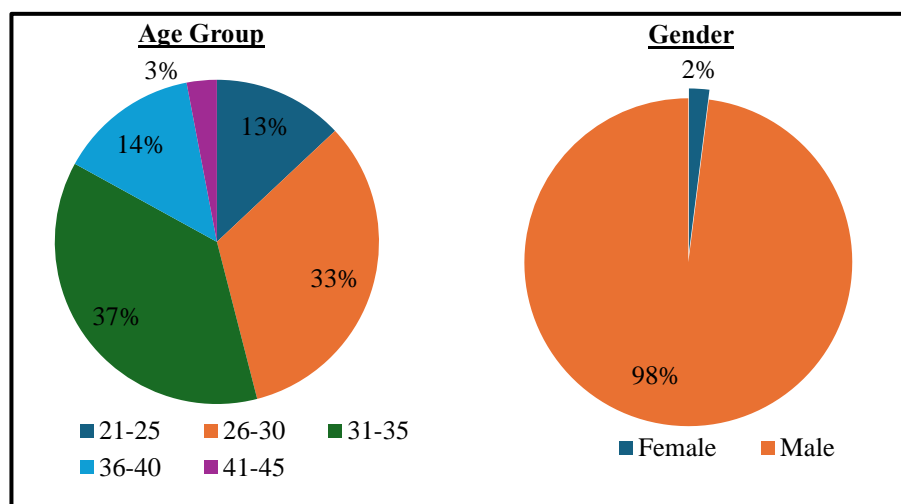
Source: Own Survey Data 2022

Figure 3: Gender and Age group

E-learning experience and spending times for online learning: According to Figure 4,

91 percent students have less than five year of involvement and only 9 percent have more than five year experience for online learning. Online learning has been used by the NMA for their training during COVID 19 pandemic situation. Meanwhile an e-learning platform was introduced during this period due to limitation of the students' movement. Under this situation, they hadn't much experience about e-learning.
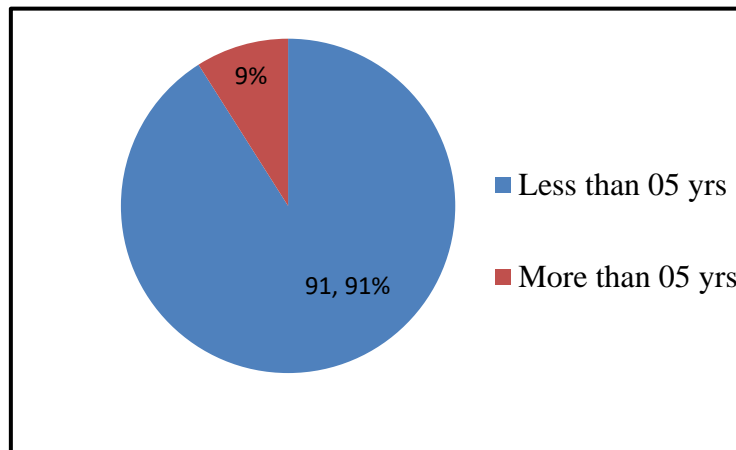
Figure 4: E-learnning Experience

According to Figure 5, 35% of the student officers are spending time more than 5hours per day. Also 78% are spending more than one hour per day. Therefore majority of student officers were engaging with online learning. They are matured with experience and have absorbed experience in advance. That knowledge and experience can give trustworthy information about the industry and it improves the validity of the findings.
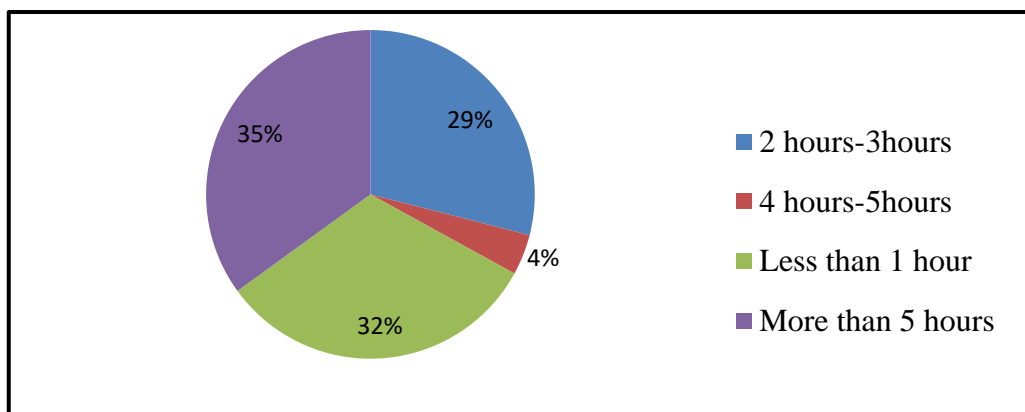
Source: Own Survey Data 2022
Figure 5: Spending Times for Online Learning

Reliability Analysis

Table 8 illustrates the value of Cronbach's Alpha which give the consistency of the respondents was investigated. According to the Table 8, all Cronbach's Alpha values are standing above value 0.60 and it reveals that operationalization of all selected variables, internal consistency and interdependency of questionnaire are in accepted and satisfactory level. Finally, internal consistency of selected dimensions and items of all variables of current study have good reliability and study produce the trustworthy and useful findings.

Table 8: Statistics of Reliability

Variables	Cronbach's Alpha
Performance Expectancy	0.841
Effort Expectancy	0.623
Social Influence	0.718
Facilitating condition	0.644
Student Behaviour Intention	0.865

Source: Own Survey Data, 2022

Frequencies Analysis

Table 9 indicates Frequencies Analysis of the respondents.

Table 9: Frequencies Analysis

	BI	PE	EE	SI	FC
Skewness	-0.136	0.449	-0.129	0.189	0.266
Std. Error of Skewness	.241	.241	.241	.241	.241
Kurtosis	-0.484	-0.292	-0.23	-0.133	-0.624
Std. Error of Kurtosis	.478	.478	.478	.478	.478

Source: Own Survey Data, 2022

This study has tested normality using skewness, which examines the normality of the distribution. With regard to all variables, the coefficient of skewness will be between -1 and +1 (Field, 2005). In comparison to kurtosis, all the absolute values of variables are less than three times of the standard error of kurtosis (Hair et al., 2010). According to Table 9, the

results show the significantly normal distribution of data.

Relationship between Factors Affecting Student Officers' Acceptance and Behavioural Intention

This section investigates the relationship between factors affecting student offices' acceptance and the behavioral intention. It can be analyzed using correlation and regression analysis.

Results of Correlation Coefficients:Table 10 indicates the relationship between factors and the behavioural intention using Pearson correlation which should be within the range of -1 to +1.

Table 10: Correlation Analysis between Factors Affecting Student Officers' Acceptance and Behavioural Intention

	BE	PE	EE	SI	FC
Pearson correlation	1	0.503	0.591	0.73	0.497
Sig. (2 tailed)		.000	.000	.000	.000

Source: Own Survey Data, 2022

A form of correlation coefficient called Pearson correlation illustrates the relationship between two variables as determined by how similar their ratio scales are. Additionally, this number demonstrates how strongly two continuous variables are related.

According to the value of Pearson coefficients, there is a strong positive correlation (73%) between social influence (SI) and the behavior intention (BI) while other factors: performance expectancy (PE), effort expectancy (EE), and facilitating condition (FI) give the moderate positive relationship with the behaviour intention with a percentage value of 50.3, 59.1, and 49.7 respectively. Those are significant associations at the significant value 0.05. Also Figure 6 further indicates that behaviour intention and main four factors have a liner positive relationship.
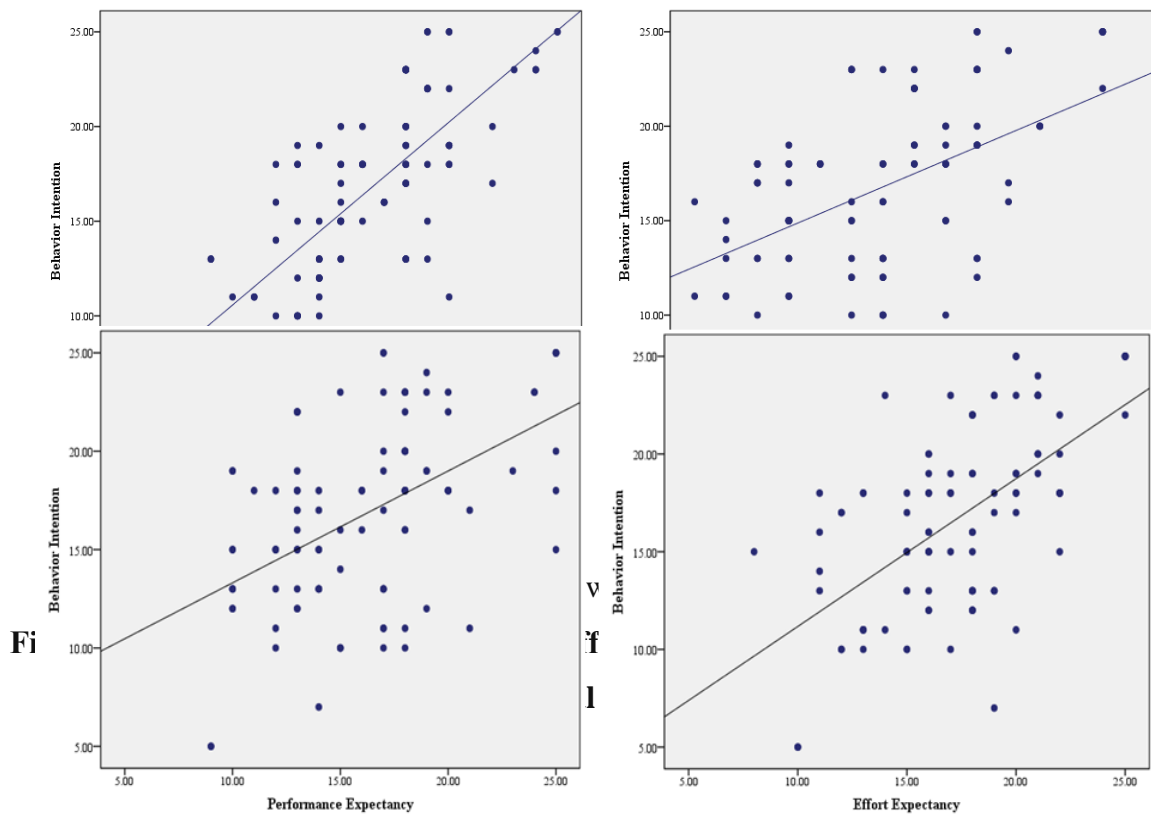
Multiple Regression Analysis: This analysis can be used to determine the impact of main four factors on persons' behaviroul intention. Accordingly, study has employed multiple regression technique due to analysis was connected with four variables. Table 11, 12, and 13 illustrate the analysis of factors' impact.

Table 11: Summary of the Model

R	R^2	Adjusted R^2	Sig.
0.774	0.6	0.583	0.000

Source: Own Survey Data, 2022

R value gives the measurement of quality with regard to the prediction of the behavioural intention. According to Table 11, the R value is 0.774 highlighting the behavioural intention's strong level of prediction. R^2 measure the proportion of variation in the behavioural intention that can be predicted by the main four factors. This value take 0.6 in Table 11, and main four factors: performance expectancy, effort expectancy, social influence, and facilitating conditions have given 60 % prediction for the variance of behavioural intention.

Table 12: ANOVA

Model	Sum of squares	df	F value	Sig.
Regression	1314.367	4	35.603	.000

Source: Own Survey Data, 2022

In Table 12, significance value is extremely low (0.000) at the 0.05 confidence level. That means performance expectancy, effort expectancy, social influence, and facilitating condition have a statistically significant relationship with the behavioural intention. Therefore it is concluded that regression model match for the data in the study.

Table 13: Coefficient Analysis

	Beta value	Sig.
PE	.044	0.664
EE	.118	0.37
SI	.757	0
FC	.309	0.008

Source: Own Survey Data, 2022

With the help of estimations in Table 13, researcher can determine how much of an increase in behavioural intention can be expected with one unit increase in the predictor which are four factors. Performance expectancy is 0.044 which means keeping all other variable constant, it is expected that for every unit rise in this variable impact to increase 0.044 units from the behavioural intention. But this is not statistically significant at the 0.05 confidence level. Also 0.118 unit of behavioural intention is increased by the one unit increasing of performance expectancy which is not statistically significant at the 0.05 significant level.

Meanwhile social influence coefficient value is 0.757 which means every unit increase in social influence impact to increase 0.757 in behaviour intention while holding other variable constant. This is statistically significant at the 0.05 confidence level. Also facilitating condition show the statistically significant positive impact on behavioural intention. That coefficient value is 0.309 which mean one unit increasing of the facilitating condition impact to increase 0.309 from the students' behaviour intention.

DISCUSSION

This part is dedicated to discussing the research findings, empirical evidence, and the researcher's overall analysis conclusion. Mamman, et al., (2016) have elaborated intention that degree of their willingness apply and resolve for people's behavior which is called intention. The same concept was presented by Venkatesh, et al., (2012) mentioned that behavior intention is some person's willingness to apply and remain the usage of technology and related components that governs that utilization. Aditia, et al., (2018) claim that using information technology is a behavioral predictor. According to research, 47.8% of students intend to accept online learning for their future education, compared to 29.4% of students who have a neutral opinion about using, accepting, and preferring online learning. Balance 22.8% of students opposes using online learning in their future classes.

According to Jasmeel, et al., (2002), they have found the positive relationship between the PE, EE, SI, FC, and BI and Mailizar, et al., (2021) also found that students' approaches towards the online learning is given greater influence to predict their intention during the COVID – 19 situation. According to many studies, they have found positive correlation between factors: performance expectancy, effort expectancy, conductive environment and habit with the behavior intention. Meanwhile descriptive statistics such as Pearson coefficient and linear relationship has been proven previous findings.

Venkatesh, et al., (2003) mentioned that the factors of performance expectancy are perceived efficacy, fit for the job, and meet the supposed results. Those impacts to change the persons believe through facilitating their work and enhance the performance. Further the variables which are influencing to effort expectancy are complication, user friendliness and supposed accessibility (Vankatesh, et al., (2003). System should give easy way to use without doing more effort. However results of the regression analysis show the insignificant impact of performance expectancy and effort expectancy to change the behaviour intention of the student officers. That means supposed usefulness, external motivation, job fitness, outcome expectation, ease of use, complexity impact positive to behaviour intention but cannot take for consideration to the training of the NMA. Further, Venkatesh, et al., (2003) stated that "gender, age, and experience will moderate the influence of effort expectancy on behavioral intention." effort expectancy is more pronounced in women than in males. However, 98% of the respondents are male officers, which constrained Venkatesh, et al., (2003) analysis to a gender perspective.

According to Venkatesh, et al., (2003) another direct predictor behavioural intention is Social influence which embrace the acceptance towards the technology. Thompson, et al., (1991) mentioned that persons' behavior can be affected by subjective social situations, interpersonal relationships: coworkers and leaders. Others, such as peers or teachers, can also have an impact on a students' choice (Shen, et al., 2006). Similar to this, research has shown that subjective norm, social factor, and image effect can alter students' impressions of online learning for the better. The ability to improve a student's likelihood is the factor that has the greatest impact on student admission. This indicates a strong influence of the interior environment on adaptation. It's possible that elements like student expectations, utility, benefits, convenience of use, and required facilities are less important in driving student officers to engage in online learning than other aspects like supervising officers, managing staff, peers' perceptions, NMA instructions, and culture.

Venkatesh, et al., (2003) define the facilitating conditions as the persons believe that the organizational and technological infrastructure which assist for system functioning. This is influence by few elements such as control of the supposed behaviour, enabling circumstances and compatibility. A "facilitating condition" is an objective environmental factor that increases people's propensity to use technology, such as prompt assistance when utilizing a difficult system or advice when selecting a system (Thompson, et al., 1991). Also perception can be increase by providing learning resources, functionality of the existing devices, and other equipment and instruments which help to make the learners decision and change the behaviour (Concannon, et al., 2005). The research shows that making online learning more accessible is a key component in influencing how positively students see online learning. Students that participate in online learning take into account their network setup, computers, and environment. Such positive outcomes are beneficial to universities, professors, decision-makers, and the higher education system when it comes to creating and implementing their online systems as mentioned by Jameel, et al., (2021). Navy must therefore take into account these variables that positively affect their perception and work to help them.

CONCLUSION AND RECOMMENDATIONS

Conclusion

Demographic factors:

As the third objective of the study, demographic factors are identified through the study. Majority of the students are male student officers and those are belongs to the millennium generation in the generation category. Young officers' perception is different than other generation. They accept the new technology and they are spending at least one hour per day for online learning without regarding their past experiences. The online learning trend came with the spreading of pandemic and it has been influencing to learn through e-platform. Therefore young officers have identified the importance of online learning for their career development.

The Relationship between Factors Affecting Student Officers' Acceptance and Behavioural Intention:

Factors affecting to behavioural intention have been identified through the empirical survey of the study which give approach to achieve the first objective of the study. However, researcher found most of the studies were conducted by the nonnative scholars and those factors are relevant to identify the behavioural intention of the students' officers in the NMA.

As the second objective, relationship between factors and behaviour intention were investigated using correlation and regression analysis. According to numerical findings of the study, researcher identified the positive relationship with the main four factors and the behaviour intention through Pearson correlation and linear correlations analysis. And 50% of the students show the willingness to continue their learning through with the supporting of e-learning.

According to impact analysis of the regression analysis has highlighted the important factor as social influence among the four factors which give more positive and significant influence for the students' perception. Other positive impact factor on behaviour intention is facilitating conditions. If students have access to the network, computers and conductive environment, they have high intention to adopt the online learning.

However, including complexity, and perceived as the perceived expectations influence to students officers' intention without having significant impact. Additionally, the Effort Expectancy shows that the effect is both positive and unimportant. These elements are not important for student officers to adhere to online learning, according to the current circumstances. Additionally, they must obey Navy directives and regulations without taking into account their perception. Therefore, contrasted to empirical study, this research recommends identifying deeper causes for this insignificant behavior of the components on Behaviour Intention.

Recommendations

The findings may be pertinent and helpful for the Navy in developing policies, corporate strategies, and processes where Behaviour Intention plays a vital role in the Navy's educational system. This study suggests that student officers who have less than five years of experience with eLearning at the NMA should be willing to continue using online learning during subsequent courses, independent of social pressure and supportive circumstances. In light of the conclusion, it is apparent that the following recommendation should be put into practice:

- o Students need better environment for online learning due to their willingness. They can talk each other, introduce themselves, sharing their expectations and ambitions, goals and stories. Then turn the tables: ask each student to introduce themselves, sharing their expectations, their goals, and their stories.

- o Motivation is an important due to their positive perception towards the online learning. As a result of, Instructors, seniors and supervisors can make a positive feeling to maximum utilization and efficiently utilization of the online learning.

- o Interact with senior officers, directing staff and supervising officers and students by commenting on their drafts or joining them in a chat room, Design projects for collaborative teamwork, set up small groups and make themself available.

- o It is required to promulgate a legal framework for online learning in the Navy. It should be consisted not only the procedure but also making more online friendly environment. Such as providing better search engines and software, minimum data usage, high video resolution, conversation facility, sounds etc…

o Authorities should ensure Online learning equity and resources in technology expertise, high-speed internet access, computers, equipment with quality and availability and conductive study space.

o Information Technology department and other responsible departments ensures service excellence for better learning for the students.

o Appreciation of best and innovative students is requiring due to reputation given by online learning and public money saving. Online learning leverage their digital skills through extrinsic motivators such as equipment and other facilities as gift, badges or certificates are useful, but inspire intrinsic motivation as well. It increase student's engagement.

o It is required to continuously monitor their performance and transparent evaluation. As a result of authorities can identify their failures, focus for struggling area and issues and take corrective actions.

Future Research Directions

The literature review indicates that there has been little research on the Sri Lankan context. Due to the rapidly evolving information technology environment brought on by advancements and competition, this topic is exceedingly complicated and unpredictable. It is crucial to comprehend the recent developments influencing students' embrace of new information technologies.

Additionally, studies found a favorable correlation with Performance Expectancy, Effort Expectancy, and Behaviour Intention, which is supported by actual evidence. Therefore, it is necessary to analyze the factors in detail and make comparisons between civil and military education.

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The Nexus Between Parental Involvement, Demographic Factors, and Undergraduates Academic Attainment: In-Depth Investigation

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ABSTRACT

Parents' involvement plays a pivotal role in assessing students' academic success. Education is a vital aspect of current society at present. Therefore, parents are concerned about their children's education. While the common knowledge is that parental involvement impacts undergraduates' education, studies focusing on undergraduates are lacking, particularly, in the Sri Lankan context. Hence, to fill this empirical gap, the objective of the study is to explore the impact of parental involvement on Sri Lankan undergraduates with a specific focus on the Western province. Data was collected from undergraduates through online questionnaires on four aspects of parental involvement, educational level, economic status, and family structure. The questionnaire was developed from a thorough analysis of the ample body of literature available in this field. Sri Lankan undergraduates from state and private universities in the Western province were selected as the responders through a simple random sampling technique. The sample includes 449 undergraduate students. Partial Least Squares-structural equation modelling was used to analyse the data using Smart PLS 4.0 software. Based on the study's outcomes parental involvement, education level, and economic status have a significant impact on the academic success of undergraduates, whereas family structure has no significant impact. Through analysis, it was found that there is less testament to demonstrate that there is a significant impact of parental involvement on undergraduates. Despite the result deviating from common expectations, distanced parent-child relationships in the modern era may have caused such behaviour. Aside from the contribution to the body of knowledge this study also assists educational institutions in proper policy implementation, parents, and teachers in better parenting and teaching, respectively. Further, this study can be enhanced with broader coverage of undergraduates and obtaining views from parents' side as well. Moreover, it is recommended to expand the scope of this study by including a more comprehensive sample of undergraduate students. Additionally, it would be beneficial to gather insights from the perspective of parents to obtain a well-rounded understanding of the topic.

Keywords: Academic Success, Demographic Factors, Higher Education, Parental Expectation, Parental Involvement

INTRODUCTION

Education is undoubtedly a critical aspect in determining a person's future. While the education may be transferred formally as well as informally, more recognition is given for the formal education. Even within formal education, there are ranging levels from nursery and primary education through secondary and tertiary education to terminal degrees such as PhD. Even though parents are getting less involved as their children become more independent from the family towards the latter part of the education spectrum, they play a pivotal role in shaping up the initial stages of the children's education. Although the role played by parents is highest during childhood education and lowest during the middle-aged education of their children, the impact of their role and related demographic factors on their children when they are young adults is still a grey area. It was found that some parents actively engage and help their young adult children in many forms such as by providing necessary financial and emotional support (Hadjicharalambous & Dimitriou, 2020). On the other hand, there is a cohort of parents who do not support their young adult children but discourage them from pursuing higher studies due to various reasons such as lack of education or financial resources. Apart from the involvement of parents, several demographic factors could be heavily affecting the education of the undergraduates.

Sri Lanka, as a developing country, has a popular belief that education will take one to prosperity. Hence society is more inclined to encourage children to learn to the highest level despite any obstacles they face. However, no specific study on the parents' and other demographics' role in the academic success of Sri Lankan undergraduates has happened earlier. Still, most of the undergraduates are completely independent from their parents. Thus, our belief was parental and other demographic factors influences would not be straightforward (Foster & Loven, 1992). Due to the resource limitations, this research studied only the undergraduates in state and private universities in the Western province of Sri Lanka. It will draw a better picture of Sri Lankan undergraduates than any other province, as the majority of universities are situated in the Western province and have students coming from every corner of the country.

One of the most significant aspects of a child's development is his or her parents. This is because parents get the power and ability to mold their children into self-motivation, and tolerance through their direct support and involvement in educational activities (Naite, 2021).

Conversely, parents who aren't involved in their children's education are just considered as being naively demotivating and discouraging them. As a result, their achievements are adversely impacted. Different parents have different approaches on involvement during their children's primary and secondary education. Some parents are actively engaged in their children's schools and support various initiatives. They even ensure their children get the opportunity to face worthwhile experiences such as visiting zoological gardens or playing musical instruments. Moreover, parents with high involvement constantly initiate constructive discussions with their children regarding the issues they face at school and elsewhere.

Academically accomplished parents constantly strive to raise their children to be more educated than they are. To make their children more educated they offer the necessary learning environment at home. The amenities and surroundings at home allow children to meet the coming problems of the next social, political, spiritual, and educational spheres of life. The common consensus of the scholarly community is that parental involvement positively impacts students' educational levels (Muhammad et al., 2020). Undergraduate students should reflect critically on their identities as people and as teachers, as well as how their worldviews and values will affect how successfully they can interact with contemporary families. According to Foster and Loven (1992) undergraduates need interaction with their parents and the involvement of their parents, but they also need to allow their personal opinions and values.

Additionally, the demographic factors such as the educational level of parents, income level, family background also effect for the academic success of the undergraduates. According to educational and economic studies, socio-demographic variables like parent's education, occupation, family income, family type, family size, living place and so on are determinants of the amount of the quality of education children receive in their lifetime. And also, this study mentioned if the socio-economic of parents are low those students have the tendency to get low GPA compared to those students who come from higher socio-economic levels (Jeynes, 2002). In Hanafi and Noor (2016) mentioned that parental education is vital for the students' academic achievement and also the study mentioned providing a better home environment also directly impacts for the undergraduates to achieve their academic goals.

Moreover, this phenomenon has not yet been investigated in Sri Lankan context according to available information. The gap addressed by this study is that there is a dearth of research into conceptions impact of parental involvement and demographic factors on undergraduates'

academic success. There is, then, ample justification for a carefully conducted study to extend the understanding of these conceptions.

The purpose of the research is to bridge the literature gap, in doing so, to achieve the main objective, researchers further examined the impact of parental involvement and demographic factors towards the academic success of undergraduates. Hence this study was conducted in Sri Lanka with special reference to the Western province, from the top 10 Western province Universities, to determine the significance and the impact of parental involvement, parents' education level, economic status, and family structure on the academic success of undergraduates.

The significance of this study comes in many different aspects, firstly, parents will comprehend the extent to which the parent-child relationship is vital to children's academic success. It will enable parents to maintain proper relationships with their children in order to enhance their academic success and clarify the importance of parents' education effects on the education of their children. Secondly, teachers can conduct their academic work effectively, whilst encouraging the appropriate relationship between the students and their parents to make a positive impact towards academic success of them. Thirdly, educational policymakers, and public institutions may find this study useful in developing programs to enhance their abilities, knowledge, and attitudes when working with children. Moreover, the study will be useful for social scientists who are examining how education is changing and how other factors of parents' lives relate to their undergraduate academic success. Furthermore, the findings of the research will be significant to the policy-making institutions to implement appropriate educational policies considering the parental influences on children. Additionally, the findings might be helpful to the educational institutions, academic staff, government agencies to develop the programmes and also could use the result of this study to determine the ideal approach for each student that would enable them to have a better-quality learning experience.

Rest of the paper is arranged in the following manner. Next section discusses the already existing literature related to the parental involvement and demographic factor associated with academic success of their children. Section 3 is on the data collected for this study and the methodology utilized. Results are provided in the section 4, while discussion was carried out in section 5. Conclusion and recommendations from this study is provided in the final section.

LITERATURE REVIEW

The research presented here considers the impact of parental involvement and demographic factors on undergraduate students' academic success. It provides an extensive review of the literature, reveals how earlier and more current research has affected the approach and identifies any knowledge gaps. The article illustrates the study's findings and how they were used in various contexts. The foundation for this study was laid by identifying and analysing from research on the impact of parental involvement, parents' educational attainment, economic status, family structure, demographic characteristics, and academic achievement are identified and analysed in the literature review. Figure 01 depicts a systematic process of selecting research papers for a literature review. With that in order to identify the existing knowledge level, Google Scholar, Willey Online, Science Direct, ResearchGate, Emarald, Sage, Springer, Taylor and Francis databases were accessed to develop the literature, while parental involvement, parenting style, parent expectation, academic success, socio economic status, family structure, family size used as keywords when searching the research articles. 30 publications were removed after 140 papers were found using keywords and database searches. The 110 publications that were remaining accessible have been divided into two groups: Sri Lankan context and the global context.

Figure 1: Flow diagram for the literature review

Identification	Literature searched databases. Science Direct, Emerald Insight, Taylor & Francis, Willey Online, Google Scholar, ResearchGate, Springer, Sage
	Keywords Parental Influence, Parental Expectation, Academic Success, Higher Education, Parental Involvement, Demographic Factors, Family Structure, Socioeconomic Status, Parent Involvement
Screening	The database search and keyword search resulted in 140 articles. (n=140)
	Articles that were rejected because of inconsistent, irrelevant, and overlapping material. (n=30)
Eligibility	Selected articles relevant to the topic and subject area. (n = 110)
Inclusion	Final research articles included. (n=110)

| Global context

 (n = 109) | Sri Lankan context

 (n = 01) |

Source: Authors' Composition

Parental Involvement on Undergraduate's Academic Performance

Regardless of a child's or student's obstacles, family factors play a crucial part in his or her success. A degree of parental participation is essential to a child's academic success. As a result, the findings of the research Duan et al. (2018) demonstrate that parental social and financial status significantly impact levels of involvement and participation. Parental participation frequently affects the children's academic achievements as well. The degree to which parents are actively involved in guiding and helping their children may not necessarily be correlated with their level of education. These parents are committed to being active in their children's

education, regardless of their academic backgrounds. Parents can encourage their children at home in numerous ways, such as by staying in touch with them, creating an atmosphere that encourages learning, evaluating their schoolwork, and more. In a survey of high school students, Zakaria et al. (2013) discovered that parents' availability, openness, acceptance, interaction, discussion, and parenting styles were all positive evidence of parental involvement in their children's academic achievement. According to previous studies by Veronica et al. (2018), academic performance and parental involvement in school are positively correlated. Improving the self-assurance of children while also helping them succeed professionally.

Prior studies have parents are important to participate in collaborative endeavours while taking into consideration the unique educational environment. The most important research Sebastian et al. (2017) in the area of family-school partnerships demonstrates the positive effects of this collaboration, which improve academic performance and achievement, among other things. Parental involvement in education has been shown by Korpershoek et al. (2020) that there is positive impact academic attainment, as demonstrated by numerous meta-analyses across various demographics and educational levels. Research studies consistently show a constant positive impact of parental involvement on children's academic success. However Garbacz et al. (2017) conducted a study on parental participation in education is conducted in Anglophone nations, using correlational and cross-sectional techniques. This highlights the importance of parental involvement in promoting academic success in children.

Moreover, Yang and Wang (2022) found that the parental contribution towards their children's development in personality, behaviour and studies has a powerful relationship with children's effort towards learning in several aspects such as behavioural, psychological, and social. Furthermore, past literature depicts that parental contribution on children's studies appears to be much higher with mastery goal orientation than performance goal orientation. Positive correlation between the students' academic success and their parents backing evidenced by the study conducted by Rassidy and Ishmael (2018), particularly in behavioural, psychological, and social learning angles.

H1: There is an impact of parental involvement on the academic success of undergraduates.

Education Level of Parents on the Academic Success of the Undergraduates

According to Ndimuh and Ngeh (2022) state that research studies demonstrate that families with higher education tend to have parents who are more understanding while remaining strict

in their parenting and that parental education and the academic success of children are strongly related. Other academics disagreed with the relationship between a child's academic success and their parents' educational attainment. Parental education has a direct correlation with parenting practices but not with children's academic success (Tsela et al., 2023). Although, this research indicated that the mother's and father's educational backgrounds varied in terms of how education impacts children's academic progress. The cognitive knowledge, skills, and values of parents' have a significant influence on their offspring. Children's academic success is positively impacted by parents who are involved in their homes. The development of child's literacy, which is necessary for academic success of child is highly influenced by their parents. (Harris & Goodall, 2008; Muraina & Kassim, 2011). Moreover, they mentioned in this study that parents who are educated have a greater capacity to provide solid guidance to their children because they have already been through the educational process and they aware of the highs and lows of the educational options. As a consequence, to encourage their children and provide them more guidance, they could share their educational experiences with them.

According to Feraco et al. (2023), parental educational participation, which includes actions like talking to kids about school, helping them with their homework, and taking part in extracurricular activities at school, has the potential to boost students' academic achievement. Research has unequivocally demonstrated a connection between student engagement with educational experiences in terms of cognitive and behavioral and social-affective engagement and academic success. Hadjicharalambous and Dimitriou (2020) have provided further information that demonstrates the relationship between parental support and encouragement and students' engagement in higher education. Furthermore, Yang & Wang, (2022), there is a strong correlation between parental support for student's personal development, academic success, behavioral support, and study assistance, as well as student participation in learning in terms of their psychological, socio-affective, and behavioral involvement. Even though past studies have revealed the information mentioned above, further research is still required to determine how parents' educational levels significantly affect undergraduate students' academic performance in Sri Lanka.

H2: There is an impact of the education level of parents on the academic success of the undergraduates.

Economic Status of Parents on Academic Success of Undergraduates.

The socioeconomic background of the family determines its social and economic standing in society's hierarchy. This becomes the most important aspect in determining a child's academic success. According to Little et al. (2014), secondary interpersonal or individual education is essential for preparing students for both individual and social interactions. After they overcome this obstacle, students can enrol in colleges. People who depart from their education at this point also need a solid foundation for beginning a trade or occupation. To determine a family's financial stability, some researchers have suggested using indicators such as parental educational attainment, parental employment, neighbourhood socioeconomic status, the presence of technological capabilities at home, and parental financial investment in their children's education. There is evidence that the environment affects children's academic achievement in the classroom. Based on the majority of previous studies Pinquart and Ebeling (2020); Wilder (2014) , there is a correlation between socioeconomic level and the degree of parental involvement in their children's academic life. Due to the realization that both their educational and economic backgrounds suggest that they have limited resources, students were identified as being at risk of not completing upper secondary school. Furthermore Roy and Giraldo (2018) contrast to other forms of home-based involvement that may be difficult to provide for parents who experience challenges, influenced by context and culture, providing social psychological support may be possible for all parents, regardless of socioeconomic resources. All parents may be able to provide a certain amount of support by checking to see if the assignment has been finished, despite that many parents find difficulty to help their children with their assignments.

However, the impact of family income on a child's education success is uncertain because it is relating to other family traits that influencing the schooling decision. As a result, one of the most critical determinants of disparities of student accomplishment is the parents' education level and the most incredible family income (Chevalier & Lanot, 2002). We still don't completely understand how Sri Lankan undergraduate students' socioeconomic situation affects their ability to succeed academically. Moreover based on the results of Dasanayake and Jayasinghe (2021) research, socioeconomic status determine by the parental income, occupation. Furthermore, this study contends the socioeconomic status of parents is important because it provides high levels of psychological support for the children by encouraging the growth of skills that required for academic performance.

H3: There is an impact of the economic status of parents on the academic success of undergraduates.

Family Structure of Parents on Academic Success of the Undergraduate

The study of the relationship between family structure and academic success has made use of a variety of frameworks. A significant amount of research that examined the relationship between family composition and academic success came up with contradictory results. Some conclusions while previous studies have revealed either no significant difference or even a positive influence, Azuma et al., (2018) research indicated a negative association between growing up in an environment with a single parent and a child's academic achievement. Additionally, the study Njoroge and Kiori (2018) examined how stepfamilies and stepparents affected children's academic achievement. Children in stepfamilies had a lower grade point average than those in intact families, while children in blended homes had academic achievement corresponding to that of children in intact families. Children in stepfamilies have worse academic accomplishments than children from intact families. The study's Ginther and Pollak (2002) conclusions suggest that stepfamilies and academic failure may be related to a lack of resources and support, whereas blended families and higher academic achievement may be related to the presence of additional caregivers and resources.

Parental involvement in a child's education and development is active, and they help them physically, emotionally, and socially. Furthermore, Strouse and Ganea (2021) grandparents and their grandchildren develop deep bonds with one another. A two-parent household frequently has more opportunities for work, income, and savings-related financial assets, which gives children a more secure environment. According to research, Cynthia and Martha (2021) when there is peace and harmony in the family, children are more inclined to leave their families at a younger age. The increasing prevalence of single-parent families significantly impacts social, economic, and political aspects of family life. Women dominate household roles in these families, making it difficult to find suitable childcare for children. This restricts income and prospects, even though many families receive assistance from extended family and friends. According to (Amato, 2000) research, children who lives with both parent families are more likely than their counterparts who don't have same living situation to succeed in school, in terms of both emotional and social development. Although research suggest that, having two parents at home is positively correlated with a child's improved academic achievement. This

relationship can be explained by the increased emotional and financial support that children receive when both parents are actively involved in their development.

Although some existing research shows that family size or structure does not have a consistent impact on children's academic performance. Therefore Dasanayake and Jayasinghe (2021) has imply that undergraduate student's academic success unaffected by student's family background. Moreover, phenomenon have been conducted by Hanafi and Noor (2016) that the family size has negative impact towards the academic achievement and also this study included smaller families offer more individualized attention and resources which may benefit a students' education, on other hand larger families have less resources to devote to each member.

H4: There is an impact of the family structure of parents on the academic success of the undergraduate.

DATA AND METHODOLOGY

Sampling and Data Collection

This study utilized quantitative research methodology to examine the impact of parental involvement and demographic factors on undergraduate academic success. Using a deductive approach, researchers used a survey strategy to gather data from a sample of undergraduates at both public and private universities. The researchers developed a self-administrative questionnaire to collect data from the undergraduates, examining the connection between parental educational level and academic achievement.

This research primarily focuses on students attending the top 10 universities in the Western Province in Sri Lanka as listed by the University Grant Commission. University of Colombo, University of Moratuwa, University of Kelaniya, University of Jayewardenepura, Open University of Sri Lanka, Sri Lanka Institute of Information Technology, General Sir John Kotelawala Defence University, ESoft Metro campus, and University of Visual and Performing Arts are among the ten institutions represented in the sample. Using a simple random sampling method, the sample consists of 449 undergraduates from universities in the Western Province. According to Krejcie and Morgan (1970) minimum sample size, should be 384 participants. Hence the sample size for this study is adequate (449>384), In general higher number of samples size ensure that the population is more accurately represented.

Data Analysis

The study used a cross-sectional questionnaire-based survey to collect quantitative data on the impact of parental involvement and demographic factors on the academic success of undergraduates in Sri Lanka's Western Province. The questionnaire included three sections, identifying students' demographic backgrounds, including age, gender, and GPA. The survey included 24 questions and statements for four independent variables and the dependent variable. Respondents scored these statements on a 5-point Likert scale, ranging from "Strongly agree" to "Strongly disagree." The study design was based on previous literature and expert opinions. The study collected quantitative data using procedures and methods similar to previous research. An online survey was conducted using Google Forms and distributed via email and WhatsApp. Likert Scale questions were used to enhance accuracy, reliability, and validity. All respondents were eligible for data collection.

The survey data was analysed through Structural Equation Modelling (PLS-SEM) with Smart PLS 4.0 software. The convergent validity of the PLS-SEM is evaluated using Cronbach's alpha, Composite Reliability (CR), and Average Variance Extracted (AVE). The values are all within acceptable limits. AVE needs to be more than 0.5. Although the AVE in this study is less than 0.5 for various constructs, Fornell and Larcker state that the composite reliability is more than 0.60. The Heterotrait-Monotrait ratio (HTMT) is used to evaluate the discriminant validity. According to the literature, the HTMT number must be less than 0.90.

RESULTS

Structural Equation model results

This study's measurement approach comprises a total of 24 indicators and four latent variables. PLS-SEM was applied to analyse the gathered dataset and evaluate the study's hypotheses. When assessing the outer model to assess the validity and reliability of the constructs, convergence validity must be taken into consideration. The results indicate that the outer loading ought to be more than 0.7. If the outer loading value is less than 0.40, the item needs to be removed in order to reach the required minimum value because their values were too low (below 0.5). After the low values were eliminated, general loadings above the value were found to be reasonably suited and appropriate for the model. According to Hair et al. (2019) the model's applicability was examined and reported after the model's reliability, convergent validity, and discriminant validity were assessed using the chosen criteria of Cronbach's alpha value, AVE statistics, and HTMT ratio.

Table 1. Reliability of the variables

Variables	Cronbach's alpha	CR (rho_a)	CR (rho_c)
Parental Involvement	0.811	0.824	0.870
Education Level	0.782	0.782	0.850
Family Structure	0.824	0.832	0.876
Economic Status	0.819	0.828	0.872
Academic Success of Undergraduates	0.766	0.774	0.851

Source: Authors' compilation based on Smart PLS output note CR= Composite Reliability

Cronbach Alpha, a measure of internal consistency, examines whether every element in a construct accurately reflect that construct. This measures a construct's consistency, which demands a high degree of correlation between the components that comprise the construct. Cronbach's alpha should be greater than 0.7 to determine the study's reliability. The failure of any independent variable to attain this result indicates that it is unreliable and lacks internal consistency (Hair et al., 2014). According to Dijkstra and Henseler (2015) the composite reliability must be more than 0.60 and 0.70.

As shown in Table 1, the variable parental involvement accepted the criteria for reliability by having a Cronbach's alpha value of 0.811, which is greater than 0.7. The remaining independent variables may also be regarded as reliable for the study due to the alpha values of education level; family structure and economic status are greater than the value required by the criteria at 0.782, 0.824 and 0.819 respectively. The dependent variable of academic success of undergraduates has an alpha value 0.766 accepting the criteria.

Table 2. AVE values

Variables	Average variance extracted (AVE)
Parental Involvement	0.575
Education Level	0.531
Family Structure	0.588
Economic Status	0.578
Academic Success of Undergraduates	0.589

Source: Authors' compilation based on Smart PLS output.

The AVE is calculated by averaging the squared loadings of all indicators linked to a project. To demonstrate statistical convergent validity, the Average Variance Extracted (AVE) must be more than 0.50 (Fawad, 2023). As a result of the Smart PLS outcomes, the AVE scores for each variable were PI (0.575), EL (0.531), FS (0.588), ES (0.578) and ASU (0.589). Hence, all the variables have accepted convergent validity as shown in Table 2.

Discriminant Validity

Using discriminant validity, it is found that the study's constructs are distinct (Hamid et al., 2017). It proves that there are few correlations between the study's constructs and that they are unique from one another. Fornell-Larcker Criterion, Cross Loadings, and Heterotrait-Monotrait (HTMT) ratio are three alternate techniques utilized in SMART-PLS to establish discriminant validity (Hair et al., 2018). According to the Fornell and Larcker Criterion Fornell and Larcker (1981) discriminant validity is shown when the square roots of the AVE for a particular construct are greater than the correlation between that construct and all other constructs (Fawad, 2023). The below Table 3 shows the Fornell-Laker criterion outcomes.

Table 3: Fornell-Laker criterion outcomes of latent variables

	PI	EL	FS	ES	ASU
PI	0.758	0.559	0.450	0.359	0.495
EL		0.729		0.643	0.538
FS		0.739	0.767	0.732	0.457
ES				0.760	0.539
ASU					0.768

Source: Authors' compilation based on Smart PLS output.

Cross loadings predict that a particular component should be more loaded on its own parent construct than on any other constructs in the study. If an item loads effectively onto a different construct as opposed to its own parent construct, discriminant validity may be compromised (Fawad, 2023).

Table 4: Cross Loading outcomes

	PI	EL	FS	ES	ASU
PI1	0.819	0.353	0.241	0.212	0.393
PI2	0.846	0.384	0.254	0.215	0.453

PI3	0.798	0.423	0.352	0.208	0.300
PI4	0.625	0.445	0.348	0.382	0.344
PI5	0.678	0.537	0.550	0.363	0.353
EL1	0.530	0.745	0.553	0.406	0.352
EL2	0.595	0.685	0.361	0.312	0.468
EL3	0.276	0.739	0.614	0.481	0.282
EL4	0.267	0.730	0.522	0.545	0.428
EL5	0.308	0.743	0.700	0.616	0.367
FS1	0.415	0.555	0.715	0.536	0.373
FS2	0.366	0.609	0.810	0.543	0.321
FS3	0.387	0.549	0.786	0.530	0.366
FS4	0.329	0.589	0.823	0.606	0.397
FS5	0.193	0.530	0.690	0.602	0.270
ES1	0.264	0.437	0.591	0.799	0.372
ES2	0.304	0.402	0.415	0.735	0.430
ES3	0.286	0.594	0.595	0.761	0.506
ES4	0.192	0.526	0.635	0.791	0.376
ES5	0.319	0.453	0.553	0.709	0.312
ASU1	0.381	0.473	0.388	0.403	0.773
ASU2	0.432	0.414	0.347	0.435	0.810
ASU3	0.334	0.296	0.274	0.371	0.670
ASU4	0.369	0.454	0.387	0.443	0.809

Source: Authors' compilation based on Smart PLS output.

Henseler et al. (2015) claim that the study implies a threshold value of 0.90 if the route model includes elements that are conceptually quite similar; in other words, a score on the HTMT greater than 0.90 indicates a lack of discriminant validity. HTMT must be less than 1 in order to differentiate between two components with clearly (Henseler et al., 2016).

Table 5: HTMT Ratio of Latent Variables

	PI	EL	FS	ES	ASU
PI		0.691	0.556	0.449	0.619
EL				0.798	0.666
FS		0.938		0.895	0.566

ES	0.662
ASU	

Source: Authors' compilation based on Smart PLS output.

The above table demonstrates that the discriminant validity was established according to the Heterotrait-Monotrait ratio, parental involvement and education level with a value of 0.691 which is less than 0.90, parental involvement and family structure with a value of 0.556 which is less than 0.09, parental involvement and economic status with a value of 0.449 which is less than 0.09, education level and economic status with a value of 0.798 which is less than 0.90, family structure and education level with a value of 0.938 which is greater than 0.90, family structure and education level with a value of 0.895 which is less than 0.90.

Structural Model Results

The coefficient of determination (R2), which demonstrates that the dependent variable's entire variation was caused by an independent or exogenous variable, was used to assess the suggested model's predictive ability (Hair et al., 2013). According to Hair et al. (2014), a model with an R-squared of 0.10 to 0.50 must be rejected if all of the explanatory variables are statistically insignificant, but it is acceptable if some or most of the explanatory factors are significant.

Despite the current study's R squared score of 0.411, the model is acceptable because the explanatory variables are significant except Family structure variable.

This research demonstrated that the parental involvement considered in this study lead to a 41.1% variance in academic success of undergraduates, as shown in Table 6, by explaining 0.411 differences in academic success of undergraduates.

Table 6: R Square Values

	R-square	**R-square adjusted**
ASU	0.411	0.406

Source: Authors' compilation based on Smart PLS output.

The Variance Inflation Factor (VIF) was used to analyse the inner reflective model, and a result was considered acceptable if it was less than 3 (Hair et al., 2019). Table 7 illustrates that the VIF was less than 3 for each construct, demonstrating that there were no collinearity issues with the model.

Table 7: VIF Inner Model

	VIF
Parental Involvement -> Academic Success of Undergraduates	1.463
Education Level -> Academic Success of Undergraduates	2.696
Family Structure -> Academic Success of Undergraduates	2.943
Economic Status -> Academic Success of Undergraduates	2.267

Source: Authors' compilations based on Smart PLS output.

The survey's structural model was evaluated by the authors using bootstrapping, a nonparametric technique, to ascertain the importance of the association between the latent variables. Using bootstrapping, the beta value, t-statistic, and p-value of the association between the independent variables and undergraduate undergraduates' academic success were determined under the significant level of (0.05). When the t-statistics value is greater than 1.96 and the p-value is less than 0.05, the independent variable has significant impact on the dependent variable (Kock, 2016). Figure 1 illustrates the structural model of the analysis procedure produced by the Smart PLS software.

Parental involvement has a significant impact on Academic success of undergraduates, according to H1. The T-statistics of 5.585, the p-value of 0.000 and the β value of 0.288 indicate that parental involvement has a significant positive impact on academic success of undergraduates. Therefore, accepting H1. According to H2, Education level has a significant impact on Academic success of undergraduates. The T-statistics of 2.917, the p-value of 0.004 and the β value of 0.212 indicate that Education level has a significant positive impact on academic success of undergraduates. Therefore, accepting H2. Family structure has an insignificant impact on Academic success of undergraduates, according to H3. The T-statistics of 1.350, the p-value of 0.177 and the β value of -0.103 indicate that family structure has an insignificant negative impact on academic success of undergraduates. Therefore, rejecting H3. Economic status has a significant impact on Academic success of undergraduates, according to H4. The T-statistics of 5.717, the p-value of 0.000 and the β value of 0.375 indicate that economic status has a significant positive impact on academic success of undergraduates. Therefore, H4 can be accepted. Therefore, among those four independent variables, PI, EL and ES have a significant impact on Academic success of undergraduates, whereas FS has an insignificant negative impact on academic success of undergraduates.

Table 8: Structural Estimates

Hypothesis	Standard Beta	T statistics	P- value	F square	Decision
H1: PI	0.288	5.585	0.000	0.097	supported
H2: EL	0.212	2.917	0.004	0.028	supported
H3: FS	-0.103	1.350	0.177	0.006	Not supported
H4: ES	0.375	5.717	0.000	0.105	supported

The path coefficients, occasionally referred to as the relationship strength, describe how the dependent variable reacts to a unit change in an explanatory variable when all other variables in the model are held constant (Bollen, 1989). A unit increase in parental involvement results in an increase of 0.288 in academic success of undergraduates. As represented in the above table, indicating a positive relationship. An increase of 0.212 in academic success of undergraduates per unit of education level indicates a positive relationship. A unit increase in economic status results in an increase of 0.375 in academic success of undergraduates indicating a positive relationship.

Figure 2: Graphical Output of Structural Equation Model
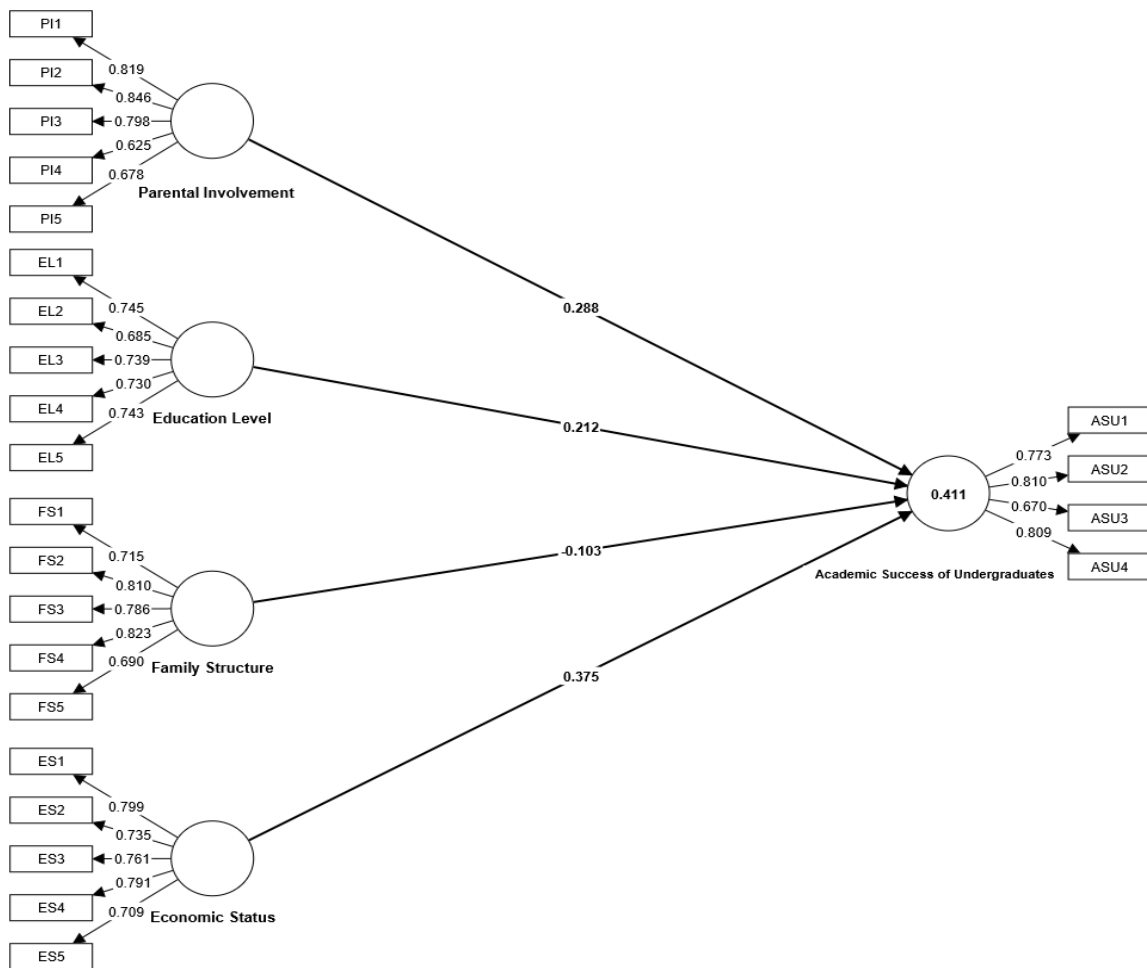
Source: *Authors compilation based on Smart PLS output.*

DISCUSSION

This study aims to analyse how does parental involvement and the demographic factors impact on to the undergraduate's academic success in Western Province of Sri Lanka. In order to determine how those independent variables affect the academic success of undergraduates, the four dimensions of the independent variables' parental involvement, educational level, family structure, and economic status were used to evaluate the study's objective. The findings of the study, which analysed four variables linked to undergraduates' academic success, determined that parental involvement, education level, and economic status all significantly impact undergraduates' academic success, however family structure does not. Based on the results of various researchers Đurisic and Bunijevac (2017); Laura and Saracostti (2019); Naite (2021); Topor et al. (2010) have illustrated the positive impact of parental involvement and their educational level on students' academic success. Therefore, based on the findings of first and

second hypotheses, parental involvement and education level have a positive impact on children academic success. According to the findings of the third hypothesis, Family structure has an insignificant negative impact on the academic success of undergraduates. This study comparable to Bjrklund and Sundstrom (2006); Tobishima (2018) earlier researchers, which found that there is a negatively insignificant impact on academic success of students. The result of the fourth hypothesis indicates that Economic Status has a significant positively impact on the academic success of undergraduates including income level, parents' occupation, unemployed parents, retired parents. The findings of the research done by Budke (2007); Gobena (2018); Qiushan et al. (2018) which examined the economic status positively significant impact on academic success of undergraduates.

CONCLUSION & RECOMMENDATION

The primary goal of this study was to identify the impact of parental involvement and demographic factors on the academic success of undergraduates in the Western province of Sri Lanka. Furthermore, this study adds to the existing body of knowledge on Academic success. The dependent variable in the study was the Academic success of undergraduates, and the four independent variables were drawn from the existing literature. Parental involvement, education level, family structure, and economic status are independent variables in this study.

This research study provides a significant contribution to measuring the impact of parental involvement and demographic factors on the academic success of undergraduates. Based on the results obtained through Smart PLS 4.0 software, there is a moderate impact of independent variables on academic success of undergraduates. However, based on the results, researchers can conclude that parental involvement, parents' education level, and economic status variables were important to the academic success of the undergraduates except for the Family structure variable. Due to parental involvement, parents' education level and economic status variables are significantly positively associated with the academic success of undergraduates. However, the Family structure has a negligible negative effect on the academic success of undergraduates. Therefore, based on the results outcomes the authors can conclude, that the academic success of undergraduates is unaffected by a student's family structure.

It must be noted that, this study was limited to single province, future researchers can conduct their analysis across a wider spectrum with more representative sample. In depth interviews with many associated parties such as students, parents, and lecturers could be conducted in the future to gain a better knowledge about the variables impact to the student's academic

achievement. There were few additional limitations in this study. in order to get a holistic view on this issue the research must look at both quantitative aspects as well as qualitative aspects, which is lacking in this study therefore it is a limitation. The authors had to adjust to the precise time period due to that reason limiting depth of analysis as well as the investigating the specific factors. Nonetheless, it is clearly visible that this study has provided valuable findings to the research community despite the limitations stated above. By expanding the current study, further insights could be certainly discovered. Finaly, enhancing parental involvement and understanding demographic factors among undergraduates is pivotal in fostering the academic success, thereby it significantly impacting the educational environment and contributing to broader economic development.

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Examining the Determinants of Perceived Effectiveness in AI-powered Conversational Interfaces: A Study Based on Higher Education Sector in Sri Lanka

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ABSTRACT

This study was carried out with the main purpose of identifying the determinants of perceived effectiveness in AI-powered conversational interfaces in higher education in Sri Lanka. There were minimal research being done to analyze the determinants of perceived effectiveness in AI-powered conversational interfaces which reflected a clear literature gap. Further, none of the studies were focused on the AI-powered conversational interfaces in Sri Lankan education institutions. This was identified as the main research problem to carry out this study. A comprehensive literature review was done to identify the main independent variables. These were recognized as Usage Frequency of AI Interfaces, Quality of AI Interaction, Training and Familiarity with AI, and Institutional Support for AI Integration. The dependent variable was identified as the perceived effectiveness in AI-powered conversational interfaces. The theories such as Constructivism and Social Constructivism, Cognitive Load Theory, Connectivism and Behaviorism and Feedback Mechanisms were examined under theoretical review of this study. This study is based on the positivism philosophy and deductive approach to achieve the objectives. Main research instrument used in this study is the survey questionnaire based on a Likert scale. Based on the literature, conceptual framework and hypotheses were developed. A questionnaire was distributed among university students and 100 answers were considered as the sample size. The collected data was analyzed using SPSS software. First, reliability and validity was tested to ensure that the data set is accurate and reliable. A thorough analysis of variables was done using descriptive statistics, and correlation analysis was used to analyze the relationship between the variables. The results indicated that all the identified independent variables have a significant positive correlation with the perceived effectiveness in AI-powered conversational interface. Main implications of these findings are investment in training to enhance students' and faculty's familiarity with AI technologies, improving quality of the interface, support for the integration of AI technologies into the curriculum and encouraging regular usage of AI interfaces. Future researchers may do a longitudinal study covering larger sample sizes to gain better understanding about the perceived effectiveness in AI-powered conversational interfaces in educational institutions.

Keywords; Institutional Support, Perceived effectiveness, Quality of AI Interaction, Training with AI, Usage Frequency

INTRODUCTION

In recent years, the integration of artificial intelligence (AI) into various facets of our lives has been nothing short of transformative. One of the most promising and rapidly evolving domains within AI application is education. This research embarks on a comprehensive exploration into

the realm of AI-powered conversational interfaces, specifically chatbots and virtual assistants, and their pivotal role in reshaping higher education. This introduction sets the stage for the ensuing discussion, elucidating the background of AI in education, articulating the research objectives, elucidating the scope and significance of the study, and outlining the structure of the paper.

Background of AI in Education

The roots of AI in education can be traced back to the mid-20th century when scholars began to ponder the possibility of using computers as instructional tools (Natale & Ballatore, 2020). Over the decades, AI technologies have progressively matured, fostering a paradigm shift in education. The advent of machine learning, natural language processing (NLP), and data analytics has ushered in an era where AI-powered tools can not only assist educators but also provide personalized learning experiences to students (Roslan & Ahmad, 2023). As digital natives populate higher education institutions, the integration of AI has become almost inevitable. The inception of AI in education can be attributed to the pioneering work of researchers like B.F. Skinner, who explored programmed instruction and behaviorist principles in the 1950s. Skinner's ideas laid the foundation for early computer-based educational systems, which were rudimentary but showed promise in delivering personalized instruction.

However, it wasn't until the 1980s and 1990s that AI technologies began to gain more traction in education (Doroudi, 2022). Expert systems, a type of AI that emulated the decision-making abilities of human experts, found applications in intelligent tutoring systems. These systems could provide students with feedback and guidance tailored to their individual needs, marking a significant advancement in personalized learning.

The emergence of machine learning and neural networks in the late 20th century ushered in a new era for AI in education. These technologies enabled the development of intelligent agents capable of adaptive learning, natural language understanding, and data-driven insights. As computing power increased, and data became more accessible, AI-powered educational tools became more sophisticated.

One of the notable breakthroughs in recent years has been the integration of AI-driven chatbots and virtual assistants into educational environments. These conversational interfaces can provide students with instant support, answer questions, offer recommendations, and even facilitate administrative tasks. They are designed to enhance the overall educational experience by providing timely and personalized assistance.

Additionally, the field of educational data analytics has gained prominence. AI algorithms can analyze vast amounts of educational data, including student performance, engagement metrics, and learning patterns. This data-driven approach allows educators and institutions to identify areas where students may struggle, adapt teaching methods, and make data-informed decisions to improve learning outcomes.

As the digital generation enters higher education, AI's role is expanding beyond the classroom. Virtual reality (VR) and augmented reality (AR) are being used to create immersive learning experiences. AI-powered content recommendation systems help students discover relevant educational materials. Furthermore, AI can assist in the assessment and grading process, reducing the administrative burden on educators (Jumani et al., 2022).

When analyzing previous literature, it was identified that there are several studies done to analyze the AI-powered conversational interfaces in education, e-commerce, and different other formats (Balakrishnan & Dwivedi, 2021; Ruan et al., 2021; Ashfaq et al., 2020). However, those studies have not captured the determinants of perceived effectiveness of those chatbots. Therefore, this study answers the research question of "What are the determinants of perceived effectiveness in AI-powered conversational interfaces in higher education?".

In summary, the integration of AI in education has evolved from early experiments to a transformative force in higher education. The convergence of AI technologies, big data, and digital platforms is reshaping teaching and learning, making education more adaptive, personalized, and accessible to learners of all backgrounds. AI's journey in education is ongoing, promising continued innovations in the years to come. Hence this study is done with the main purpose of identifying the determinants of perceived effectiveness in AI-powered conversational interfaces in higher education in Sri Lanka.

Research Objectives

This study has several overarching objectives:

- o To investigate the current landscape of AI-powered conversational interfaces in higher education.
- o To assess the effectiveness of chatbots and virtual assistants in enhancing student engagement and learning outcomes.
- o To examine the perceptions and attitudes of students and educators towards AI in education.
- o To identify the challenges and ethical considerations associated with the adoption of AI-powered conversational interfaces in academia.

   o   To provide recommendations and best practices for the responsible implementation of AI in higher education.

Scope and Significance of the Study

The scope of this study encompasses a wide range of AI-powered conversational interfaces employed in higher education, including but not limited to chatbots, virtual teaching assistants, and automated grading systems. It delves into both the technical aspects of these AI applications and their pedagogical implications. Moreover, it explores the significance of AI in addressing the evolving needs of higher education institutions, especially in a world marred by unprecedented challenges such as the COVID-19 pandemic.

The significance of this study lies in its potential to inform educators, administrators, policymakers, and technologists about the multifaceted impact of AI on higher education. By critically evaluating the effectiveness of AI-powered conversational interfaces, this research contributes to the ongoing discourse on improving the quality and accessibility of education in the digital age.

LITERATURE REVIEW

Evolution of AI in Education

Artificial intelligence (AI) has made remarkable strides in education, transforming traditional learning paradigms and ushering in an era of personalized, efficient, and effective education. The evolution of AI in education can be traced through various stages, each marked by significant technological advancements and educational reforms.

Early AI in Education: Early experiments in AI for education date back to the mid-20th century when computer-based systems were first employed as instructional tools. One notable pioneer, B.F. Skinner, introduced programmed learning, a behaviorist approach, in the 1950s, where students interacted with computer programs to reinforce learning outcomes (Hof, 2018). These early attempts, though rudimentary by today's standards, laid the groundwork for AI's role in education.

While these early attempts may seem rudimentary compared to today's sophisticated AI applications, they set the stage for the integration of technology in education and the exploration of AI's potential (Echezona & Ojukwu, 2023).

Intelligent Tutoring Systems (ITS): The 1970s ushered in a pivotal era in the evolution of AI in education with the emergence of Intelligent Tutoring Systems (ITS). These systems

represented a substantial leap in the application of AI technologies to the field of education (De Luise, et.al. 2023).

Key features of ITS included:

Personalization: ITS utilized knowledge representation techniques to create a model of each individual learner. This model allowed the system to understand the learner's strengths, weaknesses, and learning preferences.

Adaptive Content: Leveraging machine learning and AI-driven algorithms, ITS systems dynamically adapted the content and pace of instruction to suit the specific needs of each student. This adaptability ensured that learners received targeted guidance and challenges appropriate to their skill levels.

Immediate Feedback: ITS provided real-time feedback to students, offering explanations and corrections when they made errors. This immediate feedback mechanism was instrumental in facilitating active learning and addressing misconceptions promptly.

Tracking Progress: These systems were capable of tracking each student's progress, identifying areas where they struggled, and offering additional practice in those specific areas.

Data-Driven Insights: The data collected by ITS not only benefited students but also provided educators with valuable insights into student performance and areas of improvement.

Natural Language Processing (NLP) and Chatbots: Advancements in natural language processing (NLP) in the late 20th century opened new horizons for AI in education. Chatbots and virtual assistants, powered by NLP algorithms, started to play a pivotal role in facilitating student-teacher interactions. For instance, ALICE (Artificial Linguistic Internet Computer Entity), was an early AI chatbot that engaged in text-based conversations, answering questions and providing information (Kasthuri & Balaji, 2023).

Big Data and Learning Analytics: The advent of big data and learning analytics in the 21st century marked a turning point in AI's impact on education. The accumulation of vast amounts of educational data, including student performance, interactions, and preferences, enabled the development of predictive models to enhance educational outcomes. Learning management systems (LMS) and educational technology platforms leveraged AI-driven analytics to offer personalized recommendations and insights to learners (Aldahwan & Alsaeed, 2020).

The Rise of AI-powered Chatbots in Higher Education: In recent years, AI-powered conversational interfaces, particularly chatbots, have gained prominence in higher education.

These chatbots, equipped with NLP, machine learning, and voice recognition capabilities, offer students and educators personalized assistance, course information, and administrative support (Rudolph et al., 2023). They have become integral in addressing common student queries, enrollment processes, and providing 24/7 support.

The COVID-19 Pandemic as a Catalyst: The COVID-19 pandemic accelerated the adoption of AI in education. With the sudden shift to remote and hybrid learning models, institutions turned to AI-driven tools, including chatbots, to bridge gaps in online education. These chatbots played a critical role in maintaining communication, guiding students through the transition, and monitoring their well-being (Taylor et al., 2023).

In summary, the evolution of AI in education has seen a progression from early experiments in computer-based learning to the emergence of Intelligent Tutoring Systems, NLP-powered chatbots, and the use of big data and learning analytics. The recent surge in AI-powered chatbots, further accelerated by the pandemic, signifies a new chapter in education.

Theoretical Framework of AI-Powered Conversational Interfaces

To understand the transformative potential of AI-powered conversational interfaces in education, it is essential to ground our discussion in relevant theoretical frameworks that guide the development, deployment, and assessment of these technologies. Several theoretical perspectives inform the design and application of AI-powered conversational interfaces in educational contexts.

Constructivism and Social Constructivism: One foundational theoretical perspective in the application of AI in education is constructivism (Quoc & Van, 2023). Constructivist theories posit that learners actively construct their knowledge through interactions with the environment and that learning is most effective when it is learner-centered and experiential. Social constructivism, an extension of constructivism, emphasizes the role of social interactions in cognitive development. AI-powered conversational interfaces align with these theories by providing personalized, interactive, and collaborative learning experiences (Aravind & Bhuvaneswari, 2023).

For instance, virtual teaching assistants and chatbots can facilitate learner-centered interactions, adapting content and guidance to individual students' needs (Yang, 2022).

Moreover, they can promote collaborative learning by encouraging students to engage in discussions and problem-solving within a digital learning environment (Chen et al., 2023)

Cognitive Load Theory: Cognitive Load Theory (CLT) offers insights into how AI-powered conversational interfaces can optimize the learning process by managing the cognitive load on students (Bahari, 2023). CLT posits that there is a limit to the cognitive resources' learners can allocate to tasks, and learning is most effective when extraneous cognitive load is minimized. AI-powered interfaces can adapt content presentation, pacing, and complexity, reducing cognitive overload and enhancing learning efficiency (Olatunde-Aiyedun & Hamma, 2023).

For example, a virtual teaching assistant can present information in a manner that aligns with the student's current level of understanding, thereby minimizing cognitive load and promoting effective learning (Kim et al., 2020).

Connectivism: Connectivism is a learning theory that emphasizes the role of networks and digital technologies in knowledge acquisition and creation. It posits that learning occurs through connections, and AI-powered conversational interfaces can serve as nodes in this network, facilitating access to information, experts, and resources. These interfaces can analyze vast amounts of data to provide relevant, up-to-date information to learners and connect them with communities of practice (Wongwatkit et al., 2023).

By integrating AI-powered chatbots into educational platforms, institutions can create a learning ecosystem that aligns with the principles of connectivism, fostering dynamic, networked learning experiences (Nolasco & Hernandez, 2023)

Behaviorism and Feedback Mechanisms: Behaviorist theories underscore the importance of reinforcement and feedback in learning (Han, 2021). AI-powered conversational interfaces can offer immediate, personalized feedback to students based on their interactions and performance. These feedback mechanisms can promote adaptive learning, where students receive guidance and corrections in real-time, enhancing their understanding and skills (Baidoo-Anu & Ansah, 2023).

Chatbots, for instance, can provide instant feedback on quizzes, assignments, or practice exercises, reinforcing desired behaviors and correcting misconceptions (Wong, 2022).

Incorporating these theoretical frameworks into the design and implementation of AI-powered conversational interfaces in education enhances their effectiveness and aligns them with

established principles of pedagogy. These frameworks guide the development of systems that not only assist students but also foster meaningful, learner-centric educational experiences.

Applications of Chatbots and Virtual Assistants in Higher Education

Chatbots and virtual assistants, powered by artificial intelligence (AI), have emerged as valuable tools in higher education, offering a wide range of applications that enhance the overall learning experience, administrative efficiency, and student support services. This section provides an overview of some key applications of chatbots and virtual assistants in the higher education context.

Student Engagement and Support: One of the primary applications of chatbots and virtual assistants in higher education is enhancing student engagement and support. These AI-powered tools can serve as readily available resources for students, offering assistance in various aspects of academic life:

Course Information: Chatbots can provide students with information about course offerings, prerequisites, schedules, and curriculum details. They can help students make informed decisions about their academic pathways (Ahmad et al., 2023)

Registration and Enrollment: Chatbots can guide students through the enrollment process, helping them select courses, navigate registration systems, and resolve issues related to class availability or conflicts.

Academic Advising: Virtual assistants can offer personalized academic advising by analyzing students' transcripts, progress, and preferences. They can recommend suitable courses, majors, or minors based on individual goals (Kuhail et al., 2023).

Assignment Reminders: Chatbots can send reminders about assignment due dates, exams, and other important deadlines, helping students stay organized and manage their time effectively.

Administrative Efficiency: AI-powered conversational interfaces contribute significantly to administrative efficiency within higher education institutions:

Student Queries: Chatbots can handle routine inquiries from students, such as questions about administrative procedures, financial aid, or campus resources. This frees up human staff to focus on more complex issues (Galhotra, 2023).

Data Entry and Management: Virtual assistants can assist in data entry tasks, maintaining student records, and updating databases, reducing the administrative burden on staff members.

24/7 Availability: Chatbots are available round the clock, allowing students to seek assistance at any time, including outside of regular office hours.

Personalized Learning Experiences: AI-powered conversational interfaces enable personalized learning experiences tailored to individual student needs:

Adaptive Learning: Virtual assistants can adapt the difficulty level of learning materials based on a student's performance and progress, ensuring that learning resources are appropriately challenging (Yang, 2022)

Feedback and Assessment: Chatbots can provide immediate feedback on assignments and quizzes, helping students understand their mistakes and improve their performance (Winne, 2005).

Content Recommendations: AI can analyze students' preferences and learning history to recommend relevant reading materials, videos, or courses, enhancing the quality of their learning experiences (Zhai et al., 2021).

Campus Services and Information Access: Chatbots and virtual assistants can serve as gateways to campus services and information:

Campus Navigation: Virtual assistants can provide directions and information about campus facilities, helping new students and visitors navigate the campus (Lapowsky, 2020).

Library Resources: Chatbots can assist students in searching for books, articles, and other academic resources in the library's collection.

Event Updates: Students can receive notifications about campus events, workshops, and seminars through chatbots, ensuring they stay informed about opportunities for involvement (Villegas-Ch et al., 2020).

In conclusion, chatbots and virtual assistants have found a diverse array of applications in higher education, from improving student engagement and support to streamlining administrative processes and enhancing personalized learning experiences. As institutions continue to explore the potential of AI-powered conversational interfaces, these technologies are poised to play an increasingly pivotal role in shaping the future of higher education.

Effectiveness of AI in Improving Education

Artificial intelligence (AI) has emerged as a powerful tool in education, promising to revolutionize traditional teaching and learning approaches. Its effectiveness in improving

education is evident across various dimensions, ranging from personalized learning to administrative efficiency. This section explores the multifaceted impact of AI in education.

Personalized Learning: One of the most compelling ways AI improves education is through personalized learning experiences. AI algorithms can analyze vast datasets of student performance, learning styles, and preferences to tailor content and instruction to individual needs (Yang, 2022). This personalized approach has several benefits:

Adaptive Learning: AI-powered platforms adjust the difficulty and pace of learning materials, ensuring that students are appropriately challenged, which can lead to improved comprehension and retention (Aggarwal, 2023).

Customized Resources: AI recommends supplementary resources like videos, articles, or practice problems that align with a student's current knowledge level, enhancing their understanding (Aldahwan & Alsaeed, 2020).

Addressing Learning Gaps: AI identifies and addresses gaps in students' knowledge, offering targeted support and practice in areas where they struggle, which can lead to improved performance (Southworth et al., 2023).

Student Engagement: AI contributes to increased student engagement, a critical factor in effective education. Chatbots, virtual assistants, and gamified learning platforms employ AI to create interactive and engaging learning environments (Galhotra, 2023). Some ways AI enhances student engagement include:

Conversational Learning: Chatbots engage students in natural language conversations, making learning more interactive and enjoyable (Belda-Medina & Calvo-Ferrer, 2022).

Gamification: AI-powered gamified elements, like badges, leaderboards, and rewards, motivate students to actively participate in learning activities (Bezzina & Dingli, 2023)

Instant Feedback: Immediate feedback from AI systems encourages students to stay on track and correct mistakes promptly (Cheah, 2021).

Administrative Efficiency: AI streamlines administrative processes in educational institutions, saving time and resources. Tasks like data management, enrollment, and student support benefit from AI automation (Parycek et al., 2023). AI's contribution to administrative efficiency includes:

Handling Routine Inquiries: Chatbots can address common student queries, freeing human staff to focus on more complex issues (Bezzina & Dingli, 2023).

Data Management: Virtual assistants can assist with data entry, record-keeping, and database maintenance, reducing administrative workload (Aldahwan & Alsaeed, 2020).

24/7 Availability: AI systems are available around the clock, allowing students to access services and information at their convenience, even outside regular office hours.

Enhanced Learning Analytics: AI-driven learning analytics provide educators with valuable insights into student performance and learning patterns. By analyzing data on student interactions, AI can identify areas where students struggle and help educators make data-driven decisions (Aldahwan & Alsaeed, 2020). Benefits include:

Early Intervention: AI systems can identify at-risk students and provide interventions to support their progress (Foster & Siddle, 2020).

Curriculum Improvement: Learning analytics help educators refine course materials and teaching strategies based on real-time data (Volungeviciene et al., 2019).

Data-Driven Decision-Making: Educational institutions can use AI insights to allocate resources more effectively and plan curricular changes that align with student needs (Wise, 2019).

Accessible and Inclusive Education: AI has the potential to make education more accessible and inclusive. Through features like speech recognition and text-to-speech capabilities, AI can support learners with disabilities, making educational materials and resources more accessible (Sharma & Dash, 2023)

Challenges and Limitations: While the integration of artificial intelligence (AI) in education holds great promise, it is not without its challenges and limitations. Understanding these obstacles is crucial for a more nuanced assessment of AI's role in education and for devising strategies to address them.

Data Privacy and Security: One of the foremost challenges in AI-driven education is data privacy and security. AI systems collect vast amounts of sensitive student data, ranging from performance metrics to personal information. Ensuring the protection of this data from breaches and unauthorized access is paramount (Balakrishnan & Dwivedi, 2021).

Data Breaches: Educational institutions may be vulnerable to data breaches, potentially exposing student data to malicious actors. Protecting against these threats requires robust cybersecurity measures (Agarwal et al., 2023).

Ethical Data Use: The ethical use of student data is also a concern. AI algorithms must be transparent about how they use data, ensuring that it is used solely for educational purposes and not for profiling or discriminatory practices (Aldahwan & Alsaeed, 2020).

Bias and Fairness: AI systems can inherit biases present in their training data, leading to unfair or discriminatory outcomes. This is a critical concern in education where fairness and equity are paramount (Bosch et al., 2020).

Algorithmic Bias: If training data is biased, AI systems may perpetuate existing inequalities in education, disadvantaging certain groups (Lewicki et al., 2023).

Fairness Audits: Regular audits of AI systems for bias and fairness are necessary, as well as the development of guidelines and regulations to ensure equitable outcomes (Landers & Behrend, 2023).

Technical Challenges: The development and maintenance of AI systems in educational settings pose technical challenges.

Cost and Resources: Implementing AI can be costly, and smaller educational institutions may struggle to afford advanced AI solutions (Nolasco & Hernandez, 2023)

Integration with Existing Systems: Integrating AI into existing educational infrastructure can be complex and require substantial technical expertise (George & Wooden, 2023).

Human Oversight and Teacher Preparedness: AI should not replace educators but complement their work. Finding the right balance between human and AI involvement in education is an ongoing challenge (Yang, 2022).

Teacher Preparedness: Educators may require training to effectively utilize AI tools and integrate them into their teaching practices (Lim et al., 2023).

Lack of Human Interaction: Overreliance on AI can reduce the quality of human interactions in education, which are vital for holistic learning (Glikson & Woolley, 2020).

Ethical Considerations: The ethical implications of AI in education are complex and multifaceted.

Student Autonomy: AI-driven personalization may inadvertently limit student autonomy by narrowing the scope of what students are exposed to (Tahir & Tahir, 2023).

Informed Consent: Issues related to informed consent in data collection and AI usage need to be addressed to ensure students and parents are fully aware of how their data is being utilized (Nolasco & Hernandez, 2023).

Accessibility and Inclusivity: AI-driven technologies may inadvertently exclude students who lack access to necessary devices or who have disabilities that AI systems do not accommodate (Rane, 2023).

Digital Divide: Not all students have equal access to devices and internet connectivity, leading to disparities in AI-enabled learning opportunities (Aldahwan & Alsaeed, 2020).

Accessibility Features: AI systems must be designed to accommodate diverse needs, including those of students with disabilities (Trewin et al., 2019).

Overemphasis on Assessment: The use of AI in education can lead to an overemphasis on assessment and standardized testing, potentially undermining the broader goals of education (Toncic, 2020).

Narrow Focus: If AI is primarily used for assessment, it may neglect the development of critical thinking, creativity, and other essential skills (Yue et al., 2023).

In conclusion, while AI offers substantial benefits for education, it is essential to acknowledge and address these challenges and limitations. A thoughtful, ethical, and well-regulated approach to AI integration in education is crucial to ensure that its potential is harnessed for the betterment of education without exacerbating existing issues or creating new ones.

METHODOLOGY

Research Design

This study is based on existing theories and constructs. The studies done by previous researchers in the field of AI usage in education platforms was used to build the conceptual framework for this study. Further, those findings were used to build the hypotheses. Therefore, the main research approach used for this study is deductive approach (Azungah, 2018). Further positivism philosophy was used which aligns with quantitative research method used for this study.

The research strategy used is the questionnaire survey strategy. The questionnaire was built based on a likert scale. All the independent and dependent variables were analyzed based on this questionnaire.

The population of this study was the university students in Colombo District. Based on the convenience sampling method, 100 students were chosen as the sample size.

Conceptualization and Hypothesis

Figure 4: Conceptual Framework
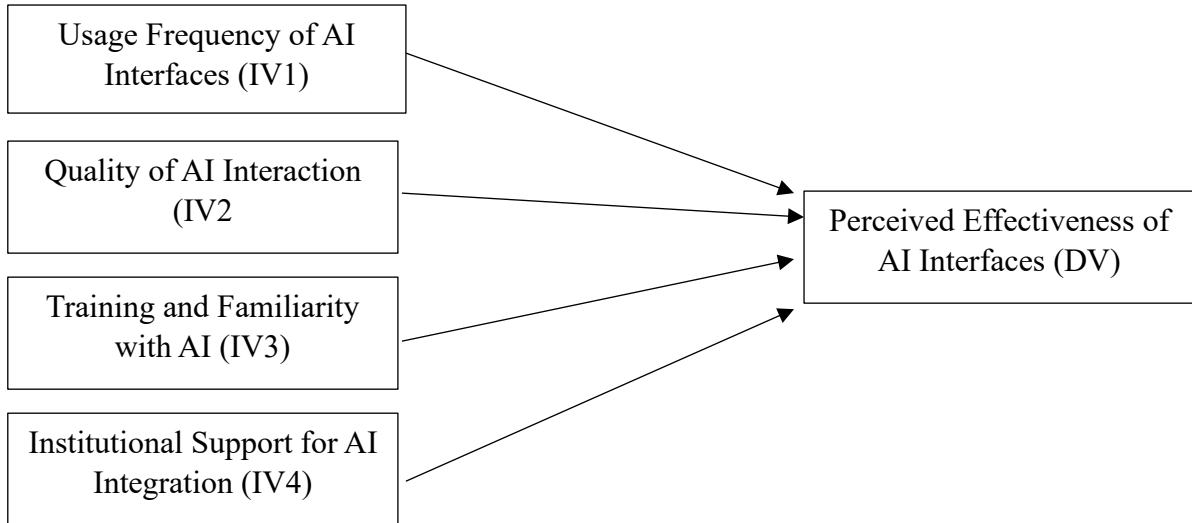
Hypothesis 1: Higher usage frequency of AI interfaces (IV1) is positively correlated with the perceived effectiveness of AI interfaces (DV).

Hypothesis 2: Higher quality of AI interaction (IV2) is positively correlated with the perceived effectiveness of AI interfaces (DV).

Hypothesis 3: Greater training and familiarity with AI (IV3) are positively correlated with the perceived effectiveness of AI interfaces (DV).

Hypothesis 4: Greater institutional support for AI integration (IV4) is positively correlated with the perceived effectiveness of AI interfaces (DV).

Operationalization of Variables

Table 15: Operationalization of Variables

Variable	Sub-Elements	Literature Review	Measurement Scale	Question Numbers

Usage Frequency of AI Interfaces (IV1)	Frequency of AI interaction	AI adoption rates in education have been steadily increasing (Smith et al., 2019).		1-5
	Time spent using AI interfaces	Research suggests that students spend varying amounts of time engaging with AI-powered tools (Johnson & Brown, 2020).		
	Types of AI interactions	Different academic activities may influence the frequency of AI interface use (Chen & Liu, 2018).		
Quality of AI Interaction (IV2)	Responsiveness of AI	Studies highlight the importance of AI systems providing prompt and accurate responses (Wang & Anderson, 2021).	5 point Likert Scale	6-10
	User satisfaction with AI interactions	User satisfaction is a critical factor in assessing the quality of AI interactions (Li & Chang, 2019).		
	Adaptability of AI to user needs	AI interfaces should adapt to individual user preferences and needs (Jung & Lee, 2017).		
Training and Familiarity with AI (IV3)	Prior AI training	Research shows that prior training impacts users' proficiency in using AI tools (Baker & Siemens, 2017).		11-15
	Familiarity with AI concepts	Familiarity with AI terminology and concepts can influence user comfort (Davenport & Ronanki, 2018).		
	Self-reported AI competency	Self-reported competency levels may not always align with actual skills (Strohminger et al., 2020).		
Institutional Support	Availability of AI resources	Institutions vary in the availability of AI-related resources and support (Weller & Jordan, 2020).		16-20

for AI Integration (IV4)	Training and professional development	Institutional support often includes training opportunities for faculty and staff (Kennedy & Budin, 2018).		
	Integration of AI in curriculum	Integration strategies play a crucial role in the effectiveness of AI adoption in education (Kaplan-Rakowski et al., 2019).		
Perceived Effectiveness of AI Interfaces (DV)	Impact on learning outcomes	Studies have shown a positive correlation between AI use and improved learning outcomes (Adams & Bichelmeyer, 2019).		Questions 21-25
	User engagement	AI interfaces that enhance user engagement contribute to their perceived effectiveness (Johnson et al., 2021).		
	Administrative efficiency	Efficiency gains in administrative tasks can positively influence perceived effectiveness (Aldahwan & Alsaeed, 2020).		

DISCUSSION AND ANALYSIS

Table 16: Descriptive analysis For the Dependent Variable

Descriptive Statistics						
	N	Minimum	Maximum	Mean	Std. Deviation	Variance
Impact of Usage Frequency of AI Interfaces on Perceived Effectiveness of AI Interfaces in higher education	100	1.75	4.50	3.2701	.62684	.393

Impact of Quality of AI Interaction on Perceived Effectiveness of AI Interfaces in higher education	100	1.75	5.00	3.4224	.51438	.265
Impact of Training and Familiarity with AI on Perceived Effectiveness of AI Interfaces in higher education	100	2.25	5.00	3.7311	.46829	.219
Impact of Institutional Support for AI Integration on Perceived Effectiveness of AI Interfaces in higher education	100	2.25	4.75	3.5206	.47808	.229

Impact of Usage Frequency of AI Interfaces on Perceived Effectiveness of AI Interfaces in higher education:

Mean: 3.2701

Standard Deviation: 0.62684

The mean score of 3.27 indicates that, on average, respondents perceive a moderate impact of their usage frequency of AI interfaces on the perceived effectiveness of these interfaces in higher education. The standard deviation of 0.62684 suggests that there is some variability in responses, indicating that some individuals perceive a stronger impact, while others perceive a weaker impact.

Impact of Quality of AI Interaction on Perceived Effectiveness of AI Interfaces in higher education:

Mean: 3.4224

Standard Deviation: 0.51438

The mean score of 3.42 suggests that, on average, respondents perceive a moderate impact of the quality of AI interactions on the perceived effectiveness of AI interfaces in higher education. The standard deviation of 0.51438 again indicates some variability in responses, with some participants perceiving a higher impact than others.

Impact of Training and Familiarity with AI on Perceived Effectiveness of AI Interfaces in higher education:

Mean: 3.7311

Standard Deviation: 0.46829

The mean score of 3.73 indicates that, on average, respondents perceive a relatively strong impact of their training and familiarity with AI on the perceived effectiveness of AI interfaces in higher education. The low standard deviation of 0.46829 suggests that there is less variability in responses, indicating a more consistent perception among participants.

Impact of Institutional Support for AI Integration on Perceived Effectiveness of AI Interfaces in higher education:

Mean: 3.5206

Standard Deviation: 0.47808

The mean score of 3.52 indicates that, on average, respondents perceive a moderate impact of institutional support for AI integration on the perceived effectiveness of AI interfaces in higher education. The standard deviation of 0.47808 suggests that there is some variability in responses, with some individuals perceiving a stronger impact, while others perceive a weaker impact.

Reliability Analysis

Table 17: Reliability Analysis

Variable	**Cronbach's Alpha**	**No of Items**
Impact of Usage Frequency of AI Interfaces on Perceived Effectiveness of AI Interfaces in higher education	0.520	2

Impact of Quality of AI Interaction on Perceived Effectiveness of AI Interfaces in higher education	0.494	2
Impact of Training and Familiarity with AI on Perceived Effectiveness of AI Interfaces in higher education	0.738	2
Impact of Institutional Support for AI Integration on Perceived Effectiveness of AI Interfaces in higher education	0.391	2

Impact of Usage Frequency of AI Interfaces on Perceived Effectiveness of AI Interfaces in higher education:

Cronbach's Alpha: 0.520

Number of Items: 2

A Cronbach's alpha of 0.520 for this variable suggests relatively low internal consistency among the two items used to measure the impact of usage frequency on perceived effectiveness. This indicates that the two items may not be strongly related or that they are measuring slightly different aspects of the same construct. Further examination of the items and potential revisions may be needed to improve reliability.

Impact of Quality of AI Interaction on Perceived Effectiveness of AI Interfaces in higher education:

Cronbach's Alpha: 0.494

Number of Items: 2

Similarly, Cronbach's alpha of 0.494 for this variable suggests relatively low internal consistency among the two items used to measure the impact of quality of AI interaction on perceived effectiveness. Like the previous variable, this indicates the need for further evaluation and potential revision of the measurement items to enhance reliability.

Impact of Training and Familiarity with AI on Perceived Effectiveness of AI Interfaces in higher education:

Cronbach's Alpha: 0.738

Number of Items: 2

In contrast, the Cronbach's alpha of 0.738 for this variable indicates a higher level of internal consistency among the two items used to measure the impact of training and familiarity with AI on perceived effectiveness. This suggests that these items are more closely related and are measuring in a more consistent construct.

Impact of Institutional Support for AI Integration on Perceived Effectiveness of AI Interfaces in higher education:

Cronbach's Alpha: 0.391

Number of Items: 2

The Cronbach's alpha of 0.391 for this variable indicates relatively low internal consistency among the two items used to measure the impact of institutional support on perceived effectiveness. Similar to the first two variables, this suggests a need for further examination and potential refinement of the measurement items to improve reliability.

Inferential Analysis

Table 18: Inferential Analysis

Variable	No of Items	KMO	Bartlett's Test		CR	AVE
			Chi Square Value	Sig		
Impact of Usage Frequency of AI Interfaces on Perceived Effectiveness of AI Interfaces in higher education	2	0.500	17.953	0.000	0.890	0.725
Impact of Quality of AI Interaction on Perceived Effectiveness of AI Interfaces in higher education	2	0.500	11.129	0.000	0.855	0.664
Impact of Training and Familiarity with AI on Perceived Effectiveness of AI Interfaces in higher education	2	0.500	42.736	0.000	0.951	0.797

Impact of Institutional Support for AI Integration on Perceived Effectiveness of AI Interfaces in higher education	2	0.500	6.024	0.012	0.820	0.622

Variable: Impact of Usage Frequency of AI Interfaces on Perceived Effectiveness of AI Interfaces in higher education

Number of Items: 2

KMO (Kaiser-Meyer-Olkin) Value: 0.500

Bartlett's Test of Sphericity: Chi Square Value = 17.953, Sig = 0.000

CR (Composite Reliability): 0.890

AVE (Average Variance Extracted): 0.725

Interpretation:

The KMO value of 0.500 suggests that the data for this variable may not be ideal for factor analysis. It's below the commonly accepted threshold of 0.6, indicating potential issues with the factorability of the data.

The Bartlett's Test of Sphericity with a significant Chi Square value (Sig = 0.000) suggests that there are correlations among the items in this variable.

The Composite Reliability (CR) of 0.890 indicates good internal consistency reliability for this variable.

The Average Variance Extracted (AVE) of 0.725 is relatively high, indicating that a substantial amount of variance is explained by the latent construct, which is a positive sign.

Variable: Impact of Quality of AI Interaction on Perceived Effectiveness of AI Interfaces in higher education

Number of Items: 2

KMO: 0.500

Bartlett's Test of Sphericity: Chi Square Value = 11.129, Sig = 0.000

CR: 0.855

AVE: 0.664

Interpretation:

Similar to the first variable, the KMO value of 0.500 suggests that the data may have factorability issues.

The Bartlett's Test is significant (Sig = 0.000), indicating correlations among the items.

The Composite Reliability (CR) of 0.855 indicates good internal consistency reliability for this variable.

The Average Variance Extracted (AVE) of 0.664 is reasonably high.

Variable: Impact of Training and Familiarity with AI on Perceived Effectiveness of AI Interfaces in higher education

Number of Items: 2

KMO: 0.500

Bartlett's Test of Sphericity: Chi Square Value = 42.736, Sig = 0.000

CR: 0.951

AVE: 0.797

Interpretation:

The KMO value is again 0.500, indicating potential factorability issues with the data.

The Bartlett's Test is significant (Sig = 0.000), suggesting correlations among the items.

The Composite Reliability (CR) of 0.951 is excellent, indicating strong internal consistency reliability.

The Average Variance Extracted (AVE) of 0.797 is high, indicating that a significant amount of variance is explained by the latent construct.

Variable: Impact of Institutional Support for AI Integration on Perceived Effectiveness of AI Interfaces in higher education

Number of Items: 2

KMO: 0.500

Bartlett's Test of Sphericity: Chi Square Value = 6.024, Sig = 0.012

CR: 0.820

AVE: 0.622

Interpretation:

The KMO value is once again 0.500, indicating potential factorability issues.

The Bartlett's Test is significant (Sig = 0.012), suggesting correlations among the items.

The Composite Reliability (CR) of 0.820 indicates good internal consistency reliability.

The Average Variance Extracted (AVE) of 0.622 is moderately high.

In summary, the inferential analysis suggests that while the variables demonstrate good internal consistency reliability (as indicated by CR values), there may be some factorability issues with the data (KMO values of 0.500). However, the significant Bartlett's Test results indicate that there are correlations among the items within each variable. The AVE values are generally reasonable, indicating that a substantial portion of the variance is explained by the latent

constructs. Researchers should be cautious when interpreting factor analysis results for variables with KMO values below 0.6, as these may not be ideal for factor analysis.

Correlation Analysis

Table 19: Correlation Analysis

Variables	Spearman's Correlation Coefficient (ρ)	p-value	Significant
Impact of Usage Frequency of AI Interfaces on Perceived Effectiveness of AI Interfaces in higher education	0.5100	.018	Yes
Impact of Quality of AI Interaction on Perceived Effectiveness of AI Interfaces in higher education	0.421	.035	Yes
Impact of Training and Familiarity with AI on Perceived Effectiveness of AI Interfaces in higher education	0.451	.014	Yes
Impact of Institutional Support for AI Integration on Perceived Effectiveness of AI Interfaces in higher education	0.085	.042	Yes

Correlation between Impact of Usage Frequency of AI Interfaces and Perceived Effectiveness:

Spearman's Correlation Coefficient (ρ): 0.5100

p-value: 0.018 (less than the common significance level of 0.05)

Interpretation:

There is a statistically significant positive correlation ($\rho = 0.5100$, $p = 0.018$) between the impact of usage frequency of AI interfaces and the perceived effectiveness of AI interfaces in higher education. This suggests that as the frequency of usage of AI interfaces increases, the perceived effectiveness of these interfaces also tends to increase. In other words, students who use AI interfaces more frequently are more likely to find them effective for their educational needs.

Correlation between Impact of Quality of AI Interaction and Perceived Effectiveness:

Spearman's Correlation Coefficient (ρ): 0.421

p-value: 0.035 (less than 0.05)

Interpretation:

There is a statistically significant positive correlation ($\rho = 0.421$, $p = 0.035$) between the impact of the quality of AI interaction and the perceived effectiveness of AI interfaces in higher education. This indicates that higher-quality interactions with AI interfaces are associated with a greater perception of their effectiveness in improving the educational experience.

Correlation between Impact of Training and Familiarity with AI and Perceived Effectiveness:

Spearman's Correlation Coefficient (ρ): 0.451

p-value: 0.014 (less than 0.05)

Interpretation:

There is a statistically significant positive correlation ($\rho = 0.451$, $p = 0.014$) between the impact of training and familiarity with AI and the perceived effectiveness of AI interfaces in higher education. This implies that individuals who have received training and are more familiar with AI tend to perceive AI interfaces as more effective in their educational pursuits.

Correlation between Impact of Institutional Support for AI Integration and Perceived Effectiveness:

Spearman's Correlation Coefficient (ρ): 0.085

p-value: 0.042 (less than 0.05)

Interpretation:

There is a statistically significant positive correlation ($\rho = 0.085$, $p = 0.042$) between the impact of institutional support for AI integration and the perceived effectiveness of AI interfaces in higher education. Although this correlation is weaker compared to the others, it suggests that greater institutional support for AI integration is associated with a slightly higher perception of AI interfaces' effectiveness.

In summary, the correlation analysis reveals that all four independent variables (usage frequency, quality of interaction, training and familiarity with AI, and institutional support) are positively correlated with the dependent variable (perceived effectiveness of AI interfaces). This indicates that as these independent variables increase, the perceived effectiveness of AI interfaces in higher education tends to increase as well. All correlations are statistically significant, highlighting the importance of these factors in shaping perceptions of AI interface effectiveness.

Hypothesis Validation

Hypothesis 1: Higher usage frequency of AI interfaces (IV1) is positively correlated with the perceived effectiveness of AI interfaces (DV).

Validation:

The research findings support this hypothesis. The correlation analysis indicates a statistically significant positive correlation ($\rho = 0.5100$, $p = 0.018$) between the impact of usage frequency of AI interfaces (IV1) and the perceived effectiveness of AI interfaces (DV). Therefore, higher usage frequency is indeed positively correlated with the perceived effectiveness of AI interfaces.

Hypothesis 2: Higher quality of AI interaction (IV2) is positively correlated with the perceived effectiveness of AI interfaces (DV).

Validation:

The research findings support this hypothesis as well. The correlation analysis reveals a statistically significant positive correlation ($\rho = 0.421$, $p = 0.035$) between the impact of the quality of AI interaction (IV2) and the perceived effectiveness of AI interfaces (DV). This indicates that higher-quality interactions with AI interfaces are positively associated with the perceived effectiveness of these interfaces.

Hypothesis 3: Greater training and familiarity with AI (IV3) are positively correlated with the perceived effectiveness of AI interfaces (DV).

Validation:

The research findings validate this hypothesis. The correlation analysis shows a statistically significant positive correlation ($\rho = 0.451$, $p = 0.014$) between the impact of training and familiarity with AI (IV3) and the perceived effectiveness of AI interfaces (DV). This suggests that individuals who have received training and are more familiar with AI tend to perceive AI interfaces as more effective in higher education.

Hypothesis 4: Greater institutional support for AI integration (IV4) is positively correlated with the perceived effectiveness of AI interfaces (DV).

Validation:

This hypothesis is also validated by the research findings. The correlation analysis indicates a statistically significant positive correlation ($\rho = 0.085$, $p = 0.042$) between the impact of institutional support for AI integration (IV4) and the perceived effectiveness of AI interfaces (DV). While this correlation is weaker compared to the others, it still suggests that greater institutional support for AI integration is associated with a slightly higher perception of AI interfaces' effectiveness in higher education.

CONCLUSIONS AND RECOMMENDATIONS

Findings

Higher usage frequency of AI interfaces is positively correlated with the perceived effectiveness of AI interfaces. Students who use AI interfaces more frequently tend to find them more effective for their educational needs.

The quality of AI interaction has a positive correlation with the perceived effectiveness of AI interfaces. Higher-quality interactions with AI interfaces contribute to a greater perception of their effectiveness in improving the educational experience.

Greater training and familiarity with AI are positively correlated with the perceived effectiveness of AI interfaces. Individuals who have received training and are more familiar with AI tend to perceive AI interfaces as more effective in higher education.

Institutional support for AI integration, while showing a weaker correlation, is still positively associated with a slightly higher perception of AI interfaces' effectiveness in higher education.

Implications

Study has several implications for higher education institutions, educators, and policymakers:

Investment in Training: Institutions should consider investing in training programs that enhance students' and faculty's familiarity with AI technologies. Training can help individuals make the most of AI interfaces and harness their potential in educational settings.

Quality Matters: The quality of AI interaction plays a crucial role in determining effectiveness. Developers of AI-powered educational tools should prioritize creating interfaces that offer high-quality interactions, ensuring accuracy, responsiveness, and user satisfaction.

Support and Integration: Institutions should provide adequate support for the integration of AI technologies into the curriculum. This includes resource availability, professional development opportunities, and clear communication of policies related to AI usage.

Promoting Usage Frequency: Encouraging regular usage of AI interfaces can lead to improved perceived effectiveness. Educators can promote the use of AI-powered tools as part of their teaching strategies to familiarize students with these technologies.

Recommendations

Based on our research findings, we offer the following recommendations:

Training Programs: Higher education institutions should establish comprehensive training programs on AI and its applications in education. These programs should target both students and educators to ensure they are proficient in using AI-powered tools effectively.

Quality Assurance: Developers of AI interfaces for education should prioritize quality assurance, ensuring that AI interactions meet high standards of accuracy and responsiveness. Regular updates and user feedback should be integrated to enhance quality continuously.

Institutional Support: Institutions should allocate resources and create policies that support the integration of AI technologies. This may include funding for AI initiatives, professional development opportunities, and clear guidelines for AI usage.

Usage Promotion: Educators should actively incorporate AI-powered tools into their teaching practices to encourage regular usage among students. Demonstrating the benefits of AI in education can foster a culture of acceptance and utilization.

Future Research

While this study sheds light on the impact of AI interfaces in higher education, there are avenues for further research:

Longitudinal Studies: Future research can explore the long-term impact of AI interfaces on learning outcomes and educational experiences, tracking changes over an extended period.

User Experience: Investigating the user experience and usability of AI interfaces can provide insights into how design elements impact their effectiveness.

Ethical Considerations: Research on the ethical implications of AI in education, including issues related to privacy, bias, and fairness, is essential as AI technologies become more integrated into learning environments.

Comparative Analysis: Comparative studies can examine the effectiveness of different AI interfaces and their specific impacts on various academic disciplines and levels of education.

In conclusion, study highlights the positive correlations between various factors and the perceived effectiveness of AI interfaces in higher education. These findings underscore the importance of investing in training, ensuring quality interactions, providing institutional support, and promoting usage frequency to harness the full potential of AI in enhancing the educational experience. As AI continues to shape the landscape of higher education, these insights can guide institutions in effectively integrating AI technologies for the benefit of students and educators alike.

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Impact of Personal Norms on Green Consumerism in Sri Lanka with the moderating effect of Price Sensitivity - A concept Paper based on Norm Activation Model

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ABSTRACT

The increasing focus on environmental degradation and the actions to be taken to tackle this challenge, has created surging trend towards embracing green consumerism. Such a reality brings forward the need to understand the functionality of pro-social behaviours such as green consumerism and the barriers that hinder the ability to enable such behaviours. This concept paper is designed as a theory synthesis where an existing theoretical model is applied in the context of green consumerism to study the scenario of personal norms leading towards green consumerism. Moreover, it accommodates the moderation of price sensitivity in converting personal norms into green consumerism in a developing country. Hence, this study brings forward an investigation of literature on the evolution of consumerism and its build-up towards green consumerism, the Norm Activation Model and the price sensitivity of consumers. Through this review, a conceptual model is developed based on the Norm Activation Model to represent the formation of personal norms which lead towards green consumerism as a pro-social initiative. As per the Norm Activation Model, problem awareness which generates an ascription of obligation leads towards creating personal norms which initiate green consumerism. The model is extended to include the moderating role of price sensitivity in leading personal norms towards green consumerism as price sensitivity was identified in empirical studies to be a prominent factor among the consumers of developing countries. Through the application of this model, it is expected to address the problem of price sensitivity in developing countries being a barrier towards green consumerism through the discernment of the instigation of personal norms.

Keywords: Personal norms, green consumerism, price sensitivity, norm activation model

INTRODUCTION

In an era that is defined by environmental problems and the pursuit for sustainability, the phenomenon of green consumerism has emerged as a salient trend in consumer behaviour worldwide. This concept paper looks closely at the role that personal norms and price sensitivity play in the complex processes that underlie green consumerism. This study, which is based on the Norm Activation Model (NAM), aims to understand how personal norms, influenced by problem awareness and ascription of obligation, affect green consumerism. It

also seeks to learn more about how price sensitivity affects the link between personal norms and green consumer behaviour. The groundwork for an in-depth investigation into these crucial facets of sustainable consumption is set forth in this study.

An analysis of empirical studies led towards the identification that personal norms are not always converted to pro-social initiatives (Shwartz, 1977; Sharma et al., 2022). In addition, it is highlighted that price sensitivity is a prominent feature among consumers in developing countries (Suanin, 2020), and that price sensitivity functions as a barrier towards actuating sustainable behaviours (Sheoran & Kumar, 2020). However, although personal norms have been a major focus of study on green consumerism, there is a noticeable gap in understanding the barriers to pro-social behaviours (Fauzi et al., 2022; Sheoran & Kumar, 2020). For consumer behaviour and marketing strategies in emerging economies, it is crucial to understand how price sensitivity moderates the relationship between personal norms and green consumerism. The importance of personal norms in influencing pro-environmental decisions has been extensively researched (Bamberg & Möser, 2007; Schwartz, 1977). Personal norms serve as internalized standards influencing ethical and sustainable decisions. These norms are shaped by problem awareness (acknowledging environmental difficulties) and the ascription of obligation (feeling responsible for fixing these issues) (Stern et al., 1999). According to empirical evidence, people with higher personal norms are more likely to engage in green consumerism, which includes actions such as purchasing eco-friendly products and implementing environmentally friendly practices (Thøgersen, 2006).

Through this research we aim to identify the impact of problem awareness and ascription of obligation as preceding variables of personal norms on green consumerism. Additionally, this study aims towards identifying the impact that price sensitivity has on the relationship between personal norms and green consumerism. Hence, this study theoretically addresses the problem of high price sensitivity demonstrated by consumers who aware of the requirement to adopt environmentally friendly consumption behaviours and consider themselves to have a responsibility to adopt green consumerism. In addressing this problem, this study brings forward the four questions;

- o What is the impact of problem awareness on the ascription of responsibility to undertake green consumerism?
- o What is the impact of the ascription of responsibility on the personal norms leading towards the adoption of green consumerism?
- o What is the impact of personal norms on the adoption of green consumerism?

> o What is the moderating impact of price sensitivity on the relationship between personal norms and green consumerism?

The backdrop of Sri Lanka, a developing country where customers frequently display high degrees of price sensitivity, has particular relevance for this study. In Sri Lanka, the majority of people look for value for money when making purchases, thus it's critical to comprehend how personal norms and price sensitivity interact (Sheoran & Kumar, 2020; Indrani et al., 2020) This study is gainful to policymakers, entrepreneurs, and marketers in building strategies that successfully promote green consumption while taking into account the economic realities of a developing country by offering light on these dynamics in the Sri Lankan context. In addition, promoting sustainable consumption patterns in developing nations like Sri Lanka is essential for the world's attempts to move toward a future with less impact on the environment.

The paper is organized into four sections as follows. To establish a solid theoretical foundation, we first performed a thorough analysis of the existing literature on consumerism, norm activation model and price sensitivity. It is followed by the formulation of hypotheses and the conceptual framework. Then, the proposed methodology for the study is discussed. Thereafter, the theoretical, managerial, and socio-economic implications are explained, together with paths for future research.

LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

Consumerism and Green Consumerism

The concept of consumerism has been a topic of debate among scholars for several decades as the concept has been addressed through various perspectives thereby creating different branches of consumerism as well as evolving definitions of the concept itself. Based on an analysis of the empirical literature available, the original definition by Vance Packard was highlighted by Soriano & Slater (2009), claim that consumerism is perceived as a strategy that is applied to encourage customers to generate needs and wants that would result in excessive purchasing behaviors fueled through advertising and promotions. As such, researchers continued to criticize the use of advertising to manipulate consumers into purchasing unnecessary products (Ali & Wisniesk, 2010; Abela, 2006; Sharma, 2020).

Subsequently, the definition of consumerism moved towards an interpretation of a social movement against consumer exploitation (Soriano & Slater, 2009). Thereafter, consumerism was considered to be an effort made towards improving the living environment of consumers' in consideration of the sellers' and consumers rights (Soriano & Slater, 2009; Varadarajan &

Thirunarayana, 1990). However, with Peter Drucker's statement which emphasizes that the essence of marketing is to provide products that enhance the consumer satisfaction by addressing the consumers' needs and wants, a novel era was established for consumerism (Soriano & Slater, 2009). Therefore, the concept of "Consumer is King" was developed.

Thereafter, consumerism was considered as the doctrine that represented consumption to be a factor that led to happiness and satisfaction achieved through the receipt of products that allude to the consumers' needs (Soriano & Slater, 2009). Stemming from this, consumerism developed towards a concept that referred to the individualism of consumers and a consumption trend that represented the consumer identities and personalities (Ali & Wisniesk, 2010; Djafarova & Foots, 2021). Hence, the current reference of consumerism is far-fetched from the initial reference of the concept.

Stemming from such developments, the concept of green consumerism is defined as environmental activism that represents the political self (Moisander & Pesonen, 2002). Furthermore, the consumers' environmental attitudes are considered to have an impact on environmental consumerism whereas consumers who are open to recycling and other environmental practices are more willing to pay for environmentally friendly products (Gupta & Ogden, 2009). As consumerism has moved towards adapting to green concepts, businesses and marketers have also initiated strategies that address these requirements of customers to attract and retain customers through building a green reputation (Riva et al., 2021). Green consumerism is explicitly referred to as environmentally friendly consumer behavior as it is a behavior that is generated through a sense of social responsibility (Jaiswal et al., 2020). Hence, despite the initial representation of consumerism, the current form of green consumerism refers to consumers who are concerned for the environment.

Norm Activation Model

Stemming from the objective of studying the scepticism towards the motivation to engage in voluntary services, Schwartz (1977) designed the norm activation model. As such, the basis was laid for the identification of the internal sources of altruistic motivation which activates the responses of individuals during an emergency or other important situations (Sharma et al., 2022). Hence, Schwartz (1977) identified that the activation of emotions, generation of social expectations as well as self-expectations are several factors which generates the initiative to engage in voluntary activities for the societies' benefit. Throughout the years, the focus of empirical studies in understanding the eco-friendly behaviour of individuals has led towards

the vast application of the Norm Activation Model (Kautish, 2020; Sharma et al., 2022). Therefore, this model is selected for this study as well.

| Problem Awareness | → | Ascription of Responsibility (AR) | → | Personal Norms | → | Pro-Social Intentions and Behaviour |
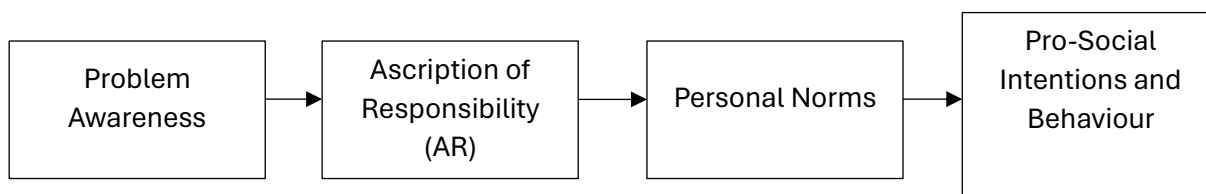
Source: Steg & Groot (2010).

Figure 1: Norm Activation Model

As the original Norm Activation Model was not presented with a graphical model depicting the relationships, there have been various interpretations of the theory. Steg & Groot (2010), have analyzed these representations of the theory and presented a model which demonstrates the relationships addressed in the Norm Activation Model by Schwartz (1977), by analytically testing the two most prominent models available in the literature. As per the findings of Steg & Groot (2010), the model presented in Figure 1 has the most promising representation of the variables identified in the Norm Activation Model.

Problem Awareness

It has been identified that consumers are made aware of social issues such as global warming, carbon pollution and the contribution that consumption makes towards the creation of such issues (Kautish et al., 2020). As per Schwartz (1977), once the problem has been identified by an individual a sense of guilt that they are responsible for taking action in unfavourable social circumstances such as social emergencies, natural disasters, and in this instance, globally identified environmental issues. For instance, Huda et al. (2018), highlight that learnings focusing on the enhancement of awareness regarding the requirement to adopt social responsibility and envision sustainability encourages actions and collaborations through the ascription of responsibility. Furthermore, in a study that analyses the barriers to the adoption of social responsibility accounting which would benefit the social and environmental performance, Khodamipour et al. (2023), state that the lack of public awareness is a main barrier to its implementation. The research by Dalvi-Esfahani et al. (2017), emphasize that the awareness of the consequences of adopting green behaviours has an impact of the intention to adopt such behaviours.

Moreover, research confirms this relationship as consciousness and awareness about an issue creates a need within a consumer to take necessary actions and adopt the required consumption behaviours (Kautish et al., 2020; Fauzi et al., 2022). As discussed previously, the concept of consumerism evolved to its current application in green consumerism as consumers were made aware of the environmental issues and the need to adopt consumption behaviours which minimize the damage to the environment (Riva et al., 2021). Therefore, as per the Norm Activation Model, it is suggested that,

> *Hypotheses 1:* The awareness of environmental problems has a significant impact on the ascription of responsibility towards green consumerism.

Ascription of Responsibility

From identifying that there is an obligation towards society and that they are able to assist in solving the issue, a sense of responsibility is triggered (Schwartz, 1977). This sense of responsibility is of two types whereas the individual may consider that they are capable of taking action to solve an issue and alternatively, because they feel responsible for creating the unfavorable situation and is motivated to make corrective measures (Schwartz, 1977). Additionally, a feeling of accountability, distinctive suitability to take action due to the possession of required skills or the appeal of drawing attention to the need and setting an example of the expected social behavior (Schwartz, 1977; John et al., 2021). Furthermore, in a study that explores the willingness of individuals to comply with certain requirements, Yazdanmehr and Wang (2017), state that the sense of responsibility heightens the personal norms held regarding the said behaviour. In studying the stockpiling behaviour of consumers during crises Elhoushy & Ribeiro (2023), mention that the sense of responsibility for the consequences of such behaviours results in activating the personal norms that lead towards responsible consumption behaviours. Moreover, Duong (2023), states that the ascription of responsibility is an internal stimulus that activates the personal norms towards adopting sustainable behaviours such as energy-saving behaviours.

Therefore, if a consumer feels responsible for the damage caused to the environment due to their consumption activities, then they are likely to take necessary initiatives (John et al., 2021). Hence, based on the Norm Activation Model it is suggested that,

> *Hypothesis 2:* The ascription of responsibility toward green consumerism has a significant impact on personal norms.

Personal Norms

As a consumer is made aware of an issue, it is more likely to lead towards stimulating their personal norms (Choi et al., 2015). Movement through the identification of an issue and the generation of a sense of responsibility activates a sense of moral obligation which thereafter builds towards a situational norm (Schwartz, 1977; Fauzi et al., 2022). These personal norms were discovered to be connected to altruistic behaviour such as the initiatives taken to reduce environmental pollution (Schwartz, 1977).

Empirical studies have identified norms to be one of the main predictors along with awareness in deciding behaviours as it shapes the perception of whether the behaviour would be satisfactory or unsatisfactory (Afroz et al., 2020). The findings by Wang & Chou (2020), suggest that personal norms have a direct impact on the attitudes that consumers hold towards the adoption of the purchase of fair-trade products. In comparing sustainable and apathetic consumers, it was discovered that the personal norms are at significantly higher levels for sustainable consumers (Park & Ha, 2011). Furthermore, personal norms play a significant moderating role in encouraging pro-environmental behaviours which are promoted through various advertisements (Jahari et al., 2022).

Hence, awareness, responsibility and personal norms have been identified as precedents which lead toward pro-social intentions and similar green consumption behaviours (Fauzi et al., 2022). It has been identified that green consumerism is a behaviour that arises with a sense of social responsibility within the consumer (Jaiswal, 2020). Therefore, as per the Norm Activation Model, it is suggested that,

> *Hypothesis 3:* Personal norms regarding pro-social intentions have a significant impact on green consumerism.

Price Sensitivity

Price has always been considered a sensitive subject among consumers as it is a significant factor that is considered when implementing a purchasing decision (Li et al., 2016; Bhutto et al., 2020). In a study by Sheoran & Kumar (2020), price sensitivity is identified as the leading barrier to sustainable behavior followed by lack of awareness, perceived social image, no sustainable practices among friends and family, unavailability, greenwashing, perception of no environmental impact and incompatibility with consumer needs.

Price sensitivity has been addressed in literature as a variable which is capable of affecting the consumers attitude towards the product as well as the personal and subjective norms towards

green consumption (Hassan et al., 2018; Moser, 2016). Adding to this is the high level of price sensitivity among the consumers of developing and under developed countries (Suanin, 2020). This is further proven through a study by the Boston Consulting Group which presented that there is a high price sensitivity for a majority of products from developing countries such as India when compared with countries such as Japan, France and Germany (Witschi et al., 2021).

In explaining the Norm Activation Model, it was identified that people tend to balance the costs of a moral action and its benefit, and thereafter if the costs are high, they would redefine the situation so as to neutralize their personal norms (Schwartz, 1977). This factor was evident in recent studies as research has identified goal-oriented and compulsive consumption behaviours or task-oriented and impulsive behaviour would lead towards enabling consumption behaviours (Kautish et al., 2020) and if these motivators are not powerful to change the traditional behaviours, then it may lead to neutralize any perceptions of adopting eco-friendly behaviours (Sharma et al., 2022). Therefore, this is an area which is in need of further study to confirm the affirmations which may impact the personal norms which are decidedly expected to impact consumer behaviours.

Henceforth, price sensitivity can be considered as a determinant of green purchasing behaviour and therefore green consumerism. If consumers deem the prices to be a restricting factor when engaging in green consumerism in terms of receiving value for money, then it is likely to discourage consumption even though the personal norms suggest that consumers have a responsibility towards the environment (Moser, 2016). However, consumers are willing to pay a premium price considering the fact that they have a strong sense of responsibility toward social and environmental well-being (Parsa et al., 2015). Even so, literature suggests that based on the context of the market the price sensitivity towards green consumption can differ whereas emerging markets are more likely to have high price sensitivity when developing green purchasing intentions (Bhutto et al., 2020). Therefore, based on the relationship between personal norms and pro-social behaviors of the Norm Activation Model and the literature on price sensitivity, it is suggested that,

> *Hypotheses 4:* Price sensitivity moderates the relationship between personal norms and green consumerism.

CONCEPTUAL FRAMEWORK

The pro-social behaviours and antecedents which lead to such behaviours are explained through the Norm Activation Model (Shwartz, 1977; Kautish et al., 2020; Sharma et al., 2022;

Fauzi et al., 2022). As per this model, the awareness regarding a problem raises a sense of responsibility which develops personal norms that decide the pro-social intentions and behaviours of individuals (Shwartz, 1977; Steg & Groot, 2010). Hence, based on this model the conceptual framework is developed for this study to explore the impact of problem awareness on creating responsibility which leads towards personal norms that result in green consumerism as demonstrated in Figure 2.

Moreover, as it was identified that individuals are likely to evade the pro-social actions developed through personal norms, this study has accommodated a price sensitivity which is considered to be a factor of importance that has been the subject of argument among researchers (Moser, 2015; Parsa et al., 2015; Bhutto et al., 2020). The literature identified that personal norms are required to be strong to overcome the barriers which may hinder the ability of an individual to engage in pro-social behaviours (Shwartz, 1977; Kautish et al., 2020; Sharma et al., 2022). As price sensitivity is a main consideration when making a purchase and because the study is undertaken in the context of a global inflationary situation (IMF, 2023), this study takes into consideration the moderating impact of price sensitivity.

Therefore, the conceptual framework demonstrated in Figure 2 for this study explores the impact that problem awareness would have on the ascription of responsibility towards environmental protection which develops personal norms leading towards green consumerism. Thereafter, the model is expanded to adopt the price sensitivity of consumers which would impact the relationship between personal norms and green consumerism.
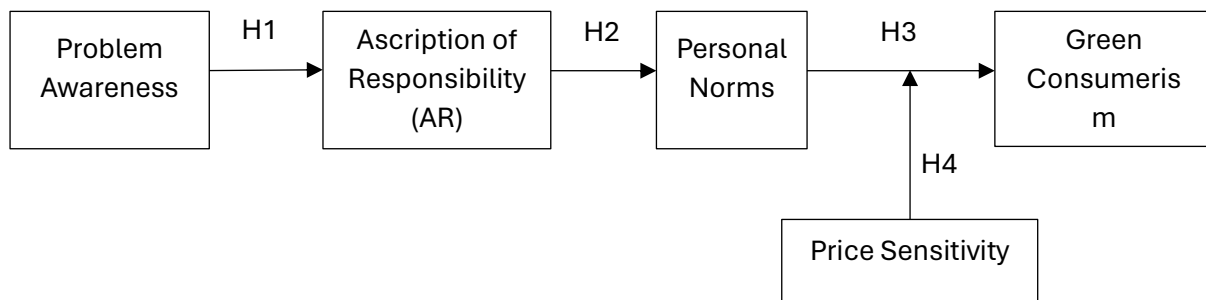
Figure 2: Proposed Conceptual Framework

THEORETICAL IMPLICATIONS

This paper takes into consideration a Norm Activation Model designed based on the original theory and has been tested previously. However, as the model is a novel design and there are

various models of norm activation applied throughout the literature, this study contributes to existing literature by confirming its validity and applicability.

Furthermore, this paper suggests testing the moderating impact of price sensitivity on the relationship between personal norms and green consumerism, which would test the motion that the actionability of personal norms can be disrupted by various factors. Hence, the Norm Activation Model is extended to include price sensitivity in moderating the execution of green consumerism.

The Norm Activation Model studies the pre-sets of pro-social behaviours and suggests several antecedents to such behaviour. The model is applied in this study under the context of green consumerism as it is considered to be a pro-social behaviour. Moreover, the knowledge of pro-social behaviours such as green consumerism in developing countries is limited in the available empirical literature. Hence, this study would generate insight from the context of green consumerism in a developing country.

MANAGERIAL IMPLICATIONS

The present research takes into consideration the cues that leads towards green consumerism in the form of problem awareness, ascription of obligations and personal norms. Each of these variables are considered to play a role in the decision-making process of customers who move towards adopting green consumerism. Hence, the findings of this research would provide knowledge on the realities of the path towards green consumerism which is a significant trend in the current market.

As the research addresses the cues to green consumerism, a deeper understanding of which areas to be prioritized when promoting green products and practices. For instance, when strategizing promotional campaigns, the managers would be able to better understand whether to raise awareness of the environmental problems, highlight the obligations of consumers towards the environment or promote various environmentally friendly behaviours addressing personal norms.

Moreover, as various groups of consumers are considered to have different responses towards price sensitivity, the findings of this study will contribute to businesses in clearly understanding the price sensitivity of consumer groups from developing countries. furthermore, as the available knowledge on the presence of green consumerism in developing countries is limited, the findings of this study will contribute to understanding the pricing strategies to be undertaken for these consumer segments.

Finally, this study is applicable in understanding the concept of green consumerism and its presence in developing countries as well as in strategizing the actions that need to be taken to address the demands of green consumerism in developing countries.

SOCIO-ECONOMIC IMPLICATIONS

In the current context, detrimental environmental disasters have become the focus of the states, firms as well as the society as a whole. Subsequently, state policies are designed and there are various organizations as well as social movements which attempt to take necessary actions to overcome these environmental challenges. Emanating from environmental disasters, events such as natural disasters, the increased spread of illnesses and the rise of pandemics such as Covid-19, changes in weather patterns and extreme weather conditions have not only demonstrated changes in the environment, but also caused changes in the functioning of economies as well as lifestyles of the modern society. Hence, more and more consumers are aware of the need to adopt environmentally friendly consumption behaviours leading to trends such as green consumerism. These factors lead to the need for economic actors to understand the concept of green consumerism in-depth so as to address the changes in consumption patterns and the need to update the current policies and economic transactions to accommodate the new trend in consumption.

This study presents the necessary understanding of green consumerism in addressing the factors that lead to green consumerism. Moreover, the study on green consumerism is provided based on the context of a developing country as it allows for the developing states to understand the policies that need to be brought forward to suit the current market structure. As developing countries are making an effort to align with the global environmental goals for the future period such as the Sustainable Development Goals (SDG), this study will present the pre-sets that need to be addressed. Hence, the insight on the price sensitivity to identify whether it's a barrier to the movement towards a green economy of a Developing country can be discerned through this study.

AREAS FOR FUTURE RESEARCH

As a concept paper, the model presented in this study has not been tested and therefore it is recommended for this model to be tested to generate factful findings on green consumerism and price sensitivity. Furthermore, as the level of green consumerism is likely to differ among

various types of products and industries such as organic production industries, fashion industry, tourism and hospitality industry, it is recommended for future studies to be undertaken separately for such industries. Moreover, this model can be tested in different contexts such as the context of developed countries and among different generations to identify whether there are differences among the norm activation for green consumerism and whether there are other unique barriers to the execution of such norms. This model can be further enhanced and expanded through combining with other theories such as the Theory of Planned Behaviour, Norm-Value Model, Social Identity Theory etc. in order to study the pro-social behaviors in-depth. Lastly, the applicability of modern marketing techniques in encouraging green consumerism can be tested through accommodating the Source Credibility Model to the Norm Activation Model.

CONCLUSION

It is evident based on empirical literature that green consumerism has risen over the past decade and the driving force of green consumerism has been the increased intensity of environmental catastrophes. This has brought the attention of scholars and practitioners alike towards the study of green consumerism. However, the functionality of green consumerism is understood to be varying between countries even though it is promoted as a pro-social initiative to protect the environment from the negative impact of consumption behaviours. As a theory synthesis, this paper presents a conceptual framework which can be applied to study the variables preceding green consumerism drawn from the perspective of Norm Activation Model. Moreover, as literature presents the high price sensitivity of consumers from developing countries, this variable is accommodated in the conceptual model to be studied as a disruptor of the personal norms to adopt green consumerism. Hence, this paper sets the path towards studying green consumerism in the context of a developing country and generates significant contributions for literature on green consumerism from the context of a developing country, which can be applied by practitioners for promotional purposes and strategy development.

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Vegetable farmers' perception towards the use of bio-pesticide: A case study on the Sooriyawewa Area, Sri Lanka

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ABSTRACT

Vegetables cultivated in Sri Lankan tropical conditions are subjected to severe pest and disease attacks, which lead to yield losses. Farmers adopt the extensive use of chemical pesticides to increase the quality and quantity of yield to gain economic advantages. However, chemical pesticide usage drives several environmental and health problems. Although bio-pesticides can be used as an alternative to chemical pesticides, farmers' perceptions and expectations of these bio-pesticides remain unknown. Therefore, this study aims to find out farmers' perceptions of bio-pesticide usage and provide appropriate marketing strategies. The present study was conducted in the Sooriyawewa Divisional Secretariat (DS) division in the Hambantota District, selecting 75 vegetable farmers randomly. Data were collected through a field survey by using pretested structured questionnaire and analyzed using Wilcoxon signed rank tests, chi square tests, and descriptive analysis. Results indicate that farmers are currently adapted to the use of chemical pesticides rather than bio-pesticides. Farmers' most preferred bio-pesticide attributes include formulation mode, application mode, price, convenience of usage, awareness about bio-pesticides, and their availability in the market. Moreover, farmers prefer to use liquid forms of bio-pesticide as foliar sprays. Farmers' perceived benefits of the bio-pesticides include safety to health, eco-friendliness, reducing production costs, increasing quality and quantity of vegetable yield, ease of handling, and increasing demand for vegetables. Therefore, improving the product attributes, reducing the market price, increasing the availability of the product, and increasing the extension services can increase the farmer's potential to use bio-pesticides. It is required to implement these strategies in collaboration with all the stakeholders involved in bio-pesticide production and usage. As this study found farmers' perceptions, further research needed to be focused on finding other stakeholders' perceptions of bio-pesticides.

Key words: Bio-pesticides, Vegetable Farmers, Perception, Marketing strategies

INTRODUCTION

The cultivation of vegetables has become a pivotal agribusiness in the agriculture sector. This sector provides a significant contribution to the country's economic prosperity while serving as a source of livelihood and promoting food security. The vegetable sector possesses a 12.6% contribution to the agri-output from the 10% contribution of the agriculture sector to the Sri

Lankan GDP in the second quarter of 2022 (Department of Census and Statistics, 2022). South and Southeast Asia produces 53.5 million t of vegetables annually on a land area of 4.65 million ha. However, in the tropics, insect pests and illnesses can severely reduce the output of these vegetables (Srinivasan, 2012). As vegetable production is severely affected by pests and diseases, farmers use pesticides in wider ranges. Since the start of the green revolution, pesticides have been employed to boost agricultural productivity while eliminating pests and diseases. According to the Pretty and Bharucha (2015), Around 5.7 billion pounds of pesticides are used worldwide each year for agricultural purposes. In the last 20 years, the annual consumption of pesticides has increased to 3.5 billion kg, representing a $45 billion business worldwide. The Sri Lankan current usage of synthetic pesticides is estimated at 1700 t of active chemicals, with a total cost of approximately Rs 4.6 billion annually (Rajapakse et al.2016).

Although these pesticides have a positive impact on increasing yield, quality of production, and saving labor and energy, they have a severe negative impact on the environment as well as the health of people. In fact, local farmers frequently overuse pesticides, combining different types and trying to apply them excessively in an effort to get better results, ignorant that doing so might increase toxicity levels and pose higher risks to the environment and human health (World Bank, 2013). According to the Helfrich et al. (2009), numerous terrestrial and aquatic animal and plant species have declined as a result of uncontrolled application of pesticides. A few endangered species' continued existence has also been under danger due to the excessive use of the pesticides. According to the WHO (2021), more than 250,000 people die each year from poisoning, with 150,000 of those fatalities due to pesticides. Moreover, there have been reports of immune suppression, hormone disruption, lowered intelligence, and reproductive abnormalities noted by community health clinics, as well as liver disorders, cancers frequently linked to long-term exposure to pesticides, lung disorders, and skin disorders linked to short-term exposure (Vinson et al., 2011). Therefore, the use of chemical pesticides should be replaced with less harmful, environmentally friendly, and healthy alternatives. Moreover, reducing over usage and educating farmers and other supply chain actors on the correct usage of pesticides can be done.

Further, the Sri Lankan Cabinet of Ministers approved restrictions and bans on fertilizer and agrochemicals such as insecticides and herbicide imports on April 27, 2021 (USDA, 2021). This encouraged farmers to use organic, healthy and locally available pesticides for cultivation purposes. It has been suggested that organic farming using bio-pesticides is a viable strategy

for developing integrated and organized farming systems that do not conflict with the advantages of the environment or the economy (Ataei et al., 2021). One of the most well-liked alternative techniques to generate safe, chemical-free food is the use of bio-pesticides (Heredia et al., 2022; Ataei et al., 2021). Biological pesticides, also referred to as bio-pesticides, are made from natural substances including bacteria, plants, animals, and specific minerals (US Environmental Protection Agency Pesticides, 2014). Bio-pesticides are gaining popularity around the world as a safer alternative to traditional chemical pesticides. However, currently, bio-pesticides account for only a small portion of the entire global agricultural pest control business, valued at about $3 billion globally (Olson 2015). The use of bio-fertilizer and bio-pesticides has been a traditional practice adopted by many rural farmers in Sri Lanka to boost soil fertility and all other soil qualities required by crops. Currently, the Sri Lankan pesticide market offers commercial formulations of biochemical pest control agents such as semiochemicals, hormones such ecdysteroids and juvenile hormones, natural plant regulators, and enzymes. However, only a small number of pesticides that meet the criteria for biological pesticides are available for sale in Sri Lanka (Rajapakse et al., 2016). Moreover, Sri Lankan vegetable farmers' perceptions, preferred attributes of bio-pesticides and addressing the concerns of farmers about promoting bio-pesticides remain unexplored yet. Therefore, this study aims to gain insights into the importance attached to different product attributes of bio-pesticides by farmers in order to introduce bio-pesticides as alternatives to chemical pesticides.

- o To examine the present status of pest management of vegetable cultivation in Sooriyawewa area.
- o To analyze the vegetable farmers perception towards the use of bio-pesticides.
- o To identify the farmer's preference towards different product attributes.
- o To developed appropriate marketing strategies to promote the bio-pesticide among vegetable farmers.

LITERATURE REVIEW

Pest management techniques in vegetable farming

Although there are many problems associated with vegetable cultivation, Ellis-Jones et al. (2008) stated that the main constraint is the pest problem in Africa. In South Asia and Southeast Asia, where the growing environments are tropical, vegetables are high-value commodities, and chemical pesticide use is extensive due to substantial yield losses caused by insect pests

and diseases (Srinivasan, 2012). In Sri Lanka, the plantation industry takes a more systematic approach to pest management, but horticultural sector faces more challenges because of the number of farmers, crops, and pests involved. Most of the farmers tend to adopt chemical pesticides due to their quick results, despite their negative impacts (Gerken et al., 2001). In Sri Lanka, the use of chemical pesticides has increased recently (Piyasena, 2009). In total, 28,640 metric tons of pesticides were imported into Sri Lanka between 2013 and 2017, with associated expenses of $225 (National Audit Office, 2019). Synthetic pesticides are mostly used to control pests, and in 2012, the total expense of pesticide imports was almost 0.1% of the country's gross domestic product. When pesticides are applied, the environment, consumers, the applicator, and the emergence of pesticide-resistant strains of the target species can all have serious effects (Rajapakse et al., 2016). Further, this causes developing secondary pests and causing health and economic losses to humans (Bandara & Sivayoganathan, 1996).

Bio-pesticides

Bio-pesticides are a type of pest control substance that is taken from living species such as plants, animals, and microorganisms. It can stop the growth and even eradicate the organisms that damage the plant (Sumartini, 2016). This bio-pesticide ensures environmentally friendly and economically beneficial farming systems with integrated and organized systems. Further, as bio-pesticide have less risk to people, animals and the environment, it is commonly accepted more healthier for environment than the chemical pesticides (Yazdanpanah et al., 2022; Neisi et al., 2020). They frequently have a much less impact on non-target species because they typically only affect the target pest and closely related organisms. The majority of microbial pesticides also have the benefit of reproducing in their target hosts and remaining in the environment due to horizontal as well as vertical transmission, which may result in long-term pest population suppression even if the application is not repeated (Sporleder and Lacey, 2013). In fact, bio-pesticides have the potential to be a useful tool in integrated pest management (IPM). However, there are a number of problems with the production and use of bio-pesticides in agriculture. The development of pesticide resistance in the target organism, dose adjustments, and the identification of new species are a few of the significant problems (Basnet et al., 2022). Challenges associated with the use and usage of bio-pesticides include the need to identify viable bio-pesticides, the expense of production, and the evaluation of the risks to humans and animals (Meshram et al., 2022). Moreover, the development and promotion of bio-pesticides in the majority of the developing world are hampered by a number of issues like the

need to standardize suitable application methods and develop sound formulations and the absence of registration processes (Srinivasan, 2012).

Types of bio-pesticides

Bio-pesticides come in a variety of forms, and they are grouped together based on the methods used for extraction and the molecules or compounds that were employed in their synthesis. They are GMO-Based Bio-pesticides, Microbial Bio-pesticides, and Biochemical Pesticides. (Ruiu, 2018). Microorganisms including bacteria, fungus, and viruses are the source of microbial pesticides. These organisms' active chemicals or substances target particular insect pests or pathogenic nematodes. Biochemical pesticides use naturally occurring substances that manage pests through harmless methods. Depending on how they use pheromones, plant extracts or oils, or naturally occurring insect growth regulators to control insect pest infestations, they are further categorized into various categories (Kumar et al., 2021). When genes are inserted into a plant (Genetically-modified crop), the result is the production of GMO-based biopesticides, which are then utilized to control pests by enabling the production of substances such as the Bt toxin. In the insect intestine, B. thuringiensis's delta endotoxins are divided into smaller toxins that cause cell enlargement, rupture, and ion leakage, which ultimately results in cell death (Gomiero, 2018).

Farmers' preference on bio-pesticides

Adhikari et al (2019) states that the perception of bio-pesticides' advantages for human and environmental health among every relevant group was quite favorable. However, numerous stakeholders must have training and familiarization with all bio-pesticides that are currently available in the market. In contrast, Constantine et al. (2020) study found that apparently about 10% of Kenya's small-scale farmers use licensed bio-pesticides, making their use relatively low. Farmers' perception of bio-pesticides as being ineffective or at least inferior to chemical pesticides is occasionally given as a cause for their poor utilization (Hashemi and Damalas, 2010). Furthermore, Constantine et al. (2020) noted that despite the high willingness to pay for bio-pesticide products, farmers still heavily rely on advice regarding which products to use. Bio-pesticides are also shown to have very low farmer adoption and applicability at the field level. This might be a result of the inherent characteristics of bio-pesticides, which demand greater care in treatment schedules than conventional pesticides, as well as the lack of promotional initiatives such as training farmers and extension personnel (Rajapakse et al.,

2016). As a result, it is crucial to improve the knowledge of those who give advice in addition to making sure that products are locally accessible at reasonable costs.

Marketing strategies of bio-pesticides

Developing stable formulation and delivery systems might accelerate the commercialization of bio-pesticide products. In developing nations, it's crucial to maintain low costs for farmers for a certain product's quality and availability (Koul, 2023). There has been a significant advancement in knowledge and technology about bio-pesticides in recent years in terms of development of formulations, and commercialization, but there are still a number of obstacles to overcome. The key challenges are creating stable formulations, supplying and storing them, standardizing acceptable delivery methods, regulating their use, advertising them, selling them, and creating a market for bio-pesticides that can compete with the market for chemical pesticides (Karamaouna et al., 2013). According to the study done by Sumarwan and Suharto (2023), it is anticipated that performance expectations, effort expectations, social influence, facilitating conditions, price value, perceived need, information publicity, and product promotion will all have an impact on non-users intentions to utilize commercial bio-pesticide products among rice farmers. These key aspects need to be considered when developing strategies for marketing.

Adhikari et al. (2019) argue that the major strategies for increasing the use of bio-pesticides among farmers are the implementation of plant clinics, the provision of duty-free systems for bio-pesticides, encouraging research to extend the shelf life of bio-pesticides, and mass production. Developing quality certification programs for bio-control agents, providing financial support for research and development, practical technological advances, improving rearing and handling practices, and promoting research and education on the use of bio-control agents are some of the crucial strategies for commercializing bio-pesticides. Additionally, it is necessary to provide customer services for location-specific biological control and clear instructions on how to utilize their products (Rajapakse et al., 2016).

METHODOLOGY OF THE STUDY

The present study was conducted in the *Sooriyawewa* Divisional Secretariat (DS) division in the Hambantota District, selecting five vegetable-cultivating Grama Niladari (GN) divisions purposefully. Data were collected through a questionnaire survey from 75 vegetable cultivating farmers selected from 5 GN divisions (*Weniwel ara, Bediganthota, Mahapelessa, Aliolu ara,* and *Viharagala*) through the random sampling method. The sampling framework was all

registered vegetable-growing farmers in these 5 GN divisions, under the Agrarian Service Center. A pre-test was conducted where questionnaires were distributed among 13 farmers in the "Aliolu ara" GN division to improve the content validity. IBM SPSS 0.25 software was used to analyze the data. Data analysis was carried out using Chi-Square, Wilcoxon Sign Rank test, and descriptive analysis. One sample Wilcoxon-signed ranked tests were used to analyze the perceptions, attitudes, and suggestions of the farmers.

RESULTS AND DISCUSSION

Demographic information of the respondents

The majority of farmers belong to the age category > 56 years old; it is 43%, and only 23% of farmers are below 45 years old. That implies the majority of vegetable farmers in this area are old, which may be because the younger generation is reluctant to engage in agricultural activities. When considering the educational background, most of the farmers (69%) have less than ordinary education, and 23% of farmers have an educational background up to the ordinary or advanced level. Further, most of the farmers engage in farming full-time (83%) and they inherited it from the previous generation (69%). The results imply that the majority of the farmers (69%) are receiving income more than Rs. 21000 (Table 1).

Table 01: Demographic information of the farmers

Factor	Category	Percentage (%)
Age	20-35	7
	36-45	16
	46-55	34
	>56	43
Education	No school	12
	Up to grade 5	13
	Grade 6 to 10	44
	O/L and A/l	23
	Other	8
Type of farming	Part time	17
	Full time	83
Descending from an agricultural family	By generation	69
	By marriage	17
	By relatives	0
	Newly started	14
	<5000	0

Monthly income	6000-20000	31
	>21000	69

Source: Survey data

Present status of pest management of vegetable cultivation

Farmers in the Sooriyawewa area are cultivating different types of vegetables, including snake gourds, ridged gourd, bitter gourd, ladies' fingers, brinjal, winged bean, Centella asiatica, string beans, long beans and pumpkin. These vegetables are associated with different pests, and farmers employ several pesticides to control them at present (Table 2).

Table 2: Types of vegetable cultivated, common pests and chemical pesticide

Type of vegetable	Name of pests	Trade name of pesticide
Snake gourd	Mite, fruit fly, stem borer, root borer, Leaf miner	Coragen , Azeta acetamiprid , piuru dan
Ridged gourd	Mite, fruit fly, stem borer, root borer, Leaf miner	Coragen , Azeta acetamiprid , piuru dan
Bitter gourd	Mite, fruit fly, stem borer, root borer, Leaf miner	Coragen , Azeta acetamiprid , piuru dan
Ladies' fingers	Scale insect, Red bug, pod borer	Virtako 40WG , Coragen
Brinjal	Red mite, stem borer, leaf miner	Admire, Provado, Lebasite, Coragen
Winged bean	Lower stage of insects	Virtako
centella asiatica	Lower stage of insects, lady bird (golden)	Virtako
String beans, Long Beans	Lower stage of insects, aphid, caterpillar, pod borer	Coragen, Virtako
Pumpkin	fruit fly, Lower stage of insects, melon fly	Success, Lagrobet

Farmers are using four main types of methods used to control pests, such as chemical pesticides, organic pesticides, bio-pesticides, and integrated pest management (IPM) methods. The usage of organic pesticides, bio-pesticides, and integrated pest management (IPM) methods for pest control either absent or at a low level. However, chemical pesticide usage is high (45.3%) and very high (38.7%) in the farming community (Figure 1). The use of chemicals has become very popular due to their high potential to kill pests and quick action against the pest population in a wide range of ecological conditions. Similar results have been discovered by past scholars. According to Constantine et al. (2020), smallholder farmers in Kenya employ a high proportion of conventional chemical pesticides and a low proportion of bio-pesticide

products in the survey areas. Chemical pesticide treatment is still the main technique used to protect crops against yield loss, despite the fact that chemical pesticides have a harmful impact on both human health and the environment (Sharma et al., 2019). In contrast, bio-pesticides have either less or no impact on living things while having good availability and working in a variety of ways (Thakur et al., 2020). Therefore, it is essential to use fewer chemical pesticides and more bio-pesticides (Ruiu, 2018)

Figure 1: Pest Management Methods
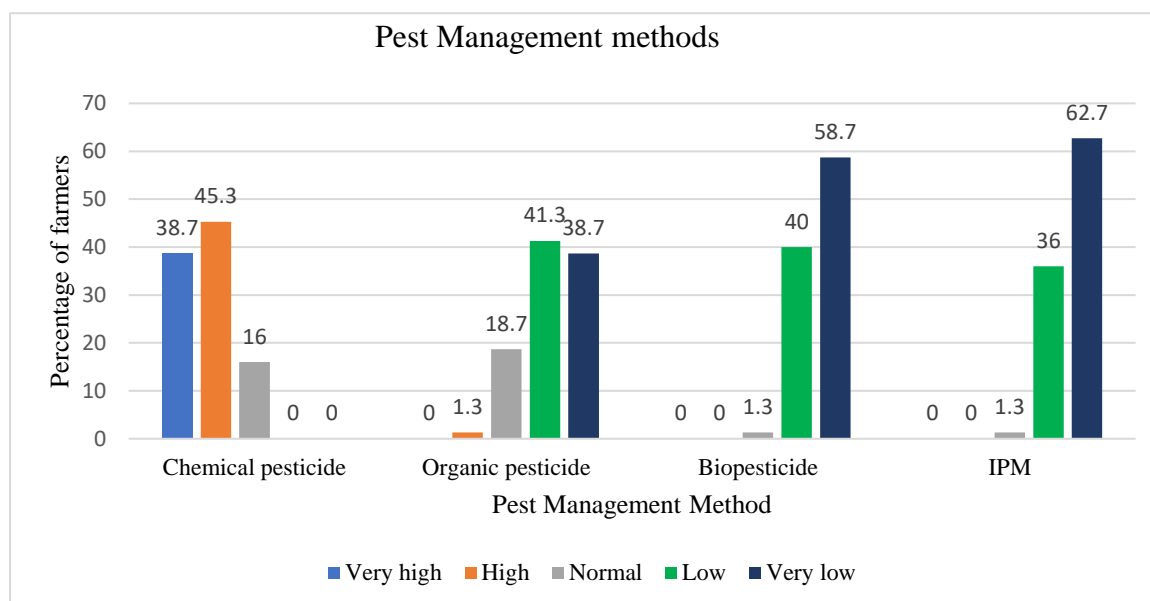
Source: Survey data

Table 3: Relationship between education level and the applying pest method.

Methods	Chi-Square value	*P* value *
Chemical Pesticide	6.693	0.570
Organic pesticide	11.848	0.458
Bio-pesticide	**19.368**	**0.013***
IPM	4.880	0.770

Source: Survey data

A chi-square test was applied to test the relationship between a farmer's education level and the utilization of different pest management methods. Accordingly, there is a significant (p=0.013) relationship between a farmer's education level and the application of bio-pesticides. This implies that educated farmers tend to use bio-pesticides to control pests. Therefore, there is potential to enhance bio-pesticide usage by providing better knowledge about bio-pesticides to farmers (Table 3).

Perception of bio- pesticide application

Results of the Wilcoxon-Sing rank test ($p < 0.05$) revealed that farmers perceived bio-pesticides as less effective compared to chemical fertilizers, and availability was an issue for them to buy the product. However, they perceived bio-pesticides as an alternative that had fewer health effects on humans (Table 4). In their survey done in Nepal, Adhikari et al. (2009) also discovered that the majority of the participants believed that bio-pesticides are safe for both human health and environmental health, and they believe that there is less availability on the market.

Table 4: Results of Wilcoxon-sing rank test; Perception of bio-pesticides

Statement	Mean value	Standardized test value	P value **
Practiced only for vegetables	2.65	0.725	0.468
Can't control pests without chemical	4.28	7.480	0.000
It is not easy to find bio-pesticides in market	3.04	4.860	0.000
Easy to obtain information	2.68	1.093	0.275
Bio-pesticides promote good health.	4.35	7.687	0.000
More profitable than using chemical pesticides.	2.45	-.574	0.566
I am happy to continues application of bio-pesticide	2.43	-.704	0.481

Wilcoxon sign rank test, **Significant at p < 0.05 level

Scale 1 = very low and 5 = very high

Source: Survey data

Attributes of bio-pesticides preferred by the vegetable farmers

The results of Wilcoxon sign rank test showed that formulation mode, application mode, price, convenience of usage, awareness about bio-pesticides, and their availability in the market are significant attributes ($p < 0.05$) of bio-pesticides when introducing it into the market. Mean value analysis revealed that farmers are highly considered all the above factors when selecting bio pesticides. (Table 5). All these attributes needed to be considered when developing marketing strategies.

Table 5: Attributes of bio-pesticides preferred by the vegetable farmers

Statement	Mean value	Test value *	*P* value **
Formulation mode	4.11	7.273	0.000
Application mode	4.08	7.053	0.000
Reduce product Price	4.08	7.169	0.000
Convenience of usage	4.07	7.118	0.000
Awareness about bio pesticides	4.05	7.292	0.000
Availability in the market	4.16	7.643	0.000

Wilcoxon sign rank test, **Significant at p < 0.05 level

Scale: 1 = very low and 5 = very high

Source: Survey data

Further, the farmer's preference level for formulation mode and application mode is identified, where the majority of the farmers (99%) prefer liquid form and all the farmers (100%) prefer applying it as a foliar spray (Table 6 and 7).

Table 6: Farmer's preference level of Formulation mode

	Very high (%)	High (%)	Normal (%)	Low (%)
Dry	99	1	0	0
Liquid	40	23	20	17

Source: Survey data

Table 7: Farmer's preference level of Application mode

	Very high (%)	High (%)	Normal (%)	Low (%)
Foliar spray	100	0	0	0
Seed treatment	16	64	20	0
Soil treatment	31	45	24	0
Post-harvest	0	19	76	5

Source: Survey data

Additionally, this study found farmers' attitudes toward the perceived benefits of bio-pesticides. Accordingly, safety to health, eco-friendliness, increasing quality and quantity of vegetable yield, ease of handling, and increasing demand for vegetables are significant (p < 0.05) benefits of using bio-pesticides (Table 8). This implies that farmers agree with the stated benefits of the bio-pesticides. According to Coulibaly et al. (2008), factors such as maintained human health,

bio-pesticide ease of application, and good yield from bio-pesticides were identified in surveys in Benin that affected farmers' willingness to pay for a new bio-pesticide for vegetables.

Table 8: Farmers' attitudes toward the perceived benefits of bio-pesticides

Statement	Mean value	Standardized Test value	*P* value **
Safe to health	4.11	7.273	0.000
Eco friendly	4.12	7.327	0.000
Have a good Yield	4.11	7.273	0.000
Quality of yield	4.07	7.196	0.000
Easy handle	4.16	7.317	0.000
High demand for vegetable	4.11	7.273	0.000

Wilcoxon sign rank test, **Significant at p < 0.05 level

Source: Survey data

Appropriate marketing strategies

The main marketing pillars, such as product, price, place, and promotion, were considered to provide marketing strategies. Under the product factor, there are about seven suggestions, including increasing the product quality, increasing the types of products, increasing the durability, increasing the efficiency of the product, applying with chemical pesticides, and reducing the negative impact and harmful effects of familiar pests. The majority of the farmers agreed with them. Further, reducing the market price, increasing the availability of the product, and increasing the extension services through farmer organizations according to price, place, and promotion factors were suggested, and most farmers agreed with those suggestions (Table 9).

Table 9: Marketing strategies

Considerable factor	Suggestions	Mean value
Product	Increase product quality	4.08
	Increase the type of products	3.00
	Increase the durability	4.19
	Increase the efficiency of the product	4.24
	Apply with chemical pesticide	2.76
	Reduce the negative impact and harmful effect for familiar pests	4.35
Price	Reduce the market price	3.04

Place	Increase the availability of the product	4.07
Promotion	Increase the extension services	4.39

Scale: 1 = strongly disagreed and 5 = strongly agreed

Source: Survey data

CONCLUSION

Most farmers are currently adapting to the use of chemical pesticides rather than bio-pesticides, even though chemical pesticides can harm human health as well as the environment. Although farmers perceive that bio-pesticides promote good health, they still hold the belief that pests are unable to be controlled without chemicals, and it is not easy to find bio-pesticides in the market. Therefore, farmers are aware of the benefits of bio-pesticides. However, there are some factors, such as availability, price, and effectiveness that prevent them from using it. Farmers will consider attributes such as formulation mode, application mode, price, convenience of usage, awareness about bio-pesticides and their availability in the market when introducing bio-pesticides to the market. Further, farmers prefer to use liquid forms of bio-pesticide as foliar spray. Farmers' perceived benefits of the bio-pesticides include safety to health, eco-friendliness, increasing quality and quantity of vegetable yield, ease of handling, and increasing demand for vegetables. Therefore, improving the product attributes, reducing the market price, increasing the availability of the product, and increasing the extension services can increase the farmer's potential to use bio-pesticides.

Required actions should be taken to implement these strategies in collaboration with all the stakeholders involved in bio-pesticide production and usage, and it is important to establish careful planning and collaboration among farmers, bio-pesticides manufacturers, government agencies, agriculture extension services, and other relevant parties. Establishing clear communication channels is required to prepare a platform to raise the voice of farmers' requirements. This can be done through farmer associations, conducting regular surveys and feedback, and the selection of farmer representatives, which can help transmit farmer demand. Moreover, information campaigns, mobile apps, workshops, and organizational meetings can be effectively used to promote dialogue and network building. These methods transmit relevant information to bio-pesticides producers, and they should adhere to farmers' requirements and demand while making efforts to reduce product costs, offer competitive prices, increase their availability in the market, and conduct proper marketing campaigns. On the other hand,

agriculture extension services and government bodies should conduct educational programs, raise awareness about, and provide the required training to adopt bio-pesticides in order to eliminate their misperceptions.

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Consumers' Intention to Use Digital Shopping Operations Post COVID-19 Pandemic: Consumers' Value Perspective

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ABSTRACT

Through the lens of the value adoption model (VAM), this study examines the consumers' perceived value and intentions to adopt digital shopping post covid. The hypothesized model is tested using structural equation modelling with the responses of 325 Indian consumers. The purposive sampling technique was used to reach out to individuals who had made an online purchase in the last six months. This work indicates the importance of Perceived technological innovativeness and Perceived credibility as the important predictors of consumers' intentions to use digital shopping. Moreover, Perceived value is also found to be one of the most important predictors of digital shopping. The study identifies the Risk of Covid 19 as a moderating variable, which has a favourable significant influence on the behavioural intentions to adopt Digital shopping. This study has revealed that the existence of value perceptions is a major impediment to customers' intention to continue online shopping. This study sheds light on drawing upon the trust-based factor called perceived credibility, which was the limiting factor in Technology Adoption Model (TAM) theory. The study's findings will help retailers and marketers to attract more consumers with the power of technological-based digital shopping.

Keywords: Digital shopping, Perceived technology innovativeness, Credibility, Perceived value, Covid 19

INTRODUCTION

The Covid 19 health problem has a significant effect on personal, social, and commercial relationships. It is in stark contrast to the technological disruption, economic recession, or other difficulties that leaders have encountered. Each business and sector will face unique problems. Nearly half (47.2 percent) of US internet users report completely avoiding shopping centres and malls at the moment. If the epidemic worsens in the future years, nearly three-quarters

(74.6 percent) indicated they will avoid shopping malls entirely. 32.7 percent of respondents indicated that they avoided physical stores, and more than half indicated that they will continue to do so if Covid 19 spreads (Coresight Research, 2020). There has been a significant increase in CPG staples' sales. Oat milk sales increased by 305.5 percent in the week ending February 22 according to Nielsen statistics. Dried beans, energy drinks, and pretzels all saw increases in sales, but water only had a 5.1 percent increase. Medical mask sales increased by 78 percent in the first week of a four-week period ending on February 22 compared to the same period last year. By the end of week 4, sales had increased by a whopping 319 percent(Nielsen, 2020). The market for online grocery shopping in India is anticipated to reach a value of INR 1310.93 billion by the year 2026, expanding at a compound annual growth rate (CAGR) of around 68.66 percent (ResearchAndMarkets.com's, 2022). There is 76% increase in the demand for the online groceries. A large section of people is working are from their homes. Using online grocery platforms to buy even the perishables such as milk, eggs and bread. Schemes and offers such as express delivery, contactless delivery, and digitally integrated payments for safe consumption.

The COVID 19 pandemic is one of the most unpredictable global health crises in recent memory. It has irreversibly shaken the planet in several ways. As of May 23rd, 2022, the WHO had confirmed 511 million cases of COVID-19, resulting in 6 million deaths. Vaccine doses totalling 11,532 million have been provided as of 30 April 2022 (WHO, 2022). But the pandemic has affected almost everyone's life in one or other aspect. The coronavirus has a big influence on the patterns that emerge all over the planet. Every sector has experienced a rapid transition in recent years. It has changed human behaviour as well as the character of business and trade, and it has even disrupted the conventional way of life. People get terrified as a result, and as a direct consequence, they avoid having contact with one another.

Figure 1. Confirmed Cases Region Wise (WHO, 2022)
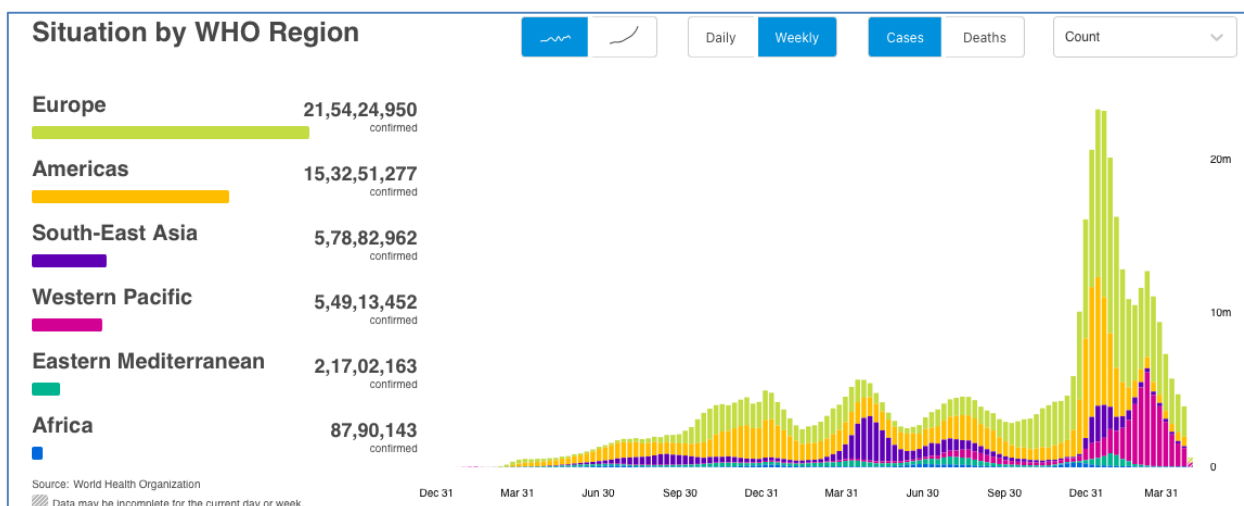
The effect of COVID 19 on Market and Consumers

The COVID 19 has a significant role in decelerating the market as well as accelerating the digital market. Lockdowns of various types have influenced our lifestyle in the months after COVID-19 emerged on the scene. These shutdowns, along with a desire to avoid intimate interpersonal interaction with strangers, have resulted in a massive increase in online grocery shopping (Stolp, 2020). The effects of the Coronavirus are variable, depending on the kind of product; this suggests that the COVID-19 contamination has a significant impact on certain things, whilst it has a less significant impact on others (Andrienko, 2020). It played a significant role in improvising the digitalization. According to projections made by Emarketer, the total value of all transactions conducted online will reach $908 billion in the year 2025. This will be the case even when the epidemic has passed, in-store shopping has resumed, and a greater proportion of consumer spending goes back to services such as travelling and seeing live performances. People are staying home to escape the pandemic, keeping their social distance, doing their shopping online from the comfort of their own homes, and working remotely. For example, the number of online grocery orders placed through Walmart's supermarket has surged by 74% (Bhatti et al., 2020). The Digital India programme has resulted in greater use of the internet and smartphones. Furthermore, internet shopping became increasingly prevalent during the Covid-19 outbreak. E-commerce in India has the potential to reach US$ 111.40 billion by 2025, with 220 million online buyers. Furthermore, online retail buying is predicted to grow by 10.7 percent by 2024 (IBEF, 2022). In addition, the use of social media has increased during this time period, and both Facebook and Google have improved their

platforms' capacities to connect more users during a single session. For example, Facebook has introduced a messenger for doing business online that can be used by multiple people at once, which is a direct competitor to Zoom. Top ten online shopping websites in pandemic is as shown below.

Table 1: Top Ten Online Shopping Websites in the Pandemic

Sl no.	Retail website	Millions (M) gained
1	Amazon.com	4059M
2	Ebay.com	1227M
3	Rakuten.co.jp	804M
4	Samsung.com	648M
5	Walmart.com	614M
6	Appel.com	562M
7	Aliexpress.com	532M
8	Esty.com	395M
9	Homedepot.com	292M
10	Allegro.pl	272M

(Andrienko, 2020)

Since it becomes ever more apparent how contagious COVID-19 is, some shoppers have posed concerns regarding the safety of getting their online purchases. And shipping circumstances create a difficult environment for COVID-19 as well, so it's not likely individuals will be exposed through the package alone, though.

Customers Transition to Adapt Online Digital Shopping (DS)

As more people get comfortable purchasing online, the popularity of shopping online increases (Goldman, 2021). Individuals get a pleasure from purchasing anything, a tingling of excitement, which is really the brain generating dopamine. During the lockdown, people were forced to rely more and more on the internet to acquire their doses of retail dopamine. During this time, the internet was the only source available. The actual amount spent on online purchases in 2020 was over 4 trillion dollars, which is almost a third more than the amount spent the previous year. Shopping is currently going through a significant transition, and the

pandemic has intensified the process that is taking place. Retailers are being obliged to evolve and adapt, but the extent to which customers are willing to continue using Digital Shopping (DS) remains an open question.

Objective of this Study

The objective of this study is to examine the consumers intentions to usage of Digital shopping, post covid scenario. The present work examines the effect of Perceived usefulness, Perceived ease of use, Perceived technological innovativeness and perceived credibility on Continued intentions to usage of Digital shopping (DS). It then examines the mediating effects of Perceived value and moderating effects of Risk of Covid 19 on Continued intentions to usage of DS. Here the current study postulates to analyse the behaviour of consumers in usage of DS with the accelerated impacts created by Covid 19 scenario and also advancements in digitalisation. Thus, this study adds to the literature by analysing the critical aspects in the adoption and maintenance of online shopping in the Indian context.

LITERATURE REVIEW

Digitalization in Shopping

 Customized services come at a premium price. Subsequently industrial revolution has brought bringing with it vast factories, assembly lines, and automated processes. Mass production of an item can bring down its price, but it also makes that object less customizable and makes it more difficult to distribute. It was necessary to convey goods from the makers to what was essentially a small warehouse located close to the houses of the consumers, which was almost a shop. Fast forward to the time when out-of-town retail complexes and superstores first started popping up. And, while these possibilities have grown in number, everything has altered as a result of the introduction of the internet (Droesch, 2021).

China's rise to the top of the e-commerce world has been aided in no little part by the country's pioneering efforts in livestreaming retail sales.It is forecast that in 2021, half of everything bought in China will be bought online. The vast majority of consumers now favour buying online over going to traditional stores because of the greater number of available options and more affordable prices. Internet marketing is highly developed the scale of the market over two trillion dollars' worth, of consumption online. A concept called as single day has been developed by them, wherein they accomplish billions of worth US $'s millions of payment

transactions in an hour. Alibaba jd.com is dominated by three massive corporations, which account for over 80% of the market (Kshetri, 2016). Another intriguing aspect of this industry is that, unlike Google search, Facebook in social networking, Amazon in E-commerce, and PayPal in payments, they have combined all of these services under a giant business (Moore & Tambini, 2018).

Figure 2: Retail E- commerce sales, 2020-2025, $ trillion (Source: eMarketer)
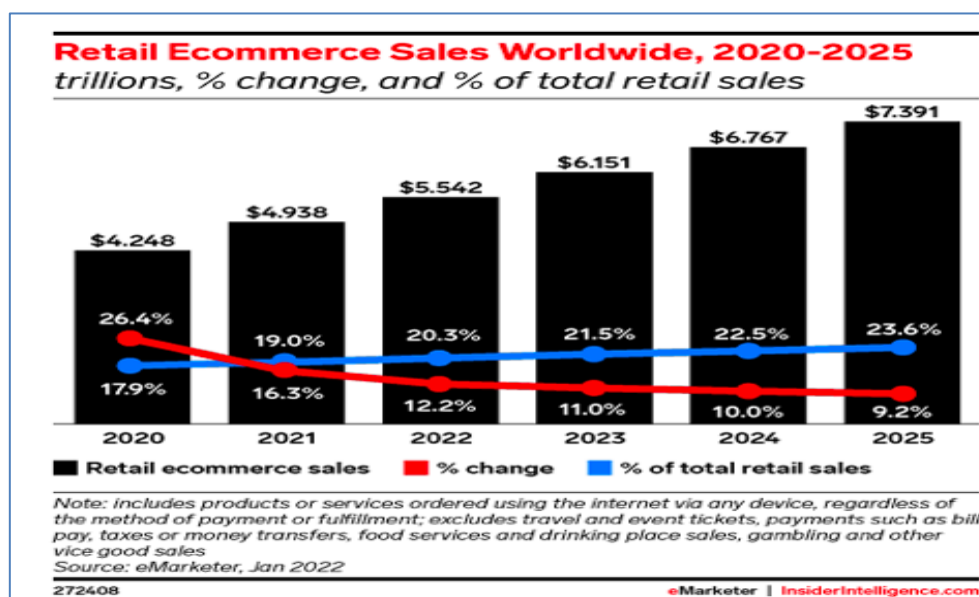
These mega app ecosystems provide merchants with in-depth knowledge of what their customers like, desire, and order. Of course, all of this necessitates a massive quantity of data. And the Chinese are far more prepared to enable data tracking of everything they do than many individuals who have a better understanding of customer expectations. Retailers may increase their profit margins while decreasing waste. Some Chinese companies are even leveraging people's digital traces to influence how things are made, a practise known as consumer to manufacturer, which effectively removes brands from the game. As a result, factories begin engaging directly with consumers and, of course, may stretch their industrial capacity. They relaxed on their laurels seeing the internet as secondary to the store, which may not have helped probably since they had invested a lot of money into shop location. For instance, the United States of America has 2.2 square metres of retail space dedicated to each and every one of its citizens (Andrienko, 2020; Droesch, 2021).

Technological Innovations in Online Shopping - A Revolution

Nike, for example, has opted to solely sell online on the Nike website. Then it devised methods for keeping a far closer eye on its clients(Matthew Stern, 2022). For example, Nike's Loyalty system allows the company to construct consumer profiles for its 250 million members, 70 million of whom joined during the pandemic. Nike's app provides a customised experience in exchange for extensive information on the user's habits. Nike can observe your location and use that information when deciding where to locate their retail locations, which helps them develop better products. Nike's applications enable customers build their own sneakers, which helps the company learn about their preferred colour schemes and shoe styles. Customers may even get a heads-up whenever it's time to buy a new pair of shoes by tracking how far they run. Nike and its consumers are able to form a more personal relationship as a result(Matthew Stern, 2022).

Direct-to-consumer selling became more prevalent as online shopping became more commonplace. Anyone may set up an online store using Shopify, an e-commerce platform. In the first six weeks of the pandemic, the number of new stores established surged by even more over 60% compared to the previous six weeks. With the increasing importance of online purchasing, it is important to research the customers' transition to online shopping(Bhatti et al., 2020). As a result, in this study, we examined the many antecedents that influence customers' shift to online buying.

THEORETICAL FRAMEWORK AND HYPOTHESIS DEVELOPMENT

Theory Underpinnings

The research proposed a conceptual research framework based on the Technology Adoption Model (TAM) and Value based adoption model (VAM), with additional constructs of Perceived technological innovativeness, Perceived credibility, and Perceived value, which aids in understanding customers' adoption of Digital Shopping (DS) in order to experience the innovativeness of online shopping technology solutions.

In the world of technology adoption, TAM has received a lot of attention. In a study of information system acceptance and utilisation works, (Venkatesh & Davis, 2000) stated that TAM is the most prominent paradigm in research. TAM is frequently utilised, and extended TAM has been employed in numerous recent studies, proving its utility (Haider et al., 2018; K.

J. Kim & Shin, 2015; Riquelme & Rios, 2010; Tarhini et al., 2014). TAM has already been employed as a foundation model in various studies (Govender & Sihlali, 2014; Sánchez-Prieto et al., 2017; Wahid, 2007). TAM was also used to explain the role of information technology in a variety of contexts, such as knowledge sharing systems in virtual communities (Noor et al., 2005), 3 Dimensional virtual world (Huang et al., 2013), mobile technology adoption (Ooi & Tan, 2016), virtual reality in medical education (Huang et al., 2016) and big data tool adoption (Okcu et al., 2019). In addition to variables of TAM, Value perspective is extended in this theory, with the help of VAM by analysing the impact of Perceived value construct. (H. W. Kim et al., 2007), developed the VAM idea while researching consumer acceptance of mobile Internet. They said that the VAM saw adoption from the consumer's standpoint rather than the technology user's perspective. The VAM is based on the notion of perceived value, which is described as "the consumer's total judgement of a product's (or service's) utility based on perceptions of what is received and what is offered" (Zeithaml, 1988). The VAM's point of view is how customers optimise their perceived value. It implies that if individuals perceive a large pay-out, they will engage in a given action. The VAM, which was introduced by (H. W. Kim et al., 2007)has been successfully used for evaluating individual behaviour, primarily in the fields of Internet shopping (Gupta & Kim, 2010), tourism (Chung & Koo, 2015), and hospitality (S. H. Kim et al., 2019), among others. The VAM was used in a recent study by (Lau et al., 2019), to assess the adoption of augmented reality (AR) technology in the context of hospitality and tourism. In addition, a recent research by (Vishwakarma et al., 2020), employed VAM to understand travellers' acceptance of virtual reality from the standpoint of consumers. The authors considered the Perceived technological innovativeness, Perceived credibility, and Perceived value are useful elements and significant predictors of continued intentions to use Digital shopping.

Conceptual Framework

Figure 3: Proposed Research Model
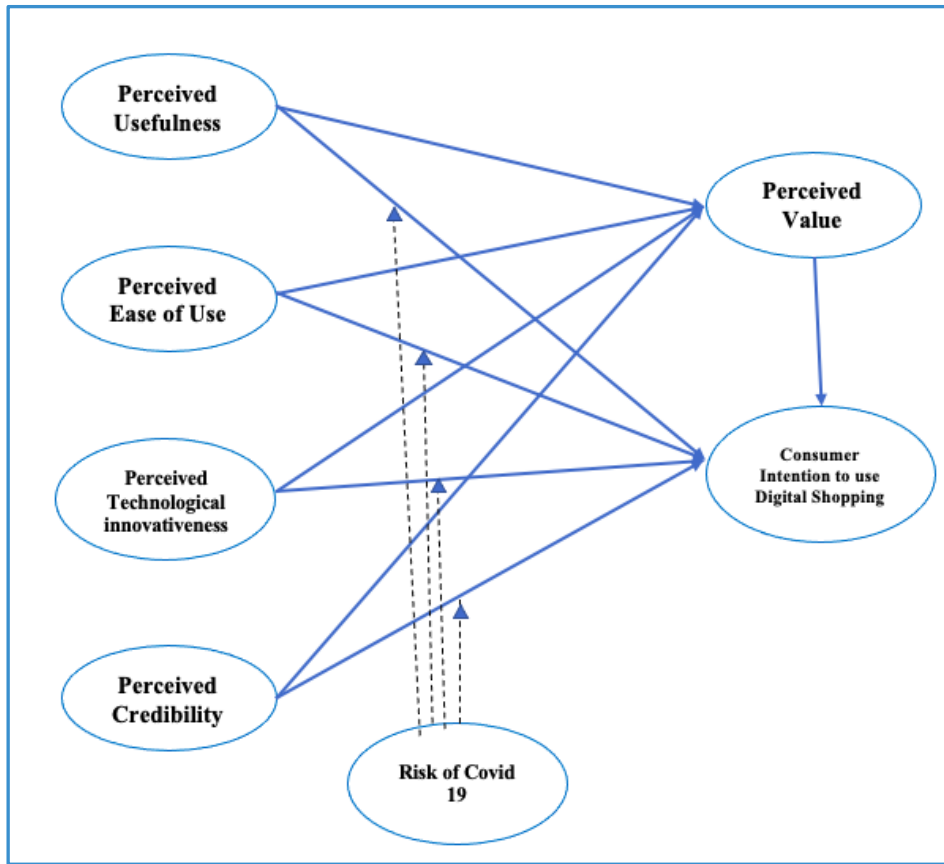
Measures

The following table 2, indicates the constructs used in the model, their operational definitions and items used in each construct are tabulated.

Table 2: Details of Constructs and Items used

Constructs	Operational Definition	Items	Scale adapted from References
Perceived Usefulness (PU)	Users perception of the expected benefits of Digital shopping Use.	1. Digital Shopping is useful mode of purchase. 2. Using Digital Shopping, makes handling of purchase activity easier.	Adapted from Davis et al., 1989 perceived usefulness scale.

		3. Digital shopping allow for a faster usage of mobile applications (e.g., ticket purchase) 4. Digital shopping help to choose suitable and better product for me.	
Perceived Ease of Use (PEU)	Users feels that using digital shopping is effortless.	1. It is easy to become skilful at using digital mode of shopping. 2. The interaction with digital shopping services is clear and understandable. 3. Digital shopping will help to choose product more conveniently.	Adapted from Davis et al., 1989 Perceived ease of use scale.
Perceived Technological Innovativeness (PTI)	The extent to which the customer perceives the newness in the technology, its creativity in using digital shopping.	1. I had personalized shopping experiences with AR , VR technologies in Digital shopping. (AR: Augmented Reality, VR: Virtual Reality). 2. I felt that I was actually viewing the product with presence of Visual cues in digital shopping. 3. Prescence of Auditory cues (Music/ Audio) in digital shopping enhances my experience of shopping. 4. Prescence of Interactive Content (Chat bot) gives me better information to choose the product in digital shopping.	Adapted from (Lowe & Alpert, 2015)

Perceived credibility (PC)	The degree to which an individual feels that digital purchasing poses no security or privacy risks.	1. When using digital shopping, I think my information is kept private. 2. I feel my transactions are safe when I purchase online. 3. I believe my privacy would not be divulged.	Adapted from (Wang et al., 2003).
Perceived Value (PV)	The consumers overall assessment of the utility of digital shopping based on the perceptions of what is given and received.	1. Compared to the time I need to spend, the use of digital shopping is worthwhile to me. 2. The price I pay offers better value in digital shopping. 3. Overall digital shopping delivers better value to me.	Adapted from(Zeithaml, 1988).
Risk of Covid 19 (ROC)	The extent to which user perceives the fear of Covid to be risky.	1. I feel safe using digital mode of online shopping. 2. Use of digital mode shopping help to reduce social contact / physical contact with humans.	Adapted from (Kaplan et al., 1974)
Customer Intention (CI)	The extent to which customer intends to use digital shopping.	1. Given the opportunity I will use Digital shopping. 2. I am likely to use digital shopping in near future. 3. I intend to use Digital mode of shopping even after Covid 19.	Adapted from (Davis, 1989)

Hypothesis Development

Linking Perceived Usefulness to Continued intention to use Digital Shopping

Perceived usefulness (PU) is introduced by (Davis, 1989), is defined as "the extent to which an individual feels that adopting a specific system will be comfortable and useful". One of the

most important aspects in determining intents to utilise Internet technologies was shown to be perceived usefulness (H. W. Kim et al., 2007). Furthermore, the evaluation of "perceived usefulness" has an impact on the perceived value of the customer's intention to embrace emerging innovations (Shaw & Kesharwani, 2019). Regardless of the study contexts, it is widely accepted that the PU of any given system is a significant component in shaping the behavioural decisions made by customers when they are shopping (Chen et al., 2018). PU was substantially connected to continuing intention in the majority of the research that were conducted in the context of e-commerce (Chou et al., 2010; D. J. Kim et al., 2009; G. Kumar & Shenbagaraman, 2017). In the case of m-commerce, (Hung et al., 2007) and (Lin & Shih, 2008) hypothesised that PU is a key antecedent of continuation intention.

H1a: Perceived usefulness of Digital shopping has positive impact on Continued intentions to usage of DS.

H1b: The relationship between Perceived usefulness and Continued intentions to use DS is mediated by Perceived value.

H1c: The relationship between Perceived usefulness and Continued intentions to use DS is moderated by Risk of Covid 19.

Linking Perceived Ease of Use to Continued intention to use Digital Shopping

The Technology acceptance model (TAM), which is designed to explain the consumer adoption of technological innovations, consists of three dimensions: perceived usefulness (PU), the perceived ease of use (PEOU), and intention to use. The previous research, which was carried out in a variety of settings, has shown that PU and PEOU do, in fact, have an effect on the process of adopting new technologies(Chen et al., 2018; Hew et al., 2015; S. J. Kim et al., 2015; Wallace & Sheetz, 2014). Regardless of the study contexts, it is widely accepted that the PEOU of any given system is a significant component in shaping the behavioural decisions made by customers when they are shopping (Chen et al., 2018). (S. Kumar & Maan, 2014) in their research on Current Situation and Future Prospects for Online Shopping: An Interactive Analysis found that shopping online is a fun and easy method to find things that are hard to buy, to make purchases and uncover deals, but that there is also some amount of risk involved. The level of complexity of any given system is what determines this antecedent(Sadia, 2011). The ease with which a system may be utilised is directly correlated to the degree to which a consumer is interested in making use of that system. PEOU has been discovered to have an

explicit impact on post-adoption usage, despite the fact that its role in promoting continuous intention to use is less significant than that of PU(G. Kumar & Shenbagaraman, 2017). If the consumer can take the appropriate safety measures, buying online can be a pleasant and stress-free experience.

H2a: Perceived ease of use of Digital shopping has positive impact on Continued intentions to usage of DS.

H2b: The relationship between Perceived ease of use and Continued intentions to use DS is mediated by Perceived Value.

H2c: The relationship between Perceived ease of use and Continued intentions to use DS is moderated by Risk of Covid 19

Linking Perceived Technological Innovativeness to Continued Intention to Use Digital Shopping

Thakur & Srivastava, (2015) conducted research on consumer purchasing patterns in relation to online shopping, and then analysed the features of the purchasing patterns of online consumers. The innovativeness variable is a worldwide measure that represents the degree to which customers are prepared to take chances and experiment with new ways of doing things. It is a variable that can be measured in a variety of contexts. The research looked into how innovative internet shopping is in comparison to traditional shopping methods from the perspective of customer purchasing patterns. According to the findings of the research conducted by (Ruiz-Alba et al., 2021), the degree to which a company is inventive in its use of technology is a critical factor in determining whether or not consumers will embrace the most recent technical developments in online purchasing. The combination of virtual and augmented reality with enhanced pictures, a broader range of viewpoints, and condensed video formats. When it comes to online shopping, it's clear that the content is extremely crucial, and it seems that technology has now caught up to the point where it can provide customers with what they want and need to view before making a purchase(Goldman, 2021). These outcomes, confirmed by other research, claims that perceived technical innovativeness has a magically substantial effect in digital shopping. The following hypotheses are thus investigated within the scope of this study.

H3a: Perceived technological innovativeness has a positive impact on Continued intentions to usage of DS.

H3b: The relationship between Perceived technological innovativeness and Continued intention to use DS is mediated by Perceived Value.

H3c: The relationship between Perceived technological innovativeness and Continued intention to use DS is moderated by Risk of Covid 19.

Linking Perceived Credibility to Continued intention to Use Digital Shopping

Ganguly et al., (2009), developed a conceptual model in which they identified various aspects of website characteristics such as information design, visual design, navigation design, communication, social presence, privacy, and security as antecedents of online trust and their effect on perceived risk and purchase intention. Specifically, the authors focused on the relationship between these antecedents and the level of trust that users have in a website. Many studies focus their attention on various aspects of consumers, including their levels of trust and their intentions to make purchases. According to the findings of the study conducted by (Akroush & Al-Debei, 2015), trust may be predicted by perceptions of the reputation of online shopping websites and the advantage they have over their competitors. Also, (Kaur & Khanam Quareshi, 2015) came to the conclusion that trust was affected by a variety of issues during the process of online purchasing. These elements included issues over quality and safety, to name just a few. Therefore, it can be concluded that the trust-based element perceived credibility has an effect on the frequency with which online buying is done. As a result, the following hypotheses have been established to test within the scope of this research.

H4a: Perceived Credibility has positive impact on Continued intentions to usage of DS.
H4b: The relationship between Perceived Credibility and Continued intentions to usage of DS is mediated by Perceived Value.
H4c: The relationship between Perceived Credibility and Continued intentions to usage of DS is moderated by Risk of Covid 19.

Linking Perceived Value to Continued intention to use Digital Shopping

The perceived value of an online store's image in the context of an e - commerce setting has been shown to influence both planned and unplanned purchasing behaviour, according to several empirical studies(Yin & Qiu, 2021). When customers just focus on the obvious benefits that the product offers, perceived value will play a part in the decision-making process. It will also encourage consumers to pick items in accordance with their own requirements when they

are engaging in online shopping. The value that is brought about by the convenience of technology and the enhancement of shopping efficiency can lead to increased levels of customer pleasure, a heightened desire for consumption, and increased rates of re-consumption (Bag et al., 2021). (Y.-Y. Wang et al., 2018) observed that the effect of advantages and sacrifices on the construction of perceived value is what further leads to the intention of users to acquire a GPS navigation app. They discovered that a user's perception of value had an important role in the uptake of GPS navigation apps. (Yu et al., 2019) conducted research that was published not too long ago in which they discussed the importance of perceived value in the process of adopting an online services and discovered that it was a favourable determinant of behavioural intention. Hence Perceived Value is observed to be most influencing factor on intentions to usage of a technology, thereby following hypothesis is examined in this study.

H5: Perceived Value has positive impact on Continued intentions to usage of DS.

METHODOLOGY

Measures: The research employs Seven Constructs. Their Perceived Technology Innovativeness has four items that have been adopted and modified from the (Lowe & Alpert, 2015). Perceived Value with three items adapted and changed to account for the perceived value of DS. from (Zeithaml, 1988). Perceived ease of use with three items is adapted from (Davis, 1989). Perceived credibility with three items is adapted from (Luarn & Lin, 2005) and modified for Perceived Credibility- trust based factor. Perceived Usefulness is with three items and is adapted from (Bhattacherjee, 2001) and is modified for Perceived usefulness. Customer Intentions to usage of digital shopping with three items adapted and modified from (Davis, 1989). Table 2 contains the definitions of the constructs as well as the sources of the constructs. The items of the constructs are included in the same table. The questionnaire was developed with 5-point Likert scale. The following scoring strategy was used: 5 = Strongly Agree, 4 = Agree, 3 = Neither Agree nor Disagree, 2 = Disagree, 1 = Strongly Disagree.

Subjects: As the dependency on online shopping has increased exponentially due to safety measures. The high demand has increased chances of irregularities such as: poor quality, some other products instead of what is ordered, delivery of other company products and mal practices by the middlemen are potential threat (search in media for reference). Other hand, the payments gateways of online shopping websites were technologically not completely ready for this pandemic traffic. This enabled the risk of failure transactions and delay in re-imbursement.

These experiences adversely affect the customers perceptions to use online shopping. For data collection, we approached respondents from major cities in India - Bangalore, Hyderabad, Chennai, Delhi, Noida, and Trichy and requested for the details of the respondents on the assurance that the data would be used strictly for academic purposes. Thereby, for ascertaining the customer intentions towards digital shopping we have administered online questionnaires sent by email and WhatsApp groups. The purposive sampling technique was used to reach out to individuals who had made a online purchase in the last six months. The data collection process took place from November 2021 to February 2022.

The survey instrument was administered among approximately 1000 subjects who are using smart phones and have experience with online shopping for 6 months and 328 filled questionnaires received. A small number of responses were eliminated as a result of the data's outlier analysis. All the respondents were guaranteed confidentiality and anonymity. The final sample of 325 consist of 48.9 % females and 51.1% of Males. The age-wise distribution of participants was as follows: 20 years and Younger (27.1 %), 21-30 years (42.5 %), 31 – 40 years (18.5 %), 41 – 50 years (6.8 %), and 50 years and older (5.2 %). The literacy level of sample was observed as 11.4 percent completed 'High School', 49.2 % completed their 'bachelor's degree', 30.5 % completed their 'Master's degree' and 8.9 % have completed education not specified in this questionnaire. The following table 2 indicates the complete demographics of the respondents.

Table 3: Demographics (N = 325)

Characteristic	Frequency	
	N (325)	%
Gender		
Male	166	51.1
Female	159	48.9
Age (In Years)		
< 20	88	27.1
21 – 30	138	42.5
31 – 40	60	18.5
41 – 50	22	6.8
>50	17	5.2
Education		
High school	37	11.4
Bachelors	160	49.2
Masters	99	30.5
Others	29	8.9
Income		
<10,000	55	16.9
10,000 – 20,000	42	12.9
20,000 – 30,000	49	15.1
30,000 – 40,000	118	36.3
>40,000	61	18.8

Data Analysis

Partial least squares structural equation modelling (PLS- SEM) in SPSS 22 and SmartPLS 3.2 was used to assess the reliability and validity of the data collected (Cordeiro et al., 2010). The structural model, which incorporates the coefficient of determination (R^2) and the root-mean-square error, is also examined (RMSEA). These evaluations determine the validity of the research model. To verify the validity of multivariate analysis assumptions, PLS allows the examination of Composite Reliability (CR) and Extracted Average Variance (AVE). Path coefficients, Mean, Standard deviations, and P values are also taken into consideration when

coming to a conclusion about whether the hypotheses should be accepted or rejected. Finally, the study paradigm examines the mediating (indirect) and catalyst (moderation) effects to see how they relate to one another.

RESULTS

Testing for the reliability of the research model

Reliability is referred to the internal consistency of the constructs used in research model. The indicator reliability is achieved when there are stronger outer loadings, which means at least 0.60 and ideally 0.7 or greater for each latent variable/ construct(Hair et al., 2020). The internal consistency is achieved when the CR composite reliability developed by (Fornell & Larcker, 1981), which is equal to or greater than 0.7. The following table 4 summarizes the results of indicator reliability and internal consistency of the measuring items. This indicates the reliability of the research model where all the indicators for each latent variable/ construct are above threshold value of 0.7, meeting the recommendation levels of CR and AVE.

Table 4 Reliability of the constructs.

Items	Item loadings	Cronbach α	Composite reliability	Average Variance extracted
PTI		0.821	0.82	0.54
PTI1	0.773			
PTI2	0.764			
PTI3	0.72			
PTI4	0.677			
PV		0.824	0.83	0.61
PV1	0.772			
PV2	0.74			
PV3	0.834			
PEU		0.765	0.77	0.52
PEU1	0.744			
PEU2	0.671			
PEU3	0.75			
PC		0.798	0.81	0.60

PC1	0.719			
PC2	0.641			
PC3	0.934			
CI		0.841	0.84	0.64
CI1	0.773			
CI2	0.868			
CI3	0.761			
PU		0.861	0.86	0.68
PU1	0.805			
PU2	0.887			
PU3	0.773			
ROC		0.735	0.74	0.58
ROC1	0.741			
ROC2	0.786			

Note: PTI = Perceived Technological Innovativeness; PV = Perceived Value; PEU = Perceived Ease of Use; PC = Perceived Credibility; CI = Customers Intention; PU = Perceived Usefulness; ROC = Risk of Covid-19.

Fit Indices: RMSEA = 0.033; CMIN/df = 1.452; CFI = 0.971; GFI = 0.934; TLI = 0.964; NFI = 0.915; IFI = 0.972; AGFI = 0.909; RMR = 0.066

The following table 5 indicates the descriptive statistics of the constructs used in the research model and the inter construct correlations among them.

Testing for the Validity of the research model

The analysis was initiated with knowing sample characteristics adopted in the study. Prior to hypothesis testing the measures assessed for reliability. The Cronbach's Alpha results of measures are greater than .70 indicates the internal consistency of sample (Nunnally & Bernstein, 1999). Further, "confirmatory factor analysis" (CFA) was adopted to assess the convergent validity and discriminant validity. The composite reliability of measures is greater than .70, average variance extracted (AVE) values exceeded 0.50 and standardized item loadings are greater than 0.70 except PTI4, PEU2, and PC2 whose loadings greater than .60. The results satisfied the criteria of convergent validity (Fornell & Larcker, 1981; Hair et al., 2020; Nunnally & Bernstein, 1999). Each construct's square root of AVE is higher than

respective inter-construct correlation values bolster discriminant validity between the constructs of proposed model (Campbell and Fiske, 1959;(Hair et al., 2020)).

Table 5: Descriptive Statistic, Inter-construct Correlations, and Square Root of AVE

Variable	Mean	S.D.	PTI	PV	PEU	PC	CI	PU	ROC
Perceived Technological Innovativeness (PTI)	3.4	1	0.73+						
Perceived Value (PV)	3.3	1	0.29	0.78+					
Perceived Ease of Use (PEU)	3.3	1	0.27	0.32	0.72+				
Perceived Credibility (PC)	3.1	0.9	0.05	0.17	0.04	0.77+			
Customers Intention (CI)	3.1	1	0.3	0.36	0.22	0.28	0.8+		
Perceived Usefulness (PU)	3.5	1.1	0.14	0.25	0.18	0.21	0.35	0.82+	
Risk of Covid-19 (ROC)	3	1.1	0.17	0.11	0.13	0.04	0.43	0.07	0.76+

Note: + depict the square root of AVE;

Common Method Bias (CMB)

The validity of hypothesis mainly threatened by the measurement errors and the method biases are the potential source for this (Bagozzi et al., 1991). The relationship between the measures were substantially affect up to 25% of variance by the Common method bias (CMB) (Cote & Buckley, 1987). Further, CMB can "inflate or deflate" the relationship between the measures leading to Type I & Type II errors. Eventually, CMB jeopardizes the validity of the results. Therefore, CMB needs to be examined systematically and addressed.

A two-stage diagnosis was adopted to ascertain the presence of (CMB) in the sample. First, CMB was examined by adopting Herman's single factor technique (Podsakoff et al., 2003), if the results of factor analysis modelled in single factor affirm the presence of CMB. Factor analysis was carried out using principle component analysis and results extracted seven factors with a variance of 22.119 by the first factor. Thereby indicating that one factor is not influencing total variance in the sample (Table 6). Second, presence of high correlations between the measures r greater than 0.9 indicates the potential threat of CMB (Pavlou et al., 2007). Whereas, results of correlation matrix exhibit the absence of high correlation between measures (Table 5). Therefore, results of factor analysis, and correlation matrix indicates CMB do not exist.

Table 6: Total Variance Explained (Common Method Bias)

Factor	Initial Eigenvalues		
	Total	% of Variance	Cumulative %
1	4.645	22.119	22.119
2	2.830	13.475	35.595
3	2.038	9.705	45.300
4	1.842	8.769	54.069
5	1.711	8.145	62.215
6	1.286	6.124	68.338
7	1.073	5.108	73.447

Mediation Analysis

The hypothesized mediation model (figure 4) was examined by considering the recommendations of (Baron & Kenny, 1986; Hayes, 2009; and Zhao et al., 2010). The results of mediation assumptions presented in Table 7, indicates the PU, PEU, PTI & PCI postulates an effect on PV (Condition 1). Further, PV postulate to exert an effect on CI (Condition 2), and finally, PV significantly caused CI and causal relationships of PU, PEU, PTI & PCI on CI are significant. Satisfying above conditions substantiate the PV as a potential mediator. The fit indices of three tests are acceptable for model fit criteria.

The positive indirect effects of PU, PEU, PTI & PCI on CI through PV were assessed using Bootstrapping technique with 5,000 samples at 95% in AMOS 20 found significant (Table 8). The presence of non-zero values in direct effects indicates the partial mediation (Baron & Kenny, 1986). Therefore, we may accept the mediation hypothesis that, PV positively mediates the relationship between PU, PEU, PTI & PCI and CI.

Table 7: Regression Estimates of Mediation Assumptions

Relation	Std. Regression*	R^2	$\chi2$/df	CFI, GFI	TLI, NFI	RMSEA
Assumption – 1						
PU → PV	0.207	0.231	1.173	0.965, 0.940	0.959, 0.922	0.047
PEU → PV	0.331					
PTI → PV	0.180					
PCI → PV	0.215					
Assumption - 2						
PV → CI	0.423	0.179	2.221	0.989, 0.982	0.980, 0.981	0.061
Assumption - 3						
PU → CI	0.275	0.265	2.049	0.941, 0.911	0.932, 0.892	0.057
PEU → CI	0.186					
PTI → CI	0.163					
PCI → CI	0.257					
PV → CI	0.250					

Table 8: Regression Estimates Direct and Indirect Effects*

Hypothesis	Direct	Indirect	Total	p	Result
PU → PV → CI	0.263	0.043	0.307	0.002	Significant
PEU → PV → CI	0.177	0.070	0.296	0.002	Significant
PTI → PV → CI	0.155	0.038	0.189	0.007	Significant
PCI → PV → CI	0.251	0.046	0.283	0.002	Significant
CMIN/df = 1.656; CFI = 0.964; GFI = 0.931; TLI = 0.957; NFI = 0.915; RMSEA = 0.045.					
* Bootstrap results of 5000 sample at 95 % Confidence Interval.					

Figure 4: Mediation Analysis

Figure 4 Mediation Analysis
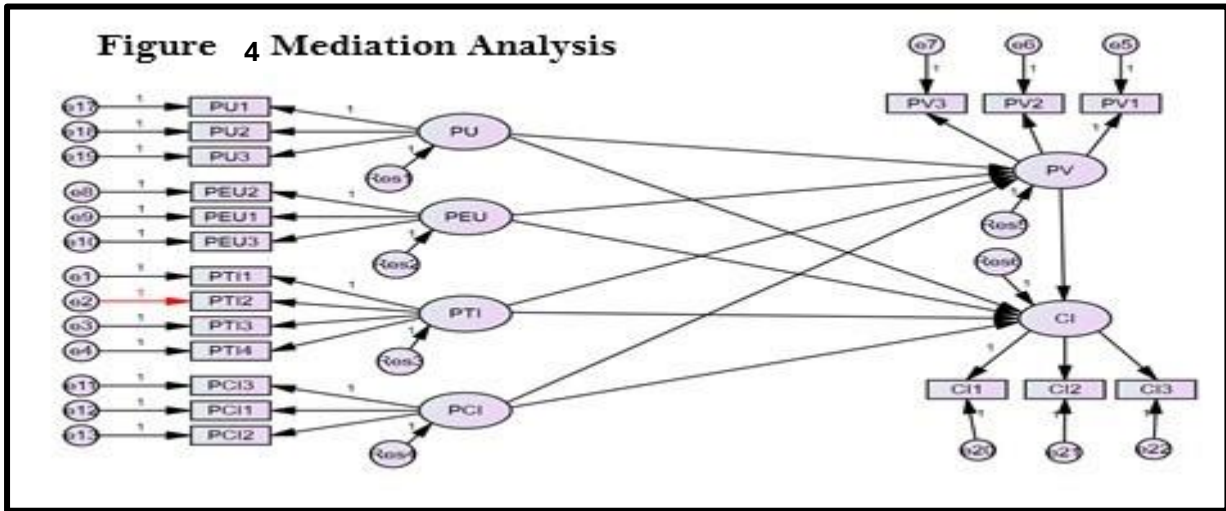
Moderating Effect

The presence of moderation effect between the relationship path need to be ascertained initially by performing inferential statistics (Edwards & Lambert, 2007; Muller et al., 2005; Preacher et al., 2007). Further, moderated analysis can be carried out using bootstrap method(Hayes, 2015). The proposed model's conditional indirect effects were examined using PROCESS macro (Hayes et al., 2017). The results exhibit the potential moderator Covid-19 risk has significantly increased the consumers' intentions towards online shopping (β= 0.341, p<0.05) as LLCI=0.249 and ULCI = 0.434 do not consist the Zero. The path was significantly moderated and thereby provided evidence to affirm that the relationship path could be moderated (Table 8). Further, the interaction effect of perceived usefulness and risk of Covid-19 found to be negative (β= -0.118, p<0.05) with non-Zero between LLCI = -0.206 and ULCI = -0.029 when compared to their individual positive effects in Figure 5. Similarly, (PTI x ROC) also observed significant negative coefficient of (β= -0.116, p<0.05) with LLCI = -0.207 and ULCI = -0.014 in Figure 6.

Table 8: Moderation Analysis

Hypothesis*	Coefficient	LLCI	ULCI	Result
ROC → CI	0.341	0.249	0.434	Significant
PU x ROC → CI	-0.118*	-0.206	-0.029	

PTI x ROC → CI	-0.116*	-0.217	-0.014	Significant Negative Moderation
Note: *Bootstrap results for 10000 with 95% level of CI;				
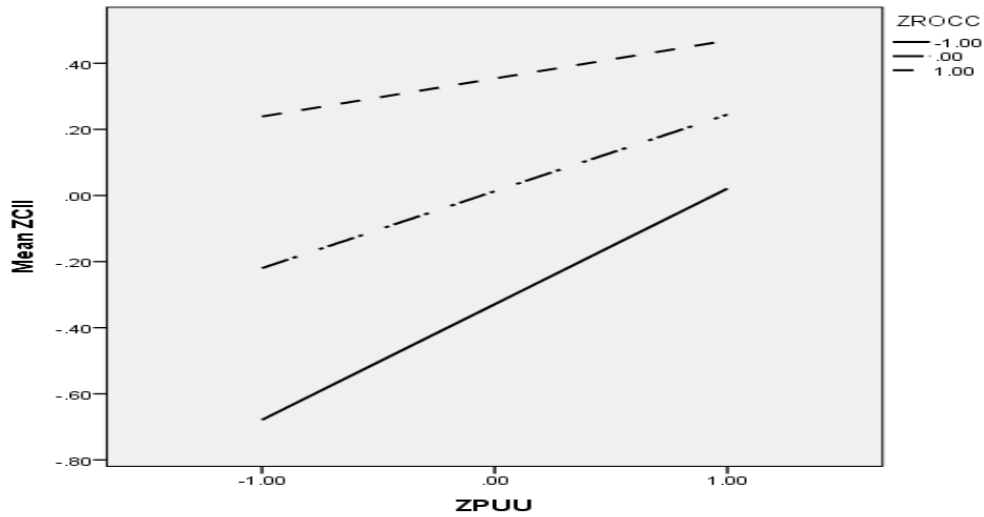
Figure 5: PU x ROC on CI
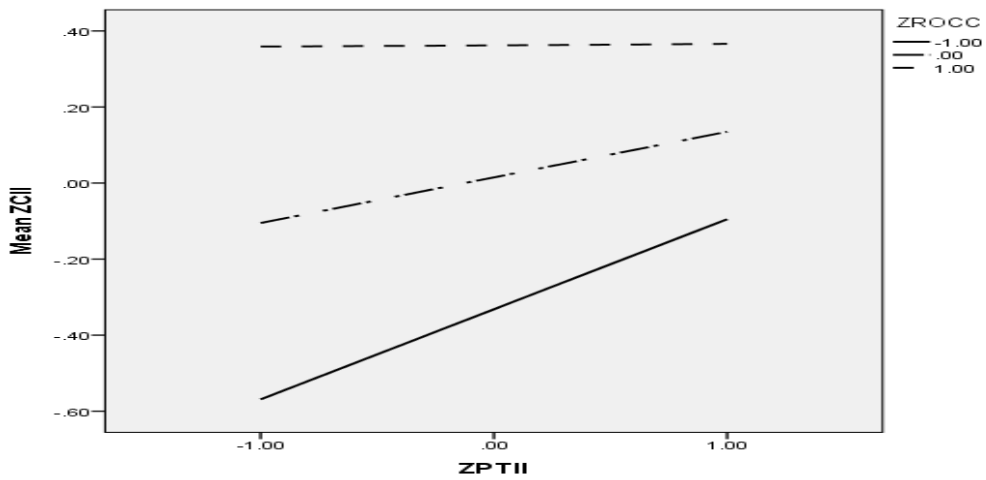
Figure 6: PTI x ROC on CI

DISCUSSION

Key findings and contributions

This study has several key findings that are validated with empirical analysis to understand the customers perception about online shopping. First the results confirm that there is significant positive impacts of Perceived ease of use, Perceived technology innovations, Perceived credibility and Perceived usefulness on Perceived value. This validates the propositions that the existence of value perceptions is a major impediment to customers intention to continue with online shopping. Secondly, the impact of customers perceptions (PU, PEU, PTI and PC) on customers intention is moderated by Risk of Covid 19. Further stressing the potentiality of the technology acceleration that has happened during the pandemic has an impact on customers usage of online shopping, which is very important to them. Third, this study sheds light on drawing upon the trust-based factor called perceived credibility, which was the limiting factor in TAM theory. Finally, the entire structural modal, with mediating role of Perceived Value and moderating role of Risk of Covid 19 helps is powerful enough to describe the directed dependencies and indirect effects among all the variables.

Theoretical Implications

This study's findings have various theoretical implications that support our suggested research methodology. By addressing a number of critical elements in the suggested research model, this body of work has the potential to have a significant influence theoretically on researchers working in the connected subject of interest. Through doing reliability and validity checks, it was determined that the study model that was suggested had a lot of potential. Following the establishment of the reliability and validity of the research model, the structural model was tested using the coefficient of determination (COD) (R^2). This study provides a great direction by assessing the mediating and moderating effects of value-based and risks associated with Covid-based variables that have impacts on online shopping intentions. This is something that, up until now, has not been well assessed in a great number of developing countries. Risk of Covid 19 is negatively moderated for both perceived usefulness and Perceived technology innovativeness over Continued intentions to use DS. This indicates that as there is increased Risk of Covid, the customers are more intended towards digital shopping. Moreover, with the interventions of technological advancements like, augmented reality, virtual reality etc., DS has gained lot of importance in E commerce. As a result, this study makes a significant

contribution to both the existing knowledge and the existing body of literature. The findings of this study endeavour give assistance for better understanding of the expectations of customers.

Implications for Practice

This study has revealed that existence of value perceptions is a major impediment to customers' intention to continue online shopping. The impact of customer's perceptions (PU, PEU, PTI and PC) on customer's intention is moderated by Risk of Covid 19. This shows that, although Risk of Covid 19 may cause customers to switch to buying more online, businesses should not neglect to improve and upgrade the interface to use their online platforms and direct marketers toward appropriate use of marketing tools and strategies in the future. This facilitates follow-up studies to expand surveys across different populations to compare differences in online shopping intentions of different economies and cultures. The article shows the technological innovations has impacts on shoppers' behaviour to use online digital shopping. Hence businesses could use new resources, upgrade themselves with upcoming technologies like Virtual reality, Artificial intelligence based online stores to attract customers. Retailers could work towards improvising the trust or credibility related factors. On their websites, retailers must clearly display their security and payment policies and provide encrypted, secure payment methods. These recommendations would help to increase online customers' perception of low risk.

LIMITATIONS AND FUTURE SCOPE

The current study has some limitations. The study has limited sample size. Because the study is conducted during critical covid times, not many respondents turned out. Nonetheless, future researchers can replicate this study on the large set of respondents. This study was limited to Indian participants; thus, it can be replicated in other cultures to increase its generalizability. The study was limited to urban users of digital shopping; consequently, the effect of perceived value on technology adoption was found to be unclear. Therefore, the intention of rural consumers to adopt DS was beyond the scope of this study. Notably, rural India has a significantly lower mobile Internet penetration rate than urban India (Agarwal, 2018). Despite the fact that Reliance Jio's low-cost 4G network is poised to penetrate India's rural areas. Therefore, future researchers can conduct a comparative study of rural and urban consumers to examine the difference in their adoption intent for DS. In addition, future research can investigate the adoption behaviour differences between urban and semi-urban areas.

As current research on the topic is fragmented, this article contributes to the body of knowledge on online consumer digital shopping behaviour. We elaborate on and describe in greater depth the future research perspectives for researchers and marketers interested in exploring consumers' digital shopping intentions. Some unexplored areas and factors, such as shopping frequency, payment options, cost considerations, demographic and geographic perspectives, trends perspective, socio-cognitive element enjoyment as a marketing tool, and other untapped segment perspectives, can be explored further in future research. In addition, our conceptual model could inspire online consumer behaviour researchers to validate it empirically through longitudinal studies and produce insightful results.

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Understanding the Determinants of Customer Satisfaction and Revisit Intentions in Theme Restaurants- Case of Steam

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ABSTRACT

The emergence of theme restaurants has made the dining experience more experiential. Besides serving food, theme restaurants aim to provide immersive experiences to their customers by creating a vivid restaurant setup. Customers in theme restaurants feel that they are in another world. Though theme restaurants' core functional activity is serving food like regular restaurants, they are very distinct from regular restaurants in their service offerings. The present study has been undertaken to understand the determinants of customer satisfaction in theme restaurants. Further, this study linked customer satisfaction with customers' revisit intentions towards theme restaurants. Studies have been conducted to understand customer satisfaction and revisit intentions toward restaurants by employing primary data gathered through a survey. Previous researchers highlighted the limitations of surveys due to their small sample size. To overcome such limitations present study is conducted by scrapping and analysing user-generated reviews from TripAdvisor. 1126 reviews of 'Steam,' a theme restaurant located in Jaipur, were analyzed using bigram analysis, and the determinants of customer satisfaction and revisit intentions were extracted. Results revealed 13 determinants of customer satisfaction like 'Food,' 'Mention of Staff & Chef,' 'Service,' 'Dining experience,' 'Theme,' etc. Further, the study was able to link customer satisfaction with customer revisit intentions, where the determinants of customer revisit intentions were largely identical to customer satisfaction.

Key Words: User generated reviews, Theme Restaurants, Bigram analysis, Customer Satisfaction

INTRODUCTION

Although customers dining out is not a new phenomenon, considerable changes in customers' expectations are seen with changing times. Along with good food, customers aspire to gain memorable dining experiences (Cao, Li, Pietro, & So, 2019). Having food in restaurants has become an experiential activity seeking pleasure and enjoyment (Kim, Park, & Lamb, 2019). Customers prefer restaurants with a good atmosphere and service. Further, any variety in restaurant setup and service makes the customers visit the restaurants. Prior studies have confirmed that customer service and various aspects of the physical environment at restaurants like ambiance, view, atmosphere, and spatial layout contribute to the customer experience at

restaurants (Han & Hyun, 2017; Ryu, Lee, & Gon Kim, 2012; Susskind & Chan, 2000). Customers' expectations and motivations to visit restaurants have become multifaceted. Apart from having food as a necessity, customers have food at restaurants to gain sensory experiences (Andersen, Mielby, Viemose, Bredie, & Hyldig, 2017; Korsmeyer & Sutton, 2011).

Restaurants have continually been operating in a highly competitive environment which compels them to provide superior services. Restaurants are bound to understand the ever-changing needs and expectations of customers and, accordingly, make product differentiation (Youn & Kim, 2017) by providing authentic signature dishes or service differentiation (Ryu et al., 2012;Yang, Li, Lau, & Zhu, 2021) to position themselves in the market. Lately, customers are visiting restaurants to escape from their daily routine, where tasting particular food or beverage in a specifically designed service scape at restaurants provides a sense of escapism among the customers (Kim et al., 2019;Park, Kim, & Xu, 2020). Many restaurants have identified this need of the customers and started to design their services based on different themes, thereby starting 'theme restaurants' to provide immersive experiences to the customers. For example, the Gufa restaurant in Bangalore is designed like a cave, which takes its customers back to the early human civilizations. Front-line employees serving food are dressed like cave dwellers, providing customers the experience of having food in a cave (Group, 2019).

Similarly, 70 MM restaurant belonging to Ohri's chain of restaurants in Hyderabad takes back its customers into the retro world of Indian cinema with movie posters and statues of movie stars all over the place(Ohri's, 2009). Shubhranshu Pani, managing director of retail services and stressed asset Management Group, JLL India opinions, running on a particular concept and creating a space for customers to engage in playful activities and good food had resulted in the success of theme restaurants(JLL, 2019). As mentioned above, the needs and expectations are highly diversified, and theme restaurants provide multi-dimensional experiences. Understanding customers' experiences are crucial in the service economy to render better services to achieve customer delight(Oliver, 1980; Pine, Pine, & Gilmore, 1999). Hence we believe that it is crucial to study the aspects related to the customers' satisfaction and dissatisfaction with these theme restaurant services to understand the customer experiences with theme restaurants.

Restaurant services have attracted the attention of marketing researchers for a long time. Some prior works had studied the effect of different constructs like restaurant image, service quality, and physical atmosphere and their effect on the satisfaction and dissatisfaction of customers at

different types of restaurants like luxury restaurants, fast-food restaurants, casual dining restaurants, etc. (Ha & Jang, 2010; Namkung & Jang, 2007; Ryu & Han, 2010; C. H.-J. Wu & Liang, 2009). Nascent studies were conducted in the context of theme restaurants (Meng & Choi, 2017; Tsai & Lu, 2012)

Further, most of these prior studies had employed primary data to understand the reasons for customer satisfaction and dissatisfaction. Analyzing small samples collected through survey instruments is sometimes ineffective in providing deeper insights into the phenomenon(CoxI, 2011). Therefore, we will employ user-generated reviews posted online by the customers to gain better inferences. Marketing and tourism researchers are conducting numerous studies based on user-generated reviews. Prior studies have signalled them as crucial elements affecting a firm's reputation (Baka, 2016) and a firm's performance(Kim, Lim, & Brymer, 2015). User-generated reviews are considered as first-hand information, as it is provided by the customers who had experienced the services (Rodríguez, Torres, & Toral, 2016; Kwok, Xie, & Richards, 2017; García, Gallego, & Benito, 2017). User-generated reviews can help us get an in-depth understanding of customers' satisfaction and dissatisfaction (Jia, 2020; Tsang & Prendergast, 2009). Thus, the contribution of our study is twofold. Firstly, we investigate the aspects of theme restaurant services contributing to customer satisfaction and dissatisfaction. Secondarily, we use real-time data like user-generated reviews, which exhibit the potential for providing novel findings.

LITERATURE REVIEW

E-WoM

Word of mouth (WOM) refers to the transfer of information between a non-mercenary informant and a recipient germane to a service, product, or brand, thereby molding customers' attitudes and behavior (Bilgihan, Seo, & Choi, 2018; Buttle, 1998). When the WOM is shared via the internet (through social networks, online communities, websites, blogs, etc.), it is referred to as electronic word of mouth (EWOM) (Hennig-Thurau, Gwinner, Walsh, & Gremler, 2004; Kietzmann & Canhoto, 2013). EWOM has emerged as a prominent source of information for making diversified decisions stretching from stock investment, book & movie selection, to dining choices (Lu, Ba, Huang, & Feng, 2013). As the services in the hospitality industry are intangible and experiential, EWOM assumes a prominent role in consumer decision-making (Jeong & Jang, 2011; Zhang, Ye, Law, & Li, 2010). Customers give credence to the user reviews posted online as they perceive the reviews to be reliable, unbiased, and

independent of the firm's marketing content and tend to rely on them while selecting a service provider in the event of planning trips or reserving a restaurant table (Bilgihan et al., 2018; Chen & Xie, 2008; Kim, Mattila, & Baloglu, 2011). Extant research has studied online reviews, an important component of EWOM in the context of hotels, restaurants, and tourism-based products, thereby establishing its significant impact on firm performance, customers' purchase and revisit intentions (Liu & Park, 2015; Park & Nicolau, 2015; Serra Cantallops & Salvi, 2014). The rising relevance of online reviews in customers' decision-making in the hospitality sector has prompted the service providers to explore the review content for identifying the factors influencing the customer experience and their criteria for evaluating the service and utilizing the same to create demand and amplify their fiscal performance.

Customer Satisfaction

The expectancy disconfirmation model has been extensively used to study customer satisfaction in the service and retail industry. It posits customer satisfaction as a direct and subjective comparison between expectations and perceptions (Oh, 1999; Oliver, 1980). It affirms customer satisfaction as a function of subjective disconfirmation between customer expectations and perceptions, with the direction and magnitude of disconfirmation determining their satisfaction level, while confirmation leads to neither satisfaction nor dissatisfaction. Positive confirmation leads to customer satisfaction, while negative disconfirmation results in dissatisfaction (Oh, 1999).

Extant research has suggested applying Herzberg's motivation and hygiene theory to study and explore the factors of customer satisfaction and dissatisfaction (Bilgihan et al., 2018; Oh & Parks, 1996). Though initially stated in the context of employees' job satisfaction, its applicability has been extended to expand the customer behavior. It categorizes the factors which influence the customers' attitude and behavior in disparate ways into mutually exclusive or independent classes (a) the hygiene (or dissatisfiers) (b) and motivator(or satisfiers). The theory states that satisfiers and dissatisfiers are not two opposite extremes rather, the privation of hygiene factors leads to dissatisfaction. Further, these factors are the facets whose performance, if perceived to be in poor light by customers, conduce to their dissatisfaction, while their perception of good performance might not lead to customer satisfaction as the customers tend to take these factors for granted (Füller, Matzler, & Faullant, 2006). On the contrary, while motivation factors lead to customer satisfaction, their absence does not stir dissatisfaction in customers (Füller et al., 2006).

Satisfied customers tend to post positive reviews, while dissatisfied customers are likely to post negative reviews. Studies have demonstrated that positive reviews positively impact hotel bookings and customer purchase intention, and the negative reviews negatively impact the hotel's reputation, image, and performance (Fernandes & Fernandes, 2018; Knox & Van Oest, 2014; Tran, 2020). Hence, the service providers need to study the factors affecting customer satisfaction and dissatisfaction and wield them to their advantage.

Previous Studies on Customer Satisfaction in Restaurants by Analyzing the Text in Online Reviews

Most research on analyzing online reviews to determine customer satisfaction and dissatisfaction has been undertaken in the hotel industry, while the studies on online reviews of restaurants are comparatively limited (Bilgihan et al., 2018). Most of the studies on customer satisfaction in restaurants have been carried out using the survey method, and online reviews of restaurants remain largely unexploited (Bilgihan et al., 2018; Pizam, Shapoval, & Ellis, 2016). The scarce literature on the analysis of online restaurant reviews is discussed below.

Yan, Wang, and Chau (2015) performed regression on the numerical scores of 10,136 reviews of Chinese restaurants and found the service quality, food quality, price & value, and atmosphere to be the antecedents of revisit intentions of the restaurant customers. Further, they performed a manual content analysis of the text reviews and identified the indicators for each of the antecedents mentioned above to be: employee attitude and appearance for service quality; environment and facilities for atmosphere; price rate & hospitality for price & value; variety, visual appeal, health & taste for food quality. Further, Bilgihan et al. (2018) tried to understand customer satisfaction indicators by analyzing 2214 randomly selected user-generated reviews of U.S.-based restaurants posted on Yelp.com by applying data visualization techniques and MANOVA. Results revealed services like outdoor seating, provision of alcohol products, private parking, and catering services to lead to higher ratings, a significant indicator of customer satisfaction, while (poor/no)delivery service and (not)good for dinner lead to lower ratings, a proven indicator of customer dissatisfaction. To gain deeper insights, Kwon, Lee, and Back (2020) analyzed large data set of 606,510 reviews of 12,436 U.S.-based restaurants posted on Yelp.com by applying the structural topic model(STM) algorithm. They identified 14 factors of customer value to be 'a rather high price for quality, 'reasonable price,' 'service failure,' 'excellence in every way, 'mediocre taste,' 'love with food', 'poor service quality,' 'lack of cleanliness,' 'long wait time,' 'exotic and creative cuisine,' 'accessibility and usability

of facility', 'rude attitude', 'portion size', and 'outdoor ambience' through word embedding and topic modeling. They also computed the effectiveness of the factors by applying regression and artificial neural networks and found the most decisive factors to be 'excellence in every way' and 'love with food', and the most detrimental factors to be 'mediocre taste' and 'rude attitude'. Nakayama and Wan (2018) took a step further. They tried to understand the role of culture in customer satisfaction by performing textual sentiment analysis on 56,159 Japanese and 76,704 Western, Yelp reviews of a Japanese restaurant. They found the Westerners to employ detailed sentiment expression on the crucial aspects like food quality and service quality and the Japanese to employ the same for the restaurant environment and price fairness. A recent study conducted by Jia (2020) compared 2448 user-generated reviews of Chinese and American tourists of three European restaurants posted on Dianping.com and Yelp.com, respectively, through Latent Dirichlet Allocation(LDA). The study found the Chinese tourists to be more fascinated by the food offering and less willing to assign poor ratings to customers, while the U.S. tourists were likely to be fun-seeking and more tolerant of crowdedness.

However, it is crucial to note that prior studies are concentrated primarily on the American and East Asian countries. Additionally, many studies have made their investigations based on fine dining restaurants. Nevertheless, the restaurant industry is witnessing the emergence of theme restaurants as game-changers. However, the literature on customer satisfaction in theme restaurants is scanty and limited to survey methods and analysis of online customer ratings. Hence, we believe that analyzing the reviews will help us gain novel insights into customer satisfaction in theme restaurants.

Theme Restaurants

In a fast-growing economy with high disposable income, customers are increasingly looking forward to experiential and enriching modes of consumption. The tourism and hospitality industry is catering to this demand by developing customer experiential consumption in theme parks, theme restaurants, and interactive museums. Themed environments provide an idealized orchestrated depiction to enable the consumers to temporarily imagine themselves in a place or time that they cannot experience in reality; they also enlighten the customers about different cultures, lifestyles, and historical events (Wood & Muñoz, 2007). Restaurants have adopted theming as a differentiating strategy to attract customers and cater to their distinct needs (Meng & Choi, 2018). Theme restaurants are often termed as 'eatertainment' for being a conglomerate of entertainment and food. They can be defined as a dining enterprise establishment that

bedizens itself in a complex of unique manifestations which are prodigally extraneous to the act of eating (Beardsworth & Bryman, 1999). In theme restaurants, service scape assumes a vital role in enhancing customers.

Service scape is vital in enhancing customers' behaviour and perceptions in theme restaurants (Kim & Moon, 2009). In themed restaurants, both the components of servicescape, substantive staging and communicative staging, positively influence the customer's quality of life through customer emotion and satisfaction, moderated by the level of perceived authenticity (Meng & Choi, 2017). Substantive staging and communicative staging in themed restaurants also indirectly affect customers' revisit intentions through customer attitude, while customer involvement mediates the relationship between perceived authenticity and revisit intention (Meng & Choi, 2018). As the purpose of visit to theme restaurant is specific, the criteria for evaluation and customer satisfaction will also vary. So, it becomes necessary to study the factors affecting customer satisfaction in theme restaurants.

Customers patronize ethnic-themed restaurants to seek veritable cultural experiences, with perceived authenticity significantly contributing to customer satisfaction (Tsai & Lu, 2012). Studies have suggested variance in the influence of attributes towards satisfaction with regard to the restaurant categories (Xu, 2021).

Revisit Intention

The conception of revisit intention can be deduced from behavioural intention (Han, Yu, & Hyun, 2020). According to (Oliver, Rust, & Varki, 1997), behavioural intention can be defined as "a stated likelihood to engage in a behaviour." Revisit intention is often considered an accretion of satisfaction rather than a distinct decision. Multiple studies have established customer satisfaction as the most compelling antecedent of revisit intention(Han et al., 2020). In a study conducted on 424 visitors of a theme park in Taiwan, experiential quality and the image of the theme park were found to impact the revisit intention of the visitors positively(Wu, Li, & Li, 2014). Kim, Lee, and Kim (2020) conducted a study on hotel customers in South Korea and found sensory marketing to positively impact customer satisfaction, which would significantly influence their revisit intention. Sadeghi, Zandieh, Mohammadi, Yaghoubibijarboneh, and Nasrolahi Vosta (2017) surveyed two hundred customers and employees of three, four, and five-star hotels in Tehran and found a significant positive relation between service climate and revisit intention of the customers. Yang, Min, and Baker (2018) analysed the effect of post-stay email features on customers' revisit intention and found

financial features, personalization, and interactivity to significantly predict revisit intention based on the customer's involvement levels, with their attitude being the mediator. A study conducted in Indiana in three Chinese restaurants identified "Food and Environment," "Service and Courtesy," "Price and Value," and "Location, and Advertising and Promotion" to be significantly related to customers' revisit intention (Qu, 1997). It evaluated four attributes of theme restaurants, namely service quality, food quality, novelty, and atmosphere, and found only food quality and atmosphere to significantly influence revisit intention (Weiss, Feinstein, & Dalbor, 2004). Yan et al. (2015) analysed 10,136 restaurant customer reviews and found food quality, service quality, atmosphere, price, and value as the antecedents of their revisit intention with the restaurant type moderating the effect of customer satisfaction and the antecedents on revisit intention. In this study, the researchers intend to analyse the text reviews posted by the customers of a theme restaurant, Steam, Jaipur, by performing bigram analysis and find the most spoken about attributes and the attributes affecting customer revisit intentions.

METHODOLOGY

The motive of this study is to identify the attributes affecting the experience of customers in theme restaurants by analyzing the reviews posted by them on review aggregator sites. This study takes the case of a theme restaurant, 'Steam' located in Jaipur, for the study. Previous studies have showcased the application of online reviews to study customer satisfaction, opinions, preferences, and emotions and identify and analyze competitors (Hu, Chen, & Chou, 2017; Köseoglu, Mehraliyev, Altin, & Okumus, 2021; Serrano, Montes, Nader, Sianes, & Law, 2021; Xu, 2020; Zhao, Xu, & Wang, 2019). TripAdvisor has been chosen as the data source for the study because it is the largest social media aggregator dedicated to travel across the world. Secondly, it has a stringent mechanism to inhibit suspicious and abusive content from ensuring quality and thus establishing the validity of the content posted (Zhao et al., 2019).

The researchers developed a program in Python to scrape the data automatically from TripAdvisor. Selenium, a Python library, an automated testing software, was imported to scrape the data automatically. As TripAdvisor reviews are organized on multiple pages, pagination techniques were applied to facilitate page navigation. Steam, a theme restaurant situated at Rambagh Palace, Jaipur, is Jaipur's most preferred lounge bar, which features a steam engine in a recreated Victorian station in a Colonial set up has been chosen for the study. It offers Mediterranean cuisine, delectable pizzas and fine liquor. 1126 online reviews posted

by the customers until Feb, 15, 2022 have been extracted for the study and stored in Excel files.For the purpose of the study, review title, review text, and overall rating have been collected. Review title and review text are unstructured data, while rating is measured on a 5-point Likert scale postulated by TripAdvisor, where 5 denotes 'Excellent' and 1 denotes 'terrible'.

DATA ANALYSIS

The researchers have applied text mining techniques to convert unstructured data into structured data to derive meaningful insights. Initially, the data is loaded into R and transformed into a corpus to pursue further analysis. Then preprocessing is performed on the corpus. Analyzing textual data is complicated for several reasons. First, the data does not follow any structure. Second, all terms entered may not be informative and need to be deleted(removal of context-specific words, stop words). Third, to a group and quantify the terms, the terms must be transformed(lemmatization, stemming) (Tirunillai & Tellis, 2014).

Preprocessing

The text preprocessing methods used in studies by Hu, Zhang, Gao, and Bose (2019) were followed in this study. Removal of unimportant content from the corpus can be performed through many methods. Initially, the data was converted to lowercase, followed by removing white spaces, punctuation, numbers, and special characters. Then, the stop words like a, an, the, can, will, etc were removed using the 'stop words(en)' lexicon of the tm package. This was followed by the replacement of contradictory words and abbreviations. The final step involved the conversion of words into their root forms.

Exploratory Data Analysis

The technical features of the data, word length, and the sentiment score were computed and the most frequently occurring terms were visualized. Post cleaning, a term-document matrix is computed to view the frequently occurring terms. It consists of documents listed as rows and terms as columns. The top 50 frequently occurring words were visualized through a word cloud in Figure 1, computed using the word cloud 2 package in R.

Sentiment score and word length

The review is composed of sentences and words which convey positive, negative or neutral feelings. The sentiment score measures the positivity or negativity by analyzing the reviewers'

tone as expressed in the review. A score greater than zero signifies positive sentiment, a score less than zero signifies negative polarity, while zero signifies neutrality. The Sentiment R package is used for computing sentiment scores.

Word length is inversely related to the ratings given by the customer(Zhao et al., 2019). Customers who give lower ratings tend to write longer reviews, while those who rate highly tend to write shorter reviews (Chittiprolu, Samala, & Bellamkonda, 2021). Customers write lengthier reviews to vent out their frustration and anger (Berezina, Bilgihan, Cobanoglu, & Okumus, 2016),

Feature Extraction

Previous studies identified the determinants of customer satisfaction using frequently repeated words (Alrawadieh & Law, 2018; Berezina et al., 2016). Unigrams are often context-dependent or can be negators or amplifier words and may lead to misleading results (Chittiprolu et al., 2021), to overcome such limitations, bigram analysis is used to determine the frequently occurring phrases impacting the customer experience. A panel of researchers in the hospitality sector identified and labeled customer experience determinants in theme restaurants.

To identify the determinants of revisit intention in theme restaurants, the comments that indicated the customers' revisit intention had filtered out the specific terms related to it mentioned in their review. A Group of hospitality researchers conducted an iterative procedure to arrive at a list of search terms. This process of identifying and searching the terms and documents has been used in earlier research (Kim et al., 2013). After arriving at the search terms list, the researchers manually selected the reviews mentioning the revisit intention containing the search terms. Post preprocessing the selected reviews, a bigram analysis was conducted, and the determinants of revisit intention were identified and labeled.

RESULTS AND FINDINGS

A total of 1126 reviews of Steam restaurant were scraped from TripAdvisor. Of all the reviews, 994(88.3%) were rated as 5 star(excellent), 90(8%) as 4 star(good), 24(2.1%) as 3 star(average), 8(0.7%) as 2 star(poor) and 10(0.9%) as 1 star(terrible). Taking the 5- and 4-star reviews as positive and 2- and 1-star reviews as negative, 96.3% of reviews can be considered positive, 1.6% as negative, and 2.1% as neutral. The frequency distribution of the number of reviews posted when plotted against the star ratings presents a J type distribution.

Correspondingly, we infer that a greater number of satisfied customers post reviews when compared to dissatisfied customers.

Further, researchers manually scrutinized the reviews and found that reviewers mentioned their revisit intentions in 303 reviews. These reviews were analyzed separately to uncover the dimensions of customer satisfaction that prompt consumer revisit intention.

Exploratory Data Analysis

The technical features of the data are given in Table.1

Mean Review Length

From the table 1, it can be observed that the mean length of the reviews rated 1 or 2 stars is higher than the mean length of the reviews rated 4 and 5 stars. The mean length of the reviews rated 1 and 2 stars is `over 130 while the mean length of the 4 and 5-star reviews is below 60. Thus, a decrease in mean review length is observed with an increase in review ratings.

Sentiment Score

The mean sentiment score is observed to increase with the ratings of the reviews. The mean sentiment score of reviews rated 1 star is negative (-0.09), and the mean sentiment score for reviews rated 2 star is close to zero (0.1). While the positive reviews exhibit positive mean sentiment scores of 0.38, and 0.467 for 4 and 5-star rated reviews, respectively.

Feature Selection

Through an intensive text mining of customer reviews and frequency of repeated terms, determinants of customer experience and revisit intentions are identified.

The results of the bigram analysis for customer satisfaction and revisit intentions are presented in table 2 and table 3, respectively. The first column represents the label of the dimension, while the second column represents the list of words with top frequency and singularity.

The bigram analysis for customer satisfaction identified 13 dimensions (table 2) based on the coherence/perplexity score. The first dimension of satisfaction is identified as 'Food' with words like amaze food, delicious food, excellent food, food drink, food amaze, excellent food being repeated 437 times. The second dimension identified is 'Mention of Staff & Chef' with terms like gupta ji, chef narendra, chef vijay, yogendra gupta, yogendra ji, special mention being repeated 432 times. The third dimenson identified is 'Service' with terms like 'Food service, excellent service, amaze service, service food' being repeated 350 times. The fourth

dimension identified is 'Dining experience' with amaze experience, experience steam, wonderful experience, dine experience being repeated 285 times. The fifth dimension identified is 'Theme' with terms like dinner steam, steam engine, steam restaurant, steam train being repeated 274 times. Similarly, the other determinants were identified namely, 'Ambience', 'Place/ Location', 'Pizza', 'Staff expertise and behavior', 'Special Occasion', 'Menu', 'Music' and 'Covid-19 safety precautions'.

The bigram analysis for revisit intention revealed 12 dimensions (table 3) based on the coherence/ perplexity score. The first dimension of revisit intention is 'Mention of Staff & Chef' with terms like 'Gupta Ji, yogendra gupta, chef narendra, chef vijay' being repeated 177 times. The second dimension is identified as 'Food' with terms like amaze food, food drink, delicious food, food amaze, food delicious, food quality being repeated 99 times. Similarly, the other dimensions identified are 'Service', 'Dining experience', 'Ambience', 'Theme', 'Place/Location', 'Pizza', 'Staff behavior', 'Special occasion', 'Music' and 'Menu'.

DISCUSSION

In the present digital era, customers are making decisions based on huge information available online through user-generated reviews. According to Trip advisor, 94% of customers decide on the restaurant based on user-generated reviews (Tripadvisor, 2018). Customers visiting the restaurants are posting their overall experience, mentioning various aspects of the restaurant like the taste and quality of food, ambiance, location etc. Such kind of information is helping the future customers for their decision making. Photos taken by previous customers also influence the decisions of present customers (Oliveira & Casais, 2019). Prior studies have established that user-generated reviews to affect restaurant performance. For instance, Wang and Kim (2021) studied the effect of online reviews and brands on restaurants' financial performance. Results exhibited the effect of online reviews on restaurant performance, with an interaction effect of the brand. The present study analysed the online reviews of 'Steam', a Jaipur-based vintage steam engine-based theme restaurant in India. Theme restaurants are very different form regular fine dining restaurants. They offer unique experiences to the customers with their specialized restaurant setup and service. Along with food, they create a sensory experience to the customers to make them immersed in the theme world created in the restaurants. This study set out to understand the attributes contributing to customer satisfaction in theme restaurants by taking the case of 'Steam.' Secondly, it tried to understand the relationship between customer satisfaction and behavioural intentions towards the theme restaurants. For this purpose, all positive reviews comprised of the tourists conveying their

willingness to visit the restaurant were categorized manually. Further, these reviews were analysed separately to identify the attributes of customer satisfaction that generated positive behavioural intentions i.e., to revisit and recommend the theme restaurants. Online reviews of 'Steam' restaurant were scraped from Trip advisor. Most reviews of the restaurant were positive. Out of 1,126 reviews, 98.4 % were positive, and a mere 1.6 % were negative, implying high positive e-WoM about the restaurant. We used bi-gram analysis to identify the attributes of satisfaction and behavioral intention towards the restaurant.

Determinants of Customer Satisfaction

As indicated earlier, most of the 'Steam' restaurant reviews were highly positive. The restaurant was able to provide customer delight to their customers with their services. Results of the study identified 13 determinants of customer satisfaction like 'Food,' 'Mention of Staff & Chef,' 'Service,' 'Dining experience,' 'Theme' 'Ambience,' 'Place/Location,' 'Pizza,' 'Staff expertise and behavior,' 'Special occasion,' 'Menu,' 'Music,' and 'Covid-19 safety precautions'. 'Food,' 'Mention of Staff & Chef, 'Service,' 'Dining experience,' and 'Theme' were the top five determinants of customer satisfaction. Among these, some determinants like 'Food', 'Service', and 'Dining experience' were in similar lines with prior studies (Bilgihan et al., 2018; Xu, 2021). While 'Mention of Staff & Chef ' and 'Theme' are the unique determinants that were revealed through our study. These findings can be attributable to the vivid nature of Steam restaurant. Through their reviews, customers mentioned about the chef and staff, revealing that they are delighted with the food recommendations and suggestions given to them. Further, the theme restaurant steam is designed in vintage railway station and engine style. Customers conveyed that they had an amazing experience with the steam engine design of the restaurant. Some customers were delighted while sitting inside the coach, while few were happy with the external ambiance of the railway platform design of seating arrangement. Further, it is clearly visible that 'Steam' was able to execute Covid- 19, precautionary measures effectively. Among all other generic determinants, 'Pizza' is a specific food-related determinant. This can be attributable to the special wooden fired pizza of steam restaurant. The steam restaurant is located beside Rambagh palace. This gives an advantage to steam in terms of its location. Prior studies had also indicated 'Location' to be a prominent determinant of customer satisfaction (Bilgihan et al., 2018; Kim, Lee, Kwon, Park, & Back, 2022; Le, Arcodia, Novais, & Kralj, 2022). Customers coming to the Rambagh palace are most likely to visit steam restaurant contributing to the restaurant occupancy.

Impact of Customer satisfaction on Revisit intentions

Prior studies had indicated the prominence of identifying the effect of customer satisfaction on revisit intentions towards the restaurants (Konuk, 2019; Mannan, Chowdhury, Sarker, & Amir, 2019). Most studies have established the relationship between customer satisfaction and revisit intentions by employing primary data gathered through traditional survey instruments. Studies linking customer satisfaction and revisit intentions through online reviews are sparse. In this study, we attempted to link customer satisfaction and revisit intentions. All the positive reviews of customers who had indicated their intention to revisit the restaurant are considered for analysis. Post analysis results portrayed 12 determinants of customer revisit intentions. 'Mention of Staff & Chef,' 'Food,' 'Service,' 'Dining experience,' and 'Ambience' are the top five prominent determinants, followed by 'Theme,' 'Place/Location,' and 'Pizza.' Whereas, 'Staff behavior', 'Special occasion' 'Music' and 'Menu' are the determinants having a low influence on revisit intentions of customers. It is interesting to note that the determinants of revisit intentions are identical. For example, both customer satisfaction and revisit intentions have 'Food,' 'Service,' 'Dining etc., as their determinants. Though there is heterogeneity in terms of their prominence as determinants, broadly, they are the same. With the support of these empirical findings, we can state that customer satisfaction significantly influences customer revisit intentions.

CONCLUSION

Our study tries to uncover the determinants of customer satisfaction and revisit the intentions of customers coming to theme restaurants by analysing online reviews. Results portray a positive picture of the Steam restaurant. Customers visiting the restaurant are highly satisfied with the service and tend to revisit the restaurant. Theoretically, the present study empirically validated the confirmation disconfirmation theory in theme restaurants by employing user-generated reviews. Secondly, a linkage between customer satisfaction and revisit intentions was made by comparing their determinants. Therefore, this study contributes to the existing literature by validating confirmation disconfirmation theory and further strengthening the literature of customer satisfaction and revisit intention.

Managerially, this study indicates valuable takeaways for the practitioners of the restaurant industry. The steam restaurant has a high positive image among its visitors largely because of its staff, location, and theme. The restaurant staff are highly proficient with their suggestions and recommendations of dishes. Hiring highly motivated staff with proficiency results in long-

term success of the restaurant. The steam restaurant is attached to Rambagh palace, which attracts many tourists resulting in high occupancy and creates popularity for the restaurant. While establishing a restaurant, proper care should be taken while finalizing the location and place, as it greatly affects the restaurant's future reach in the market. Another vital factor for Steam restaurant's success is its unique theme. Restaurant managers can learn to create uniqueness in their offerings to make their restaurants stand out from the competition.

However, our study is not free from limitations; the present study has considered only one theme restaurant for identifying the determinants. Therefore, the findings of this study may not be generalizable to the other theme restaurants. Future studies can take more theme restaurants and analyse their reviews to draw more generalizable findings. Further, rather than bigram analysis, latent discriminant allocation can be used to analyse the reviews to dig deeper into the data. User-generated reviews reveal only the opinions of people who post them online, while some people may not comment their opinion online due to various reasons. Future researchers can make their studies more stringent by validating them with an offline survey to arrive at a more insightful picture.

ETHICAL DISCLOSURES

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ANNEXURES

Figure 1. Word Cloud

Table 1. Technical Features of the Data

Rating	Mean review length	Mean sentiment	Standard deviation of review length	Standard deviation of review sentiment	number	percentage
1	132.6	-0.09	82.75	0.161	10	0.009
2	136	0.101	86.859	0.296	8	0.007
3	99.375	0.12	62.018	0.192	24	0.021
4	59.6	0.38	38.936	0.152	90	0.08
5	51.847	0.467	39.661	0.263	994	0.883

Table 2. Determinants of customer satisfaction

Rank	Determinant of Customer satisfaction	Frequency	Bigram Terms
1	Food	437	*amaze food, delicious food, food drink, food amaze, excellent food, food delicious, food excellent, food quality, quality food, awesome food*
2	Mention of Staff & Chef	432	*gupta ji, chef narendra, chef vijay, yogendra gupta, yogendra ji, special mention, chef naman, service yogendra, magan singh, chef virendra*
3	Service	350	*Food service, excellent service, amaze service, service food, service amaze, ambience service, service excellent,amaze hospitality, excellent hospitality, service hospitality*
4	Dining experience	285	*amaze experience, experience steam, wonderful experience, dine experience, top notch, enjoy food, awesome experience, amaze time, experience food, absolutely amaze*
5	Theme	274	*dinner steam, steam engine, steam restaurant, steam train, inside train, outdoor seat, restaurant steam, seat inside, table inside, train carriage*
6	Ambience	226	*food ambience, amaze ambience, ambience food, sit inside, beautiful ambience, service ambience, ambience staff, nice ambience, food ambience, lovely ambience*
7	Place/ Location	196	*steam rambagh, restaurant jaipur, rambagh, visit rambagh, stay rambagh, ground rambagh, jaipur steam, rambagh steam, restaurant rambagh, view rambagh*
8	Pizza	181	*crust pizza, thin crust, pizza chef, wood fire, amaze pizza, pizza amaze, pizza town, pizza delicious, love pizza, pizza jaipur*

9	Staff expertise and behavior	137	*team steam, courteous staff, entire team, amaze staff, hospitality staff, staff courteous, friendly staff, staff specially, staff extremely, staff steam*
10	Special Occasion	122	*birthday celebration, feel special, dinner date, anniversary celebration, wed anniversary, date night, birthday dinner, birthday special, celebrate birthday, special day*
11	Menu	117	*ice cream, pizza pasta, barrel potato, bake nachos, chocolate cake, calzone pizza, food menu, keema kulcha, soya keema, chicken tikka*
12	Music	60	*live music, drum heavan, music amaze, live band*
13	Covid-19 safety precations	38	feel safe, social distance, covid safety, covid time, post covid

Table 3. Determinants of Revisit intentions

Rank	Determinants of Revisit intention	Frequency	Bigram Terms
1	Mention of Staff & Chef	122	*Gupta Ji, yogendra gupta, chef narendra, chef vijay, service yogendra,chef naman,ji robin, magan singh, chef mahendra, hospitality yogendra*
2	Food	99	*amaze food, food drink, delicious food, food amaze, food delicious, food quality, drink food, execellent food, food serve, awesome food*
3	Service	81	*amaze service, excellent service, service food, service amaze, drink service, exceptional service, warm hospitality, amaze hospitality, fantastic service, hospitality service*
4	Dining experience	73	*amaze experience, wonderful experience, experience steam, dine experience, love food,absolutely amaze, enjoy food, experience highly, experience restaurant, food experience*
5	Ambience	56	*amaze ambience, food ambience, ambience service, love ambience, outdoor seat, seat inside,ambience food, ambience love, drink ambience, nice ambience*
6	Theme	56	*steam engine, inside train, steam train, dinner steam, inside steam, steam restaurant, train carriage, train coach, set train, steam highly*
7	Place/Location	54	*visit jaipur, steam rambagh,beautiful rambagh, ground rambagh, restaurant jaipur,time jaipur, trip jaipur*
8	Pizza	42	*thin crust, crust pizza, wood fire, calzone pizza, pizza chef, pizza town, tasty pizza*

9	Staff behavior	35	*Friendly staff, service friendly, service provide, staff courteous, staff profession courteous staff, hospitality staff, special care, staff friendly, staff specially*
10	Special occasion	22	*dinner date, feel special, special occasion, birthday dinner, special birthday*
11	Music	19	*live music, live band, music amaze*
12	Menu	12	*bake nachos, cocktail food, pizza pasta, signature drink*

Conceptualizing the industry 4.0 adaptation for small and medium-sized enterprises & performance

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ABSTRACT

Information technology (IT), electronics, and digitalization have all contributed significantly to the emergence of the third Industrial Revolution. These innovations have paved the way for transformative technologies like the Internet of Things (IoT), Cyber Physical Systems (CPS), and the Internet of Services (IoS). Together, these elements constitute the foundation of Smart Factory, and they play a pivotal role in shaping the emergence of Industry 4.0. Industry 4.0 has a major influence on the industrial sector in industrialised countries, mostly by large firms. But, Small and medium sized enterprises (SMEs) find it challenging to replicate the same achievements. This paper explores the influence of emerging digital technology in Industry 4.0 on various factors that affect the adaptation of SMEs' organisational processes. Furthermore, developed a model to assess the organisation's performance, considering the mediating impact of the maturity score and the moderating influence of the industry type of the SME. The resource base view (RBV) theory and contingency theory are employed to develop the conceptual frame, and the maturity model is used to find the industry 4.0 maturity score. The paper makes an academic contribution by providing valuable insights to support future research on SMEs' transition towards digitalised processes and its impact on organisational performance.

Keywords: Operational Performance, Financial Performance, Industry 4.0, SME, Maturity Model, RBV and Contingency theory

INTRODUCTION

The dynamic environmental landscape presents significant challenges, driving businesses to invest heavily in sophisticated and integrated IT based solutions to enhance their competitiveness. Enterprises seek automated systems that facilitate collaboration and exchange of information regarding competitors, consumer trends, market dynamics, product delivery features, and technological advancements (Rajan & Baral, 2015). The industrial revolution evolved through three phases since the 1800s: Industry 1.0 utilised water and steam power, Industry 2.0 introduced assembly lines and mass production, while Industry 3.0 brought computer networks, robotics, and the Internet, revolutionising information management and sharing. (Gökalp et al., 2018). Additive manufacturing, AI, autonomous robots, CPS, IoT, big

data, augmented reality, and the smart factory idea are all examples of the coming digital technologies that are part of the "Industry 4.0" paradigm. Alternatively, Industry 4.0 can be seen as the progression of technology from embedded systems to CPS (Rojko, 2017). Industry 4.0 enables businesses to gain enhanced control by leveraging real time data, leading to improved productivity and streamlined processes. This powerful synergy fosters continuous growth, making it a driving force for industries that embrace these transformative technologies. SMEs are very important to the global economy because they help create jobs, reduce poverty, encourage business, and improve rural areas. In recent years, the business environment for SMEs has evolved, emphasising customer satisfaction and market flexibility. (Awan et al., 2021). Hence, SMEs are widely recognised as necessary for economic development. SMEs play an essential role in industrial value development and supplying large organisations (Müller et al., 2018). As a result of Industry 4.0, large organisations have new technology demands that must be fulfilled. However, most SMEs are not positioned to adopt this new technology (Yüksel, 2020a) and don't have fully understood the technology or digitalisation (Yüksel, 2020b). Moreover, they are uncertain about the capital required to purchase new technology and its effects on their business strategies (Schumacher et al., 2016a). Experts have identified key challenges in implementing Industry 4.0, including a lack of strategic direction, difficulty grasping complex concepts, uncertainty regarding benefits and costs, inability to assess readiness, and failure to evaluate capability. These challenges hinder businesses from embracing Industry 4.0 effectively (Schumacher et al., 2016a). Industrialised countries have established national strategies to support Industry 4.0 development, whereas developing countries rely on corporate-level initiatives without coordinated national policies. Developed nations prioritise comprehensive approaches while developing ones depend on individual company efforts for implementing Industry 4.0 technologies (Bogoviz et al., 2019). Similarly, the adaptation of Industry 4.0 systems in Asian countries manufacturing SMEs are less than 20% (Ghobakhloo & Ching, 2019) .

Recent studies reveal that SMEs have a low rate of digital adaptation in Industry 4.0, attributed to its complexity and unpredictability. Smaller businesses' risk aversion, resource limitations, and technical skill gaps pose challenges in adopting advanced technologies (Horváth & Szabó, 2019a). However, any industry lagging behind the industrial revolution has a significant risk of losing its competitive position and performance [12]. For Europe to reach its economic goals by 2030, it would require annual investments of 90 billion Euros in Industry 4.0 implementation [13]. (Geissbauer et al., 2016) A survey of over 2,000 senior executives from industrial product companies across 26 countries revealed that 56% of respondents anticipate

efficiency gains of over 20% in the next five years through Industry 4.0 adoption. Additionally, the introduction section in the literature emphasises that Industry 4.0 significantly enhances organisational performance. Hence, this research aims to address critical questions raised by SMEs regarding Industry 4.0, such as assessing their current situation, determining their level of transformation, identifying focus areas, and understanding how Industry 4.0 impacts financial and operational performance. The main objective is to develop a conceptual framework to evaluate SMEs' Industry 4.0 transformation and its effects on their financial and operational performance.

SMEs and Industry 4.0

Extensive studies on Industry 4.0 highlight the greater difficulties that SMEs commonly encounter in harnessing the potential advantages compared to larger organisations (Horváth & Szabó, 2019a). Also, emphasises customised production and manages the full product lifecycle value chain (Vaidya et al., 2018). Industry 4.0 technology implementation necessitates the integration of contemporary innovations and existing legacy systems, creating the essential connectivity and intelligence required for optimal functionality of front-end technologies (Benitez et al., 2020). However, (Estensoro et al., 2022) emphasise that the implementation of Industry 4.0 is adequate to achieve a sustainable competitive advantage in SMEs.

SMEs can classify Industry 4.0 technologies into two tiers: first-tier and second-tier technologies [15]. SMEs may independently acquire and utilise first-tier technology like 3D printers. The integration of several first-tier technologies, such as data collecting systems and machine learning, gives rise to second-tier technologies like industrial IoT and CPS. (Ghobakhloo & Ching, 2019). (Agostini & Nosella, 2019b) investigated the essential correlation between advanced manufacturing technologies (AMTs) with Industry 4.0. These AMTs play a critical role in enabling the successful implementation of Industry 4.0 technologies by SMEs. Furthermore, computer aided design and engineering, digital factory floor, enterprise support operations, and supply chain integration technology are the four groups of Industry 4.0 technologies that have been recommended for SMEs (Bosman et al., 2019).

Existing research highlights multiple categories for Industry 4.0 technologies, but SMEs' adoption rate has been significantly low. Although many SMEs benefit from basic digital technologies, the adoption of current Industry 4.0 devices remains low across segments. For instance, less than 20% of high-tech Czech SMEs use advanced technologies like 3D printing,

virtual reality, or autonomous vehicles (Pech & Vrchota, 2020). European SMEs face similar challenges (Agostini & Nosella, 2019a). Moreover, South Korean manufacturing SMEs (Won & Park, 2020), Norwegian manufacturing SMEs (Buer, Strandhagen, et al., 2021) , and Australian SMEs (Hopkins, 2021) are also at an equivalent level.

SMEs face challenges in developing growth strategies due to limited technological knowledge, inadequate R&D, and insufficient financial investment for technology adoption(Al Bulushi & Bagum, 2017). Policymakers and industry associations express concerns that the absence of defined frameworks and standards leaves SMEs lagging in Industry 4.0 implementation, lacking the necessary resources(Khanzode et al., 2021). Thus, it is widely acknowledged among scholars that most SMEs remain in the early adoption phase and have yet to implement advanced Industry 4.0 technologies (Chatterjee et al., 2021; Maisiri et al., 2021).

Industry 4.0 and Organisation Performance

Over the past few years, a new research domain has emerged dedicated to examining the effects of Industry 4.0 on organisational performance (Kohtamäki et al., 2019). According to (Bruck et al., 2018), the quantity and extensive utilisation of Industry 4.0 technologies within a company have a positive influence on creating opportunities. However, there are changes in outcomes with real performance rather than the expected indicators. As per (Szász et al., 2021), Industry 4.0, encompassing advanced technologies linked to the future's smart factory and the trend towards automation and robotisation, significantly impacts cost, quality, delivery, and flexibility performances. (Tortorella et al., 2019) made a difference between the two types of Industry 4.0 technologies. Technologies supporting manufacturing practices positively impact operational performance indicators, while those supporting product and service development have no direct impact.

Furthermore, the study conducted by (Swierczek, 2022) revealed that the emergence of supply chains acts as a complete mediator in the relationship between Industry 4.0 technologies and process performance. Additionally, there exists a positive correlation between supply chains and organisational performance. Similarly, (Wankhede & Vinodh, 2023) indicated that Industry 4.0 moderately relates to the organisation's productivity performance. According to (Antony et al., 2021) early adopters of Industry 4.0 outperform late adopters in operational, financial, environmental, and social aspects. (Cho et al., 2022) reveals that Industry 4.0 technologies, such as technology sensing and responding capability, have positive effects on exploratory and exploitative innovativeness, leading to improved new product performance. Likewise, (Mubarak et al., 2021) emphasises the positive impact of Industry 4.0 on open

innovation and green innovation performance. As a result, the research incorporates the Industry 4.0 maturity score as a mediator of organisation performance.

THEORETICAL BACKGROUND

Globalisation and competitiveness have significantly influenced organisations' decisions to use technology solutions to manage their day-to-day business requirements (Wieder et al., 2006; Yurtyapan & Aydemir, 2021). As a result, these solutions can be found in computerised business processes, well-organised accounting systems, and other projects that could help a business improve its performance and capabilities (Haddara et al., 2022). Among all technologies, Industry 4.0 strongly emphasises creating customised products tailored to meet specific customer requirements. It represents a new paradigm in planning, implementing, and controlling the entire value chain of the product (Lasi et al., 2014).

Using the TOE framework (which stands for technology, organisation, and environment), researchers (Hirschheim, 2007) have studied how organisations embrace new technologies. Their study revealed that multiple factors play a role in influencing the adoption of AI among Swedish manufacturing SMEs. Another study (Trstenjak et al., 2019)looked at the impact of Industry 4.0 on manufacturing and service facilities by using four MCDM techniques (analytical hierarchy process (AHP), PROMETHEE, ELECTRE, and TOPSIS). (Sari & Santoso, 2020) conduct a study to examine the preparations of SMEs in Indonesia using the SEM-multigroup test with a sample size of 300 businesses. The theory of reasoned action (TRA) was used in(Widayani et al., 2020) to evaluate the readiness and capability of SMEs from an Industry 4.0 perspective. Moreover, (Jang et al., 2022b), employed the resource-based view (RBV) and contingency theory to analyse the SME's performance by evaluating Industry 4.0 maturity levels in Korea. Similarly, (Wang et al., 2020) evaluate the logistics innovation capability in the Industry 4.0 era by employing the RBV and Contingency theories. Hence researchers employed above discussed theories and models to evaluate industry 4.0 with SMEs behaviours.

Resource Based View Theory and Contingency Theory

The RBV theory is the most influential perspective on organisational strategy. According to RBV, a company's competitive advantage rests on its resources, both tangible (such as its physical assets) and intangible (such as its knowledge, skills, and capabilities). The contingency theory contends that the efficacy of a company's strategy is dependent on the environment in which it operates (Barney, 1991). The RBV theory indicates that a firm's

resources are skills, tech, capabilities, and infrastructure. Capabilities are complex skills and knowledge used through processes to support actions and asset utilisation (Day, 1994; Hafeez et al., 2002). Thus, the adoption of Industry 4.0 is expected to enable companies to elevate manufacturing capacities and potentially enhance overall performance. Also, Industry 4.0 technologies can offer businesses novel competitive advantages by lowering production costs, shortening delivery times, enhancing product quality, and improving overall flexibility [54],[55]. Low-tech SMEs benefit from Industry 4.0 adoption, reducing labor costs and improving quality. RBV suggests Industry 4.0 systems as valuable assets enhancing productivity. Increasing Industry 4.0 maturity boosts SME efficiency and competitiveness(Mittal et al., 2020). Therefore, a company's resource value and competitive advantage depend on the factors of the business environment in which it performs. According to contingency theory, organisations should maximise and improve their resources and skills to maintain the uniqueness of their business environments (Zheng et al., 2021). According to this theory, organisations must achieve high performance by maintaining and balancing their structures and contextual factors (Donaldson, 2001). The contingency method is commonly used to study contextual factors, manufacturing practices, and performance results to determine the settings in which adopted practices are effective (Sousa & Voss, 2008). So, this study uses the contingency theory to explain how the deployment of Industry 4.0 can enhance the performance of SMEs.

The study, which was conducted using a combination of RBV and contingency theory, can expand on existing conceptual studies related to Industry 4.0 and improve current empirical studies. It showed that organisational learning capabilities mediated the relationship between Industry 4.0 technology and organisational performance (Tortorella et al., 2020). Also, this combination is used to discover lean manufacturing and organisation performance with mediating effect of Industry 4.0 technology (Kamble et al., 2020). Similarly, both theories are employed to evaluate the improvement of the operational performance and supply chain capabilities with the adaptation of Industry 4.0 technology (Chauhan et al., 2021). Hence we can utilise the combination of RBV and contingency theory to evaluate organisation performance with the mediation effect of industry 4.0 technology.

Maturity Model

Maturity is defined as the point at which one is completely grown or matured. (Paulk et al., 1993) employed the maturity model to evaluate the software development capabilities. These

methods have been widely recognised in many different kinds of areas. The maturity model can be applied in several domains, such as assessing IT capabilities, ensuring top management desition, evaluating the new improvement, overseeing project management, developing cooperative desition, and enhancing skill development (De Bruin et al., 2005). Similarly (Hankel & Rexroth, 2015), the maturity model is applied to evaluate the Industry 4.0 adaptation level. Also, researchers have produced models for determining Industry 4.0 readiness as well as proposals and designs for Industry 4.0 roadmaps (Pacchini et al., 2019). (Basl & Doucek, 2019) discussed the maturity score that may be used to determine an SME's readiness for implementing Industry 4.0 technology and digital/smart automation techniques or current technology level. The assessment of maturity was derived by considering various organizational aspects in practice, and the validity of the index was verified through both qualitative and quantitative methodologies.

Hence, maturity models serve as valuable tools for identifying and assessing a company's level of maturity within a specific field or method concerning its progress towards a future objective (Ávila Bohórquez & Gil Herrera, 2022). Within a maturity model, a designated level acts as the initial stage, providing a foundation from which progression to higher levels of maturity can be strategically planned and executed. The primary aim of maturity models is to quantify and gauge the efficacy of undertaken activities, fostering their measurability and gradual advancement (Mittal et al., 2018). The above literature suggests using maturity models to evaluate Industry 4.0 adaptation in SMEs. These conceptual structures define maturity levels, guide procedures for future outcomes, and classify capabilities for internal and competitor analysis, as well as benchmarking.

As per the above theoretical exploration, the following theoretical model is employed to develop the conceptual framework and presented in Figure 1.
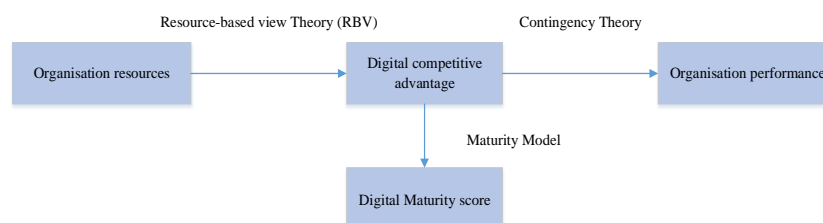
Figure 1: Proposed theoretical framework

Proposed Conceptual Framework

The RBV is an essential perspective in organisational strategy, with the literature and

theoretical framework highlighting the importance of both physical and skill resources in achieving a competitive benefit. RBV focuses on firms' distinctiveness, strategic resource utilisation, and adaptation to business environments.(Lockett & Thompson, 2004). However, the financial support of the technology and management IT knowledge influence the leverage of the organisation's digital competitive advantage (Rahimli, 2012; Zhang & Lv, 2021). Furthermore, the organisation's agility positively impacts the sustainable development of the organisation and digital innovations (El-Khalil & Mezher, 2020; Sun et al., 2022; Attafar et al., 2013). Similarly, business competitiveness influences the organisation's digital competitiveness as well as new digital business models (Sunigovets, 2019). The study selected independent variables categorised as "management IT knowledge" and "financial support on technology" under management-related factors, and "organisation agility" and "business competitiveness" under business factors. The dependent variables are "financial performance" and "operation performance" based on contingency theory's focus on maximising resources and capabilities to match specific business contexts.

As per the literature given in the introduction, SMEs generally have less knowledge of Industry 4.0 technology. Hence, SMEs need to use proper assessment tools to evaluate their current position at the technology level (Rauch et al., 2020). The maturity model is a suitable method that can be employed to evaluate companies and organisations. Because it provides a clearer picture of the steps still required to get the desired outcomes. (Pöppelbuß & Röglinger, 2011). In business, "maturity" usually indicates how far along in accurate execution the organisation is in connection with whatever it aims to analyse or appraise. Both quantitative and qualitative maturity assessments are possible, employing criteria based on individual or group factors, respectively (Schumacher et al., 2016b). Hence, we selected the "Industry 4.0 maturity score" as the mediator of the conceptual framework.

The engagement and success of Industry 4.0 may vary depending on the technological environment. High-tech industries with rapidly changing production technologies differ from low-tech industries with slower changes(Ko et al., 2020). High-tech manufacturing organisations tend to be more dynamic and information-intensive (Yang & Kang, 2008). Collaborations among machines, humans, and processes are crucial for optimising Industry 4.0 systems (Won & Park, 2020). Hence we selected the industry types as the moderator variable of industry performance in the conceptual framework.

The proposed conceptual framework is shown in Figure 2, according to the above description.
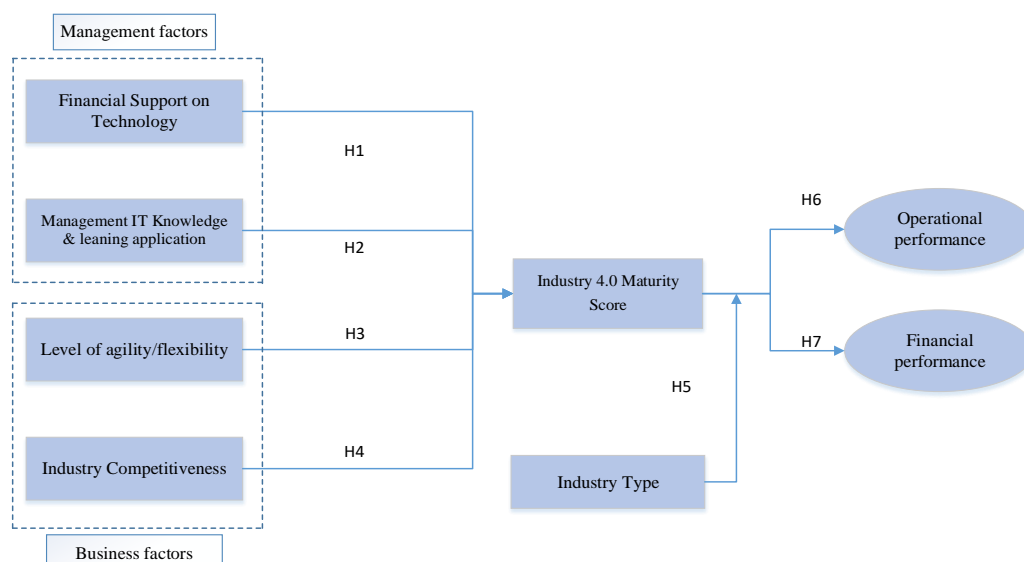
Figure 2: Proposed conceptual framework

Hypothesis development

Research hypotheses are developed based on the research questions, and the following research questions can be developed from the above conceptual framework. These questions address the transformation of SMEs into Industry 4.0, the impact of Industry 4.0 transformation on financial and operational performance, and whether the industry type influences the effects of Industry 4.0 transformation on financial and operational performance. The researcher expected to develop the following hypothesis to achieve the above questions.

Financial Support on Technology (H1)

The organisation's financial capability is an important factor in adopting modern technology (Hajoary, 2020). The availability of financial resources is an essential aspect of any business. Investments and the return on investments are very important to all businesses (Jasra et al., 2011). SMEs are typically owner-centred or family-owned organisations with limited financial resources. Hence, they have obstacles to adopting new technology or enhancing the Industry 4.0 maturity ladder (Martinsuo & Luomaranta, 2018). However, several authors indicated that investment in the R&D has more probability to the adaptation of Industry 4.0 application than the size of the organisation (Buer, Semini, et al., 2021). Furthermore, new developments in Industry 4.0 offer significant opportunities for SMEs (Haug et al., 2023). Hence, the organisation's Industry 4.0 maturity score is most significantly influenced by financial support for technology.

Management IT Knowledge and Learning Application (H2)

(Jain & Ajmera, 2020) state that the most important considerations for implementing Industry 4.0 are the employees' experience, knowledge, and access to training opportunities. Similarly, (Horváth & Szabó, 2019a) discovered that effective management and control are the major motivators for developing Industry 4.0. However, a significant obstacle to successfully adopting Industry 4.0 is the deficiency in capable management, capable employees and their behaviour to adup the new environment (Mittal et al., 2018). Hence, for organisations to effectively implement Industry 4.0 technologies, they need to conduct effective learning programs and develop new training techniques that enable the improvement of employee skills (Kiel et al., 2017). Hence management IT knowledge and learning application is significantly influencing when implantation Industry 4.0.

Level of Agility / Flexibility (H3)

Agility is the capacity of a system to adjust to evolving demands through the substitution or enhancement of individual processes facilitated by specified software and hardware interfaces. (Hermann et al., 2015). Incorporating organisational agility is a fundamental guiding principle for the successful implementation of Industry 4.0. Embracing agile and flexible frameworks is imperative to effectively address the challenges posed by Industry 4.0 and sustain adaptability in this dynamic environment (Veile et al., 2020). Properly constructed organisational structures and procedures that are more important in a dynamic atmosphere. (Horváth & Szabó, 2019b). Industry 4.0 gives the industry several opportunities that will help improve organisational agility. Also, organisational agility is a key part of dealing with changes in circumstances like Industry 4.0 (Matthiae & Richter, 2018). Hence the level of agility/flexibility is significantly influenced when the implantation of Industry 4.0

Industry Competitiveness (H4)

Competitive pressures regularly force organisations to seek innovative approaches that enhance operational efficiency and drive productivity growth (Themistocleous et al., 2004). Most organisations embrace their rival's technologies due to pressure from their business partners and competitors (Teo, 2007). According to (Horváth & Szabó, 2019b), market competition and rivalry are essential factors. Leveraging innovations rooted in Industry 4.0 technologies can empower companies to expand their market presence and gain a distinctive competitive edge. There is room for innovation in both business models and the value proposition. Thus, by strategically investing in emerging digital technologies, businesses can enhance their

competitive advantage and secure unparalleled positions in their respective markets (Hortoványi, 2016). Therefore, SMEs have embraced Industry 4.0 technology in order to make better, faster business decisions in more competitive markets. (Boonsiritomachai et al., 2016). Hence Industry Competitiveness is significantly influenced when the implantation of Industry 4.0.

Industry Type (H5)

The business plan of a company is based on situations and contexts that must change all the time for its sustainability (Egfjord & Sund, 2020). Because various industries operate in different technological contexts, this can have an impact on a company's capacity to innovate and its approach to acquiring new knowledge and resources (Chun et al., 2015). There are significant differences between the high-tech and low-tech industries (Lin et al., 2006). Technologically advanced enterprises produce advanced technology and do extensive R&D. Conversely, low-tech businesses usually work where technology changes slowly(Hirsch-Kreinsen, 2008). Hence, the industry types moderately affect Industry 4.0 and organisation performance.

Industry 4.0 Maturity Score and Organisation Operational Performance (H6)

SMEs would benefit financially and operationally from adopting Industry 4.0 technology, and this will encourage businesses to shift their focus to the consumer (Mittal et al., 2020). Similarly, (Tao et al., 2018) described that Industry 4.0 enables customising products based on individual needs by leveraging big data analytics for measuring customer demands and preferences. This facilitates mass customisation, reduces manufacturing costs, and enhances flexibility to meet changing customer requirements (Lu et al., 2020). Manufacturing waste may be minimised, and resource value can be maximised with the help of Industry 4.0 systems. Businesses may reduce the risks associated with deploying resources by creating, testing, and analysing virtualised models of industrial assets in action. (Parhi et al., 2021). Additionally, organisation management must make various decisions that demand huge amounts of data and complicated computations. Cloud computing can facilitate complicated decision-making and store enormous volumes of data on cloud servers (Xu et al., 2018). Furthermore, increased accuracy in processing, decreased costs, and real-time data collection are just some of the benefits provided by IoT (Rajput & Singh, 2018). Businesses can reduce waste and increase productivity by remotely monitoring and controlling these processes. Also, automation and industrial robots can reduce the number of mistakes and help tasks be carried out quickly,

repeatedly, and accurately (Ghobakhloo, 2018). Hence, Industry 4.0 technologies is significnly influence the operational performance.

Industry 4.0 Maturity Score and Organisation Financial Performance. (H7)

The literature discussed in 4.1.6 shows that the adaptation of Industry 4.0 is beneficial to encouraging the organisation's operational and financial performance. However, cost of operation and maintenance, quality, delivery, lead time, and flexibility are the desired criteria for operational performance. As such, it could positively impact the business performance (Büyüközkan et al., 2015). This may be linked to the reduction in inventory and materials expenses, as well as the enhancement of labour efficiency. Also, reducing sales returns can enhance sales productivity (Altuk & Kablan, 2020). Additionally, Ghobakhloo (2020) emphasises that digitisation will contribute to the creation of economic advantages over time with the implementation of Industry 4.0 across the board in the business ecosystem. Hence, Industry 4.0 technologies significantly influence financial performance.

RESEARCH METHOD

Saunders et al. (2016) grouped research methods into quantitative, qualitative, simple or complex combinations and mono methods. Qualitative research uses numbers and mathematics but also has a lot of descriptive data. Quantitative or qualitative based on data research is known as the "mono method". The "mixed methods" and "multi-method" methods use both qualitative and quantitative methods, even if one is primary and the other is auxiliary or supplementary, to achieve various objectives and overcome the constraints of a single method. However, qualitative approaches typically use open-ended methods, resulting in a time-consuming process of translating and analysing data (Powelson, 2012). Hence, the quantitative approach is recommended to find the research objective.

CONCLUSION

The latest innovations in Industry 4.0 present chances for businesses to improve their operations and this trend can no longer be ignored. This strategy might be especially useful for SMEs operating in challenging conditions. (Peillon & Dubruc, 2019). While SMEs may be successful with their present approaches, they may be hindered from expanding further and may fall behind their global market rivals if they do not adopt Industry 4.0 technologies. This research aims to develop the conceptual framework to evaluate whether the SMEs are transforming into Industry 4.0, how the Industry 4.0 transformation affects financial and

operational performance, and how the Industry 4.0 transformation affects financial and operational performance. The Industry 4.0 maturity model, RBV and contingency theory are employed to develop the above framework. Based on the literature, we selected the independent variables under two categories. Existing "management IT knowledge" and "financial support on technology" are taken under the management-related independent variables. Similarly, "organisation agility" and "business competitiveness "are taken under the business factors. Also, the organisation's "financial performance" and "operation performance" are selected as the dependent variables in the conceptual framework. Hence this framework can be used for academically by supporting future research investigating SMEs in planning conversion towards digitalised processes and how it affects the organisation's performance. Also, this research findings can serve as a foundation for constructing a more accurate conceptual framework in future investigations.

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An investigation into the impact of supply chain management practices on the supply chain responsiveness of the non-alcoholic beverage industry in Western Province, Sri Lanka

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ABSTRACT

Market share will be lost as the number of competitors increases if supply chain management practices, particularly supply chain responsiveness, are not implemented. The goal of this study is to see if there is a link between strategic supplier partnerships, customer relationships, information sharing, and supply chain management practices, and supply chain responsiveness. The study is being conducted in Western Province, including the districts of Gampaha, Colombo, and Kalutara, to evaluate and identify the influential factors for supply chain responsiveness. Individual executives and above-level employees from departments of production, operation/manufacturing, quality enhancement, inventory and warehouse, transport, and distribution in non-alcoholic beverage manufacturing companies registered with the Export Development Board of Sri Lanka were polled.

Data from 134 respondents is collected and analyzed using reliability and validity tests, descriptive and correlational analysis, and simple and multiple regression analysis. Other literature studies have all contributed to the findings of this study. The findings revealed a significant positive relationship between supply chain responsiveness concepts and supply chain management practices such as strategic supplier partnership, customer relationships, and information sharing. The study delves into the concept of supply chain responsiveness and its impact on manufacturing companies, as well as suitable strategies for improving supply chain responsiveness and supply chain management practices. There have been few studies on the selected topic in the Sri Lankan context, so this study will add to the literature and have several managerial implications for the industry. It is advised to conduct additional research to obtain more reliable insights in the field of study.

Keywords: Supply Chain Management Practices, Supply Chain Responsiveness, Strategic Supplier Partnership, Customer Relationship, Information Sharing

INTRODUCTION

Background of the Study

The stages of planning, organizing, leading, and controlling that occur in the process of combining to achieve a specific goal are simply referred to as "management." Management is the process of coordinating resources, achieving coordination, and establishing the goals or

objectives of managerial involvement. Supply chain management is the management of the entire production or service floor, from raw materials to final product output or service delivery to the customer. The smooth flow of goods and services among business units, on the other hand, is location-dependent, including raw material storage, working in process inventory, finished goods, and consumption quantities. Visibility, talent acquisition, cloud-based solutions, cyber security, digitalization, globalization, and resilience are some current supply chain management trends. Supply chain management practices help to improve understanding of how processes are integrated to produce output that adds value to customers. Supply chain management practices include a variety of activities, including business, that promote effective supply management, such as planning, sourcing, supplies and materials, manufacturing, delivery, and returns. Supply chain responsiveness is the ability of an organization to respond efficiently and effectively to the dynamic impact of its customers by reacting in accordance with market requirements. Strategic supplier partnership (SSP), customer relationship (CR), and information sharing (IS) are all important supply chain management practices.

Strategic supplier partnership is the pinnacle of supplier relationships that organizations consider when selecting partners. Strategic supplier partnerships are focused on collaboratively working as a team while sharing information and developing risk-rewarding relationships. The majority of these connections occur between two or more commercial enterprises. Strategic supplier partnerships can significantly improve the quality of materials provided to organizations. It can also be used to capture the supply chain process and subprocesses in decision support systems. Strategic supplier partnerships enable open forms, case problem solving, interconnections, and the achievement of a common goal, which is essentially profitability and cost reduction for an organization. These collaboration strategies are intended to resolve conflicts, meet mutual demands, manage costs, delivery activities, and other organizational activities throughout the supply chain management process.

Customer relationships are the criteria that a company uses to coordinate with its customers and improve their product or service's customer experience. This has an effect on the organization's ability to conduct business, respond to inquiries, and meet deadlines. Customer relationships, as a supply chain responsiveness criterion, demonstrate that the organization's first concern is about customer needs and being supportive to compete in a crowded market, continuous progress, and brand development. Simply put, information sharing is the exchange of various levels of data between various types of organizations, technologies, and people. It is a critical approach to any type of organization's survival and supply chain integration.

Furthermore, information sharing is encouraged to provide the foundation for supply chain processes to execute transactions and to aid management levels in decision-making.

Dimensions of supply chain responsiveness include operational system responsiveness, logistics process responsiveness, and networking supply responsiveness. The responsiveness of an operational system aids in qualifying an organizational process or supporting information technology solution indications in response to changes in conditions and customer interactions. Simply put, logistic process responsiveness means that a company's transportation, distribution, and warehousing systems respond to fluctuations in customer demand through operation system responsiveness. The responsiveness of logistic processes is an important factor in the success of responsive supply. Responsive suppliers can have a significant impact on the impact of supplier network responsiveness on an organization's delivery performance.

Oil, fats, additives, functional foods, herbal natural foods, alcoholic and non-alcoholic drinks, energetic drinks, baked foods, canned and packaged foods, and animal foods comprise the global food and beverage industry. The food and beverage industry is the world's largest and fastest-growing sector, with significant growth potential in the manufacturing sector. It includes food manufacturing, operating, catering, food transport services, cafeterias, and fast-food restaurants that are involved in the production, packaging, transportation, and serving of food or beverages.

The beverage industry generates jobs and invests heavily in technology, retail improvement, and environmental sensitivity. The beverage industry is an important supporter of national exchange and economic development in each country. The United States is expected to have the largest industry in 2022, with a total annual revenue of more than 146 billion US dollars. Furthermore, the alcoholic and non-alcoholic beverage industries in the United States generate a total annual revenue of 146 billion dollars. According to EHL insights, the beverage world's 2022-year trend is focusing on a good, healthy beverage as a development of drinking habits due to the COVID worldwide pandemic era. A beverage is simply a non-water drink that has been prepared for human consumption. Tea, herbal, water, coffee, dairy, syrups, cordials, soft drinks, carbonated drinks, and fruit juices are examples of beverage products. Non-alcoholic beverages (soft drinks) can be classified as carbonated or non-carbonated, such as fruit juice, fruit nectar, coffee, tea, packaged water drinks, and tonic water (Sivasomaskhar, 2010).

At a medium and smooth level, Sri Lankan manufacturing companies use supply chain responsive practices. The Colombo Stock Exchange (CSE, 2020) is home to approximately 50

food, beverage, and tobacco manufacturing companies. In addition, the Export Development Board of Sri Lanka (EDB, n.d.) Registered 11 non-alcoholic beverage companies and 25 alcoholic beverage companies. The carbonated soft drink market in Sri Lanka was worth 289 million USD in 2015 and is expected to reach 614.3 million USD by 2025 (marketresearch.com, 1999-2022).

The food and beverage sector, according to the Export Development Board, includes coconut, vegetables, fruity products, extracts, juices, partially cooked foods, bakery foods, ready-to-serve foods, animal feed, cereal preparation, and flour. Sri Lanka's soft drink market is worth $80 million, and the fruit juice market is worth $12 million. For Sri Lankans, the Ready-to-Drink (RTD) industry is a distinct segment of the beverage market.

According to Statista.com, the beverage segment's revenue is expected to reach US$109.30 million in 2022. From 2022 to 2025, revenue is expected to grow at a 23.98% annual rate. By 2025, the population of beverage users is expected to reach 2.5 million. In any case, according to the Sri Lanka Colombo stock exchange (2022, Aug. 17), the beverage industry in Sri Lanka increased by 7.9% in the last week, with Distilleries Company of Sri Lanka increasing by 9.2%. According to previous year's records and data analysis, the beverage industry has decreased by 18%. It is expected to grow at a 6.2% annual rate over the next few years.

The Sri Lankan beverage industry's performance fell by 4.5% in the first quarter of 2020. Short-term restrictions harmed economic activities, including exports (Goolsbee & Syverson, 2021); the food and beverage industry contributes 4.7% to export earnings (Central Bank of Sri Lanka, 2020).

The supply chain responsiveness is agile and responsive to customer needs while serving demand, with base-line business activities such as order fill, scalable delivery, communication, and customer satisfaction expected. The responsiveness will be intuitive and capable in the face of sudden changes, as well as an improvement of the organization's entire supply chain process in strategic supplier partnerships, customer relationships, and information sharing. Supply chain management practices can help improve supply chain responsiveness and thus an organization's competitive advantage. Directly impacted the competitiveness of that organization's supply chain by increasing supply chain visibility, developing good relationships, improving the brand, and completing the supply chain process. This study focuses on the non-alcoholic beverage industry and how certain supply chain practices affects the beverage industry's supply chain responsiveness in Western province, Sri Lanka

Problem Identification & Justification

Because of the rapid changes in the business environment and the competition in the beverage industry in the manufacturing field, which has created a high demand for low prices, good quality, large varieties, and the fastest delivery in today's world economy, supply chain manufacturing practices are useful for each organization. Moreover, organizations are not currently focused on different supply chain segments. As a result, consider all organizations to be one supply chain unit. Market share will be lost as the number of competitors in the supply chain management field grows, if there is high competition without supply chain management practices, particularly supply chain responsiveness practices. There have been very few studies, a scarcity of research findings, a lack of interest in this area of the beverage industry in recent years, very little collection of literature, a low focus on the industry, few discussions, and a specific research gap on supply chain management practices in SSP, CR, and IS in Sri Lanka. The study aims to fill a gap in the literature on supply chain responsiveness by empirically investigating the impact of various practices between and among non-alcoholic beverage companies in western Sri Lanka on supply chain responsiveness. As a result, discovering a link between SCMP and SCR and presenting it to the business community raises awareness. As a result, using these supply chain practices at the managerial and executive levels will benefit the organization's performance. The literature included will help you learn new things. Considering the foregoing, we can conclude that the study's problem statement is that it is critical to investigate the impact of SCR on the non-alcoholic beverage industry in Sri Lanka's western province.

Research Questions

- o Does strategic supplier partnership impact the supply chain responsiveness of beverage companies in Sri Lanka?
- o Does customer relationship impact the supply chain responsiveness of beverage companies in Sri Lanka?
- o Does information sharing impact the supply chain responsiveness of beverage companies in Sri Lanka?
- o Does supply chain management practice impact the supply chain responsiveness of beverage companies in Sri Lanka?

Research Objectives

- o To understand the strategic supplier partnership impact on the supply chain responsiveness of beverage companies in Sri Lanka.

- To identify the impact of customer relationships on the supply chain responsiveness of beverage companies in Sri Lanka.

- To understand the impact of information sharing on the supply chain responsiveness of beverage companies in Sri Lanka,

- To evaluate the impact of supply chain management practices on the supply chain responsiveness of beverage companies in Sri Lanka.

Importance of the study

As a practical and important consideration, responsiveness in the supply chain will help the business community's supply chain practices of executives, manufacturers, and managerial levels to improve organizational performance and impact the food and beverage industry and all other manufacturing companies. Theoretically, it is critical for the research community, such as academic research, to study and obtain references that have not yet been explored in Sri Lanka. In comparison to other nations and industries, Sri Lankans have published fewer articles, journals, and papers on the beverage industry, as well as supply chain practices and supply chain responsiveness. Because there are few educational resources available to educate people, this effort is beneficial for current and future improvements in supply chain responsiveness undertaken by manufacturing companies. Researchers can use these findings to conduct additional research with relevant comparisons across industries. And the data would help them gain a better understanding of this study by identifying the various factors, dimensions, and supply chain responsiveness impacts of supply chain practices. The study was useful in interpreting the impact of supply chain management practices on the supply chain responsiveness of non-alcoholic beverage industry in Western province, Sri Lanka. This research will help to close the research gap as much as possible. Aside from that, research findings will contribute to the provision of useful information for future studies.

LITERATURE REVIEW

Supply Chain Management

According to Min and Mentzer (2004), the SCM concept is based on long-term relationships, information sharing, vision, goal setting, risk sharing, cooperating, integration processing, and supplier leadership. Supply chain management (SCM) is defined by supply chain management leaders (CSCMP, 2004) as the planning and management of activities involving suppliers, intermediaries, external service providers, and customers. Fauzi et al. (2017) go on to explain supply chain management implementation in industrialized systems. There is a distinction that

affects both upstream and downstream. Several studies have suggested supply chain management for agricultural supply chain implementations as well. Yildiz et al. (2020) define SCM as four component suppliers: manufacturers, distributors, and retailers linked by financial information frameworks, with required performance analysis and regularly improved monitoring.

Supply Chain Management Practices

SCMP was defined by Min and Menzer (2004) as a long-term relationship, information sharing, and a corporation of integrated supplier leadership. Chen and Paulraj (2004) advocate for a long-term relationship that spans functional teams, supplier reduction ground, and supplier participation. SCMP was defined by Thatte (2007) as supplier partnership, customer relations, and information sharing. The Sri Lankan literature, on the other hand, interprets SCMP as strategic supplier partnership, customer relationship, and information sharing. SCMP has been defined by academic researchers as a key business process of collaboration and integration in purchasing raw materials, manufacturing, and distribution for end users by providing informational value to customers (Lai, C.F. 2018).

Supply Chain Responsiveness

Supply chain responsiveness is defined as the degree to which the supply chain responds to fluctuations in customer demand (Holweg, 2005; Prater et al., 2001; Lummus et al., 2003). Duclos and colleagues (2003). The defined ability of supplier partnerships to react quickly to the current market (Kim & Cavusgil, 2009), as another competitor launches a new product (Fayezi & Zomorrodi, 2015). If supporting supply chain integration is running, supply chain responsiveness must adjust supply chain operations conducted strategically collaboratively under supplier partners and will run optimally in applying SCR (Yu et al., 2019). As a result, suppliers can significantly increase productivity in order to capture customer demand and reduce uncertainties (Siagian et al., 2021). This means that supply chain integration is crucial to supply chain responsiveness.

Strategic Supplier Partnership

The performance of the supply chain is influenced by relationships between two or more firms that facilitate major areas of research, manufacturing, marketing partnerships with suppliers, and information integration (Khan et al., 2015). Responding to challenges in the comparative world as well. SCM is critical in preparing organizations to effectively coordinate supplier partners with long-term positive interaction. SCP is in favor of improving performance with

fewer uncertainties and greater information transfer (Sambasivan et al., 2013). The most important strategy for managing the supply chain is to form strategic partnerships with suppliers.

Customer Relationship

A competitive advantage between manufacturing companies is one of the essential tools. The entire procedure improves customer satisfaction and handling compliance, resulting in long-term customer relationships (Li et al., 2006). And a strategy type is used to identify customer needs, generating consumer loyalty through relationship development, and supplementing necessary products and services. It aids in the reduction of marketing costs as well as the strengthening and improvement of customer relationships (AI-Dmour et al., 2019; Herman et al., 2020).

Information Sharing

To improve the effectiveness of exchanging information systematically, personally, or organizationally, and to increase the need for sharing, each unit should have raised questions about who, what, how, and when to share. As a result, responding to status will help to reduce costs, increase responsiveness, and reduce additional payment costs. Sun and Yen (2005). Different strategically improved networks with advanced information technology can be created to shorten the distance between supplier partners in relationships. The collaboration results in a profitable and advantageous path. According to Min et al. (2005), the heart of SC is IS, and information exchange requires a great deal of understanding and focus. It is a relationship formed between two non-dependent chain components. It is created by increasing the levels of information sharing in order to reduce total costs and inventory. Yu and colleagues (2001). IS, according to Simatupang and Sridharan (2005), is a term that refers to performance analysis, data development, and increased transparency in decision making. Demand forecasting is considered under IS when it is captured, progressed, stored, and presented. In general, only reasonably accurate, trustworthy information shared in a timely manner is used for SCM. Following a review and consolidation of the literature, three dimensions of SCMP, namely SSP, CR, and IS, are identified to lead SCR. According to Khan et al. (2015), supplier partnering and integrated IS have a direct impact on SC performance.

RESEARCH METHODOLOGY

Research Design: This is basically, choosing a study, deciding on a sampling plan, setting a time frame, approaching research, and designing data collection strategies used "quantitative techniques" as the technical method of data collection to answer the questionnaire. The questionnaire collects and analyzes numerical data. A questionnaire was used to collect data from a total sample of 134 executives and above, who were classified by age group, highest academic qualification, current working section, namely production/manufacturing, quality enhancement, inventory and warehousing, supply chain, transporting/distribution, and others. And respondents are classified based on the number of years they have worked in various functions.

Study Setting: Assumes a quantitative viewpoint. The researcher used quantitative methodology for this study by administering a questionnaire to non-alcoholic natural beverage manufacturing company management, executives, and above-level individuals.

Time Horizon: The strategy took into account a sectional time horizon because, depending on the research questions, it focuses only on a specific period rather than a continuous data collection occurrence.

Research Approach: Conducted to determine the impact of executives and above-level employees in Western province manufacturing firms on supply chain responsiveness. Individual data for this study were gathered.

Sampling Plan: This is an important area of research and a subset of the chosen population. Kuma (2011) defines sampling as "the process of selecting a sample (inner part) from a larger group." A sample of executives and above-level manufacturing field employees is chosen for this study.

Study Population: A set of entities for which statistical interference is to be drawn is frequently based on a random sample drawn from a larger section of the population. The population is focusing objectively; the sample reflects the population's characteristics. Executives and above-level employees from Sri Lankan non-alcoholic beverage companies are well-versed in supply chain responsiveness. As a result, managers, executives, and individuals above the level were chosen as the population because they have extensive experience in the profession and are exposed to and use supply chain responsiveness in their work environment.

Sampling Technique: Because this unbiased group and subset of statistical population has an equal probability of being used, the simple random sampling method is used as the sampling method. According to Philip and Adrian (2007), to technically rationalize data collection, appropriately technique-banned objectives, personnel, or events must be used. During the sampling procedure, researchers attempt to identify the area to be studied by taking into account the entire population (Kumar, 2011).

Sampling Frame: This study's sampling frame consists of non-alcoholic beverage companies registered with the Export and Development Board in Sri Lanka's Western province.

Sample Size: One hundred thirty-four (134) people make up the sample size. Questionnaires are distributed randomly to individuals by randomly identified managers, executives, and individuals above levels working for non-alcoholic beverage manufacturing companies in Western provinces via the LinkedIn platform.

Data Processing: A questionnaire is used to collect data, and 134 samples are classified by job title; respondents are classified by job function: production, operation, or manufacturing. Quality improvement, inventory and warehousing, supply chain, transportation and distribution, and other services are all available. From beverage manufacturing companies registered with the Export and Development Board of Sri Lanka in the Western Province districts of Gampaha, Colombo, and Kalutara. This study relied on primary data derived from structured questionnaire responses. Questionnaires were distributed via email to the targeted sample. The questions are closed-ended and use a 5-point Likert scale. As a result, variables in the research model (Sahibzada Jawad et al., 2020) were measured using the "Five Point Likert Scale," and demographic facts were measured using the "Nominal Scale," which was completed by the respondents based on their responses to all questions.

Survey Instrument: Personal information from 134 respondents was collected using nominal measures, which included "gender, age, highest academic qualification, current work sector, and working experience." The second section of the questionnaire is dedicated to research data. Perceived determinants of supply chain responsiveness adoption using questions developed by researchers with the assistance of other related literature reviews Here are thirty-four (34) statements to assess both independent and dependent variables using a "Five-Point Likert Scale."

Data Presentation Method: According to Junyong and Lee (2017), data presentation is like summarizing, processing, and analyzing raw data by utilizing powerful communication tools such as textures, graphs, and tables. Most research yields perfect conclusions and results from analyzing all available data; if the research does not yield results, carrying out the study is pointless and has no benefit. The most delicate aspect of research is data analysis. This investigation as statistical tables are a vital area of focus, a graphical display of information to have a clear insight into commanding effectively to have effect, this paper contains tables to explain the collected data from the respondents.

Method of Data Analysis: To determine the frequencies and percentages of survey responses from the sample, collected quantitative data was analyzed using "Statistical Package for Social Sciences" (SPSS) version 23. As a result, the analyzing techniques of correlation, simple regression, and multiple regression are used.

Figure 1: Conceptual Framework
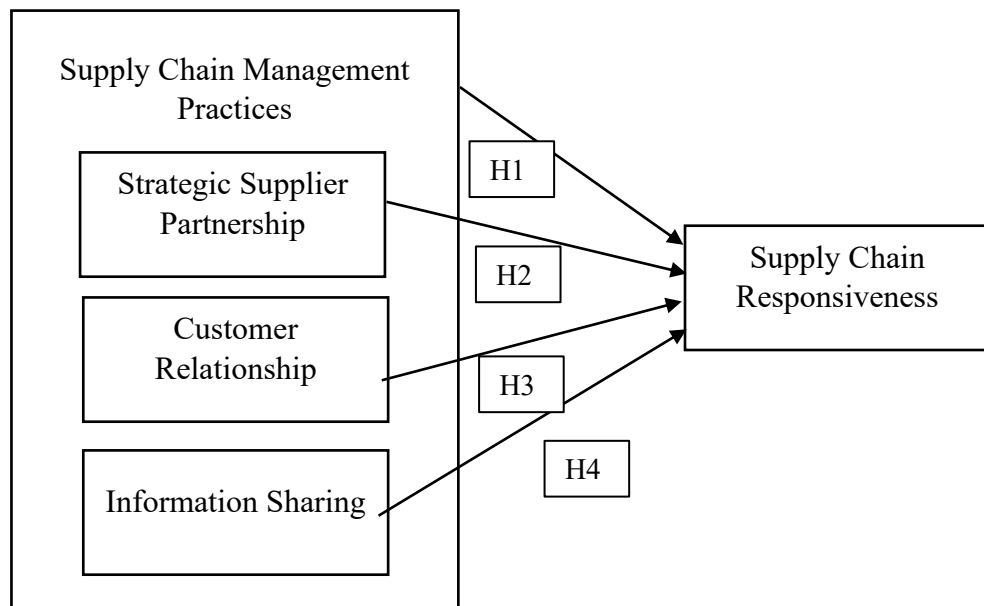
Source: Developed by researcher based on (Sukati, et al., 2011), (Bekele, 2021)

H1: Supply chain management practices are positively related to supply chain responsiveness.

H2: Strategic supplier partnership is positively related to supply chain responsiveness.

H3: Customer relationship is positively related to supply chain responsiveness.

H4: Information sharing is positively related to supply chain responsiveness.

DATA ANALYSIS

Analysis of Reliability

Cronbach's alpha was used to assess the dependability of the instrument. Through the instrument's strong internal consistency and reliability (alphas), the content instrument indirectly ensures conceptualization and operationalization of the variables based on literature. Table 1 shows the Cronbach's alpha test results, which show that the internal reliability of each instrument was adequate to satisfactory. "Table 1" showed "independent variable reliability" and "dependent variable reliability." Variables in their entirety Cronbach's Alpha Co-Efficient factor analysis for supply chain management practices (SCMP), strategic supply partnership (SSP), information sharing is 0.865, and the factor of dependent variable shows a reliability of operation system responsiveness of 0.840, logistic responsiveness of 0.800, and supplier network responsiveness of 0.889.

According to Journals Mantik 2022, Cronbach's alpha value of 0.600 is declared reliable in the results and discussion section reliability test of all variables. Cronbach's alpha for the dependent instrument should be greater than 0.700. If the Cronbach's alpha value is greater than 0.700, the internal consistency of the scale is considered "satisfactory" (Sekaran and Bouch 2016). Cronbach's alpha coefficient values for total variables are also greater than 0.800 in this research study. As a result, it was suggested that the items be considered dependent, indicating that the internal reliability of each instrument (Table 1) was satisfactory.

Table 1: Reliability Analysis

Variable		Cronbach's Alpha Value	Number of Question Items
Supply Chain Management Practices	Strategic Supply Partnership	0.873	06
	Customer Relationship	0.888	05
	Information Sharing	0.865	06
Supply Chain Responsiveness	Operation System Responsiveness	0.840	06
	Logistic Process Responsiveness	0.820	05

	Supplier Network Responsiveness	0.889	06

Source: Survey data

Analysis of Validity

Table 2: Validity Analysis

Variable	Kaiser- Mayer Olkin	Number of question items
Analysis strategic supply partnership	0.849	06
Analysis customer relationship	0.863	05
Information sharing	0.823	06
Operation system responsiveness	0.662	06
Logistic process responsiveness	0.705	05
Supplier network responsiveness	0.789	06

Source: Survey Data

The validity analysis is used to ensure the adequacy of the sampling and to evaluate the appropriateness of using factor analysis. It should be significant (less than 0.05) with a p-value of 0.001, indicating a significant deviation from an identity matrix in which no two variables are associated. More than 0.60 on the "Kaiser-Meyer-Olkin Scale" indicates that each factor has enough items (Table 2).

Demographic Data Analysis

Descriptive analysis was used to examine demographic and personal information. The information gathered on individual characteristics is presented and analyzed in the following presentation and analysis. The personal information questions pertain to the respondent's significant personal information, which includes gender, age, highest academic qualification, currently working sector, industry of employment, year of experience, and company location.

The sample responses were divided into male and female responses. Males were given a weighting of 70.9% when selecting the sample for the research study, while females were given a weighting of 29.1%. The questionnaire was distributed at random to male and female participants (Table 3).

Table 3: Gender

Gender	Frequency	Percent
Male	95	70.9 %
Female	39	29.1%
Total	<u>134</u>	<u>100%</u>

Source: Survey Data

The sample includes people aged 20 to 30, 31 to 40, 41 to 50, 51 to 60, and over 60 years. As shown in Table 4, the age group between 31 and 40 is given the most weight in the sample because it accounts for the largest percentage of the total population (38.8%). And no one over the age of 60 has responded.

Table 4: Age

Age level	Frequency	Percent
20-30	49	36.6%
31-40	52	38.8%
41-50	26	19.4%
51-60	7	5.2%
Above 60	0	0%
Total	<u>134</u>	<u>100%</u>

Source:Survey Data

There are five categories of academic qualifications: highest academic qualifications under GCE A/L or London A/L; diploma; degree; postgraduate; and doctorial. There are no doctorial qualifications, so two respondents with 1.5% weight in GCE A/L and London A/L qualification have the lowest weight (Table 5).

Table 5: Highest Education Qualification

Highest Education level	Frequency	Percent

GCE A/L or London A/L	2	1.5%
Certificate / Diploma	17	12.7%
Degree	85	63.4%
Postgraduate	30	22.4%
Doctorial	-	0%
Total	<u>134</u>	<u>100%</u>

Source: Survey data

The sample was classified as follows in Table 6: production, operation, manufacturing, quality enhancement, inventory and warehousing, supply chain, and transport/distribution. The department of production, operation, and manufacturing has the most respondents (79), accounting for 52.2% of the total sample, while the department of transporting and distribution has the fewest (accounting for 6.7% of the total sample).

Table 6: Currently Employed Sector

Sector currently employed	Frequency	Percent
Production/Operation/Manufacturing	70	52.2%
Quality Enhancement	20	14.9%
Inventory and Warehousing	24	17.9%
Supply Chain	11	8.2%%
Transporting / Distribution	9	6.7%
Total	<u>134</u>	<u>100%</u>

Source: Survey of data

The data in Table 7 shows the company location of the sample, which is in the Western province and registered with the Export Development Board in three district levels: Gampaha, Colombo, and Kalutara. The Gampaha district has the highest proportion of survey respondents. That translates to 88 frequencies and 65.7 percent of the total population. The Kalutara district had the lowest frequency at 6.0 percent and eight frequencies out of the 134 respondents.

Table 7: Company Location

Years of Experience	Frequency	Percent
Gampaha	88	65.7%
Colombo	38	28.4%
Kalutara	8	6.0%
Total	134	100%

Source: Survey of data

Data on years of experience were collected as 1-5 years, 6-10 years, 11-15 years, and more than 15 years. The highest frequency (67 respondents) of respondents have experience between 1 and 5 years, and 33.6% have experience between 6 and 10 years. 14.2% of respondents have experience ranging from 11 to 15 years. The remaining 2.2% of respondents have worked with the experience for more than 15 years, with the fewest (2 respondents) (Table 8).

Table 8: Years of Experience

Years of Experience	Frequency	Percent
1-5	67	50%
6-10	45	33.6%
11-15	19	14.2%
Above 15	3	2.2%
Total	134	100%

Source: Survey of data

Correlation Analysis

Table 9: Correlation Analysis

	Strategic supplier partnership	Customer relationship	Information Sharing	Supply chain Management practices
Pearson correlation (r)	0.512	0.618	0.701	0.697
Significance level (p)	0.000	0.000	0.000	0.000

** Correlation is significant at the 0.01 level (2- tailed)

Source: Survey Data

The correlation is significant at 0.01 (2-tailed), and it is considered strong when the coefficient (r) exceeds 0.5 (0.5p). Table 9: Pearson correlation results show a strong positive relationship (Table 6) between SCR and SCM methods [r = 0.697]. As previously stated, SCR and IS have a strong positive relationship (r = 0.701), SCR and CR have a strong positive relationship (r = 0.618), and SCR and SSP have a medium positive relationship (r = 0.512). As a result, there is a significant positive correlation relationship, and all of the significance levels (p) are 0.000 (p 0.01).

Simple Regression Analysis

Table 10: Regression Analysis

	Strategic Supplier Partnership	Customer Relationship	Information Sharing	Supply Chain Management Practices
R	0.512	0.618	0.701	0.697
R Square	0.262	0.382	0.491	0.486
Adjusted R Square	0.256	0.377	0.487	0.482
Std. Error	0.32952	0.30153	0.27370	0.27509
Sum of Squares	5.087	7.419	9.532	9.431
F	46.848	81.594	127.248	124.300
Sig. F	0.000	0.000	0.000	0.000
T	6.845	9.033	10.276	6.860
Sig. T	0.000	0.000	0.000	0.000
B- Constant	2.434	2.164	1.998	1.594
B-	0.415	0.479	0.538	0.622
Beta	0.512	0.618	0.701	0.697

Source: Survey Data

According to Table 10, Regression Equation:

SCR = 2.434 + 0.415 SSP

At 5% [Sig. T = 0.000], the value "b", regression gradient 0.415, is significant. SCR variance of 26%, denoted by "R Square," discussed by strategic supplier partnership with 0.512

standardized beta, "F = 46.848, significant at 5% [p = 0.000], interpreting strategic supplier partnership significantly evaluated SCR variance of 26%.

SCR= 2.164 + 0.479 CR

The 'b' gradient regression coefficient is 0.479, which is significant at 5% [Sig. T = 0.000]. With a normalized beta of 0.618, CR explains 38% of the variance in SCR, according to R squared. The "F" value is 81.594, which is 5% significant, indicating that customer relationships account for 38% of the variance in supply chain responsiveness.

SCR= 1.998 + 0.538 IS

At 5% [Sig. T = 0.000], the value "b", regression gradient 0.538, is significant. Strategic supplier partnership significantly evaluated 49% of SCR variance, as denoted by "R Square," with 0.701 standardized beta, "F = 127.248, significant a 5% [p = 0.000].

SCR= 1.594 + 0.622 SCMP

The 'b' gradient regression is 0.622, which is significant at 5% [Sig. T = 0.000]. With a normalized beta of 0.697, CR explains 49% of the variance in SCR, according to R squared. The "F" value is 124.300, indicating that customer relationships explain 49 percent of the variance in supply chain responsiveness.

Multiple Regression Analysis

Typically, a multiple regression analysis is used to create a regression equation for predicting dependent variables from a set of independent variables (Elliot and Woodward, 2016).

Supply chain Responsiveness (SCR) = 1.643 – 0.156 SSP + 0.206 IS+ 0.568 SCMP

SCR was found to have a positive relationship with three variables, including information sharing and supply chain management practices, but SSP had a negative relationship with SCR. Interpreting SCMP output is critical for high-level SCR consideration. Beta 0.636, 0.015 (p 0.05) is a significant standardized coefficient. (Table 12)

Table 11: Model Summary

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate

1	.729ᵃ	.532	.521	.26436

A. Predictors: (Constant), Supply Chain Management Practices, Information Sharing, Strategic Supplier Partnership

Source: Survey Data

Table 12: Coefficient Table

Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
1 (Constant)	1.643	.225		7.308	.000
Strategic Supplier Partnership	-.156	.133	-.192	-1.176	.242
Information Sharing	.206	.119	.268	1.731	.086
Supply Chain Management Practices	.568	.230	.636	2.470	.015

A. Dependent Variable: Supply Chain Responsiveness
Source: Survey Data

R squared (R2) = coefficient assumes that all independent variables help to explain the variation in the dependent variable in the model. It represents the percentage of explained variation because all independent variables in the model had an effect on departmental variation. An R2 representing the regression line perfectly fit the data. Adjusted R squares of 0.532 and 0.521 denote high-degree regression with properly fixed insight, according to the R square (R2) construct. This meant that the regression model could account for approximately 53% of the variance in the dependent variable (Table 11).

Hypothesis Testing

Table 13: Status of Hypothesis testing

Hypothesis	Status
H1: Supply chain management practices are positively related to supply chain responsiveness	Accepted

H2: Strategic supplier partnership is positively related to supply chain responsiveness	Accepted
H3: Customer relationship is positively related to supply chain responsiveness	Accepted
H4: Information sharing is positively related to supply chain responsiveness	Accepted

DISCUSSION

The research reported in this paper aimed to advance understanding of supply chain management techniques by examining the connections between customer relationships, information exchange, and supply chain responsiveness. By developing and testing the research framework of SCMP and SCR constructs and conducting valid, reliable instrument analysis of several manufacturing organizations, this study investigated the relationship between strategic supplier partnerships and supply chain responsiveness, customer relationship and supply chain responsiveness, information sharing and supply chain responsiveness. The research looked into competitive advantage and SC techniques.

In general, this research contributes to our understanding of how SCM methods work, supply chain responsiveness, and the competitive advantage of businesses in the SCM industry. It began by proposing a theoretical framework for SCM procedures that emphasized the firm's competitive advantage, customer relationships, and information exchange. Second, this research provides supply chain managers with a valuable tool for auditing and evaluating supply chain management procedures. Third, the research provides theoretical and applied literature on supply chain management techniques, supply chain responsiveness, and firm competitive advantage.

Fourth, findings support the notion that improved supply chain management procedures improve supply chain responsiveness and competitiveness. As business captures more, competition shifts from among enterprises to among supply chain partners. According to the findings of the Sukati et al., 2011, 47% of respondents stated that their company had not begun a program specifically for SCM implementation. The remaining 53% of respondents said their company only implemented SCM programs twice a year.

The study resulted in practitioners' confidence, collaborating application of significant impact under competitive advance, and the supply chain responsiveness of the organization. Firms must be more responsive in fast-paced global competitiveness to meet client expectations.

In addition, the company must be responsive on all fronts, including supplier, internal, and downstream. With terms like interchangeability, the concept of "supply chain responsiveness" is complicated. The findings demonstrate to practitioners the critical elements of responsiveness and how to achieve them. It provides firms with a set of reliable and useful metrics for assessing, measuring, and comparing supply chain responsiveness at various supply chain nodes such as raw material suppliers, component suppliers, assemblers, sub-assemblers, producers, distributors, retail sellers, and whole sellers. SCR facts enable practitioners to identify immediate effects and comprehend organizational performance effects. Dillwyn (2022) developed Hypothesis No. 5: supply chain responsiveness has a direct impact on operations and has a direct, significant positive relationship. According to Ambreen (2013), strategic supplier partnerships have a significant positive impact on company performance (b value 0.317, p = 0.002). Sukati et al. (2011) investigated supply chain management practices under four hypotheses: H1: Supply chain management practices are positively related to supply chain responsiveness, H1a: Strategic supplier partnership is positively related to supply chain responsiveness, H1b: Customer relationship is positively related to supply chain responsiveness, and H1c: Information sharing is positively related to supply chain responsiveness. Accordingly, the findings of this research can be identified as being in line with the findings of previous scholarly research.

CONCLUSION AND RECOMMENDATION

The research concentrated on supply chain management techniques and responsiveness. SCR was the dependent variable, and the independent variables were SSP, CR, and IS. The effect of supply chain management practices on the relationship between supply chain responsiveness can be summarized as information sharing builds a significant and strong relationship to maintain the quality of the information sharing process between the manufacturing company and supplier on demand for production, information sharing on sales marketing, and promotions with the use of the manufacturing company's information sharing. The relationship between information sharing, which was the most important indicator of supply chain responsiveness, was also taken into account, followed by customer relationships and strategic supplier partnerships. Increased information sharing and responsiveness in the supply chain. Based on these findings, managers should improve information sharing to improve supply

chain responsiveness and firm performance. Manufacturing firms should increase their investment in information technology facilities to improve information sharing both internally and externally. Renting information technology specialists, third-party outsourcing to improve trending supply chain relationship behavior to strengthen strong customer relationships, and continuous information sharing make anything possible. This study recommended that manufacturing companies develop information flow through proper information collection, storage, and recording systems by adhering to their own enterprise resource planning system for fruitful all transactions in information transparency.

Customer relationship has a strong relationship and a positive association, and it includes meeting customer needs, evaluating the importance of the relationship between customers and manufacturing products, assisting customers in maintaining reliability and responsiveness, measuring customer satisfaction levels, observing future customer expectations, and assisting in reaching product consistency, all at regular and frequent intervals. This enables manufacturing companies to maintain continuous production while also establishing and ensuring proper supply chain processes, such as production, packaging, and finally delivering to customers. Through communication and standardization of everything, including suppliers, lean supply creates strategic supplier relationships. Because of the potential for various improvements, suppliers are always aware of the status of their supplier relationships. Recommending that the marketing department of the organization develop customer relationships through continuous information sharing and mentoring customers in order to increase market research and responsiveness. It should be done a mammoth on the entire production to improve supply chain responsiveness in logistics. As a result, using standard trucks or similar alternative vehicles to transport raw materials and distribute finished goods can help improve product quality and supply chain efficiency.

Strategic supplier partnership has a significant positive relationship with various supplier selection criteria. Regarding raw material quality, the company assists suppliers in developing raw material quality on a continuous basis by establishing short-term and long-term relationships and transitioning to a long-term supplier relationship with time, training suppliers to minimize lead time in every single action in which the supplier's contribution stages are achieving product quality. A better supplier rating strategy is beneficial to the success of the strategic supplier partnership in terms of affordable consistency.

The results of correlations between supply chain management strategies in terms of strategic supplier partnership, customer relationship, and information sharing were discovered to be linked to supply chain responsiveness in terms of operation system responsiveness, logistic process responsiveness, and supplier network responsiveness in this study. This study discovered significant associations between strategic supplier partnership, operation system responsiveness, logistic process responsiveness, and supplier network responsiveness. Taking into an account all the cases, manufacturing companies are better able to focus on supply chain management practices for further efficient and effective improvement of product quality and fulfillment of customer expectations in order to grasp business sustainability and success.

Limitation and Future Research Directions

First, when using the simple or basic random sampling method on beverage companies in Western Sri Lanka, a sampling error can occur; samples do not precisely reflect the population that is expected to be present. Second, this study focuses on a specific limited time period rather than a continuous data collection occurrence. As a result, future research can perform the same function as a longitudinal study. Third, due to the small number of publications, the revalidation of the creature was not performed as part of this study. Fourth, respondents were asked to address difficult supply chain management issues involving both upstream and downstream suppliers. However, no single person is in charge of the entire supply chain process; production managers are primarily responsible for production and may be unable to handle customer-related questions. As a result, a single response may result in some measurement errors.

The current study set out to look into Sri Lanka. The first direction of this study focused solely on supply chain management factors. As a result, additional studies can be carried out by introducing new variables. Second, the study only included beverage manufacturing enterprises located in Western province, Sri Lanka that were registered with the Export Development Board. As a result, the scope of the research can be expanded to include more provinces in the future, making it more effective. Further, it is proposed that same study can be conducted as a longitudinal study to explore the impact of changes in the industry over a period.

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The Effect of Resilient Supply Chains on Sustainable Trade in Sri Lanka's Export Sector in a VUCA World

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ABSTRACT

Sustainable trading practices in Sri Lanka's export sector are examined in this study considering the current VUCA conditions, which are characterized by volatility, uncertainty, complexity, and ambiguity. The major objective is to determine the impact of Vulnerabilities, Capabilities, Strategies, and Performance indicators on sustainable trade in a resilient supply chain. A thorough methodology including a literature review, primary data collecting through questionnaires, and advanced statistical analysis are utilised in the research. To comprehend the relationship between sustainable commerce and resilient supply chains in a volatile, uncertain, complex, and ambiguous (VUCA) environment, the literature review lays the empirical framework. A robust supply chain structure is required for long-term trade sustainability since it reveals the complex dynamics and difficulties encountered by the export ector. To collect primary data, a structured questionnaire was given to 198 people in Colombo who work for Sri Lankan export companies, supply chain experts and professionals, and international trade partners and organisations. Using IBM SPSS, we conduct thorough analyses on the data, evaluating for reliability, analysing correlations, and using regression to draw conclusions. A fascinating tale emerges from the analysis. Except for "capability," all the independent variables pertaining to resilient supply chains have a statistically significant effect on the dependent variable, which is sustainable commerce. This highlights how important it is to strengthen sustainable trade practices in Sri Lanka's export sector by addressing supply chain resilience. This study offers practical insights for practitioners and policymakers as well as academics who are trying to understand the relationship between volatile, uncertain, complex, and volatile (VUCA) environments, resilient supply chains, and sustainable commerce. The results highlight the importance of stakeholders making improvements to supply chain performance indicators, strategic adaptation, and vulnerabilities management a top priority to successfully navigate the obstacles caused by VUCA dynamics. Finally, in a volatile, unpredictable, complex, and ambiguous (VUCA) environment, strengthening supply chains is a strategic need for Sri Lanka's export business. Sri Lanka's export sector has been growing, and this report lays out a plan to strengthen the supply chain, create an atmosphere that encourages sustainable trading practices, and keep it going.

Keywords: Sustainable Trading Practices, Sri Lanka Export Sector, VUCA Conditions, Resilient Supply Chain, Vulnerabilities, Capabilities, Strategies, Performance Indicators

INTRODUCTION

According to Ivanov and Dolgui (2020), supply networks that possess resilience, robustness, or agility can effectively respond and adjust to various shocks and uncertainties in the global business environment. In addition to that the factors, namely logistics, risk management, adaptability, and sustainability, are also taken into consideration by (Bennett & Lemoine, 2014). Reliable supply networks boost Sri Lanka's economy, facilitate goods movement, and promote international trade. The reliability of Sri Lanka's supply network is also important in assessing how strong supply chains affect the country's export business. In a VUCA (Volatile, Uncertain, Complex, and Ambiguous) environment, supply chain disruptions and uncertainties can have major effects on a nation's economy and global trade competitiveness (Abeysekara et al., 2019). Sri Lanka, an exquisite island nation situated in South Asia, boasts a robust export-oriented economy, a richly diverse cultural heritage, and a profound historical significance. Sri Lanka has emerged as an worldwide player due to its thriving textile, tea, and IT industries (Abeysekara et al., 2019). The island's strategic position within the Indian Ocean and unique geographical characteristics renders it susceptible to natural disasters, geopolitical instabilities, and economic unpredictability. The economic competitiveness and stability of Sri Lanka are contingent upon the presence of dependable supply lines (Kamalahmadi & Mellat-Parast, 2015)

The primary goal of this research is to analyze the impact of VUCA (Volatile, Uncertain, Complex, and Ambiguous) environments on sustainable trade practices in Sri Lanka's export sector with the aim to learn how resilient supply chains can help Sri Lanka's export businesses succeed in a world where geopolitical tensions, natural disasters, market instability, and changes in regulatory frameworks are all commonplace. The COVID-19 epidemic, international trade disputes, and natural disasters are just some of the disruptions that the global supply chain ecosystem has had to deal with recently (Ušča & Talis Tisenkopfs, 2023). The World Economic Forum (2021) highlights that the occurrences of interruptions have underscored the imperative of developing robust supply chains to guarantee the continuous and unimpeded movement of goods. It is noteworthy to emphasize that Sri Lanka relies heavily on its export sector, which comprises a considerable share of its gross domestic product (Central Bank of Sri Lanka, 2021). As a result, any disturbances in the supply chain can possibly have significant repercussions on the overall economic stability of the country. According to the Central Bank of Sri Lanka (2021), As a result, any disruptions that occur within the supply chain can potentially have a negative impact on the overall economic stability of the nation.

Additionally, it is worth noting that the VUCA world is distinguished by an increased level of volatility, uncertainty, complexity, and ambiguity, as highlighted by Bennett and Lemoine (2014). In the given context, the importance of supply chain resilience cannot be overstated when it comes to effectively managing and overcoming unexpected obstacles. Similarly, there is a growing global recognition of the significance of sustainable trade, driven by an escalating need for products that adhere to environmental and social responsibility standards (United Nations, 2015). The enhancement of resilient supply chains has the potential to facilitate the ability of Sri Lanka's export sector to effectively respond to the changing needs of the market. Furthermore, the establishment of robust supply chains has the potential to confer Sri Lanka with a competitive edge within the international marketplace. This study has the potential to provide insights into the many tactics that might be employed to improve Sri Lanka's export competitiveness. Therefore, the research inquiry into the evaluation of the influence of resilient supply chains on sustainable commerce within Sri Lanka's export industry in a volatile, uncertain, complex, and ambiguous (VUCA) global environment is of great significance and timeliness. The study discusses important economic and strategic priorities for Sri Lanka, provides valuable observations on global supply chain patterns, and has the potential to guide policy-making and corporate planning in the country's efforts to achieve sustainable trade and economic development.

In the context of a volatile, uncertain, complex, and ambiguous (VUCA) environment, the export industry of Sri Lanka necessitates the establishment of robust supply networks. Yoshikawa and Tsujimoto (2022) conduct a comprehensive analysis of the VUCA difficulties faced by resilient supply chains and their significant influence on sustainable commerce in Sri Lanka's export-oriented industries. Moreover, the stability of Sri Lankan exports is subject to the effect of other factors, encompassing market demand, exchange rates, and worldwide geopolitical concerns. Hence, the field of commerce strongly depends on flexible and adaptable supply systems that possess the ability to promptly adjust to ever-changing situations. In addition, the presence of international marketplaces, regulatory rules, and changing consumer tastes may pose an risk to supply networks. In such circumstances, it is imperative for export operations to exhibit their capacity to withstand challenges by promptly adjusting to evolving market dynamics. According to Herath. R. P (2014), the presence of intricate global supply networks might lead to the emergence of inefficiencies and bottlenecks within the system. Nevertheless, the enhanced visibility and improved efficiency of resilient supply networks enable them to effectively manage this intricate nature. Furthermore, unforeseen occurrences

like natural calamities and political upheavals have the potential to generate substantial disruption within the supply chain. However, by using strategic planning and proactive actions, supply networks that demonstrate resilience can effectively maintain their operations and sustain their company operations even in situations characterized by unpredictability. Given the prevailing volatile, uncertain, complex, and ambiguous (VUCA) conditions, it is imperative for Sri Lanka's export industry to establish robust and adaptable supply networks. The ability to persist and adapt in the presence of uncertainty, complexity, and ambiguity is a key factor that contributes to the success and durability of commerce (Abeysekara et al., 2019). The implementation of digitization, supplier collaboration, diversification, and sustainability strategies have the potential to enhance Sri Lanka's export economy, safeguard the environment, and establish enduring trade partnerships.

The export sector of Sri Lanka functions within the intricate dynamics of a volatile, uncertain, complex, and ambiguous (VUCA) global environment. Consequently, it is crucial to prioritize the investigation of resilient supply chains and sustainable trade practices. The export-oriented businesses in Sri Lanka, including textiles, tea, and IT services, have historically flourished. However, these industries are currently facing substantial problems due to the unpredictable nature of the global business environment. Understanding the mechanisms via which resilient supply chains can effectively mitigate these obstacles is of utmost importance in fortifying Sri Lanka's export-oriented economy (Tsujimoto et al., 2022). The current state of the environment is marked by geopolitical conflicts, natural disasters, market changes, and regulatory adjustments. These factors all contribute to the global landscape's volatility, unpredictability, complexity, and ambiguity. The existence of these intricate and varied problems poses a substantial threat to the export industry of Sri Lanka. Moreover, there is a growing emphasis on the adoption of sustainable business practices, which incorporate the values of environmental preservation, social responsibility, and adherence to international standards. To effectively penetrate international markets and establish a competitive presence on a worldwide scale, it is imperative for Sri Lanka's export sector to completely adopt and implement these practices (Fernando & Aruppala, 2019). The establishment of a resilient supply chain is an mitigating element in addressing the challenges posed by the volatile, uncertain, complex, and ambiguous (VUCA) nature of the contemporary world (Abeysekara et al., 2019). Nevertheless, the extent to which robust supply networks may adequately facilitate the support of Sri Lanka's export industry remains uncertain, given the scarcity of studies conducted on this matter. The objective of this project is to investigate novel concepts, technologies, and approaches that have

the potential to improve sustainability and effectively tackle the difficulties posed by volatility, uncertainty, complexity, and ambiguity (VUCA). There is a clear need for support in the development and execution of strategies pertaining to supply chain resilience, sustainable trade, and the overall resilience of the export sector in Sri Lanka. This assistance is sought by policymakers, industry stakeholders, and firms operating within the country. The robustness and durability of Sri Lanka's business sector are essential determinants in assessing its global competitiveness. To attain sustainable economic growth, it is imperative to recognize and understand the intricate interrelationships among these components (Kamalahmadi & Mellat-Parast, 2015) The primary objective of this study is to investigate the impact of Vulnerabilities, Capabilities, Strategies, and Performance metrics on Sustainable Trade in the Export Sector of Sri Lanka. Furthermore, the study presented the following research questions: What is the influence of resilience during vulnerabilities on sustainable trade in Sri Lanka's export sector? What is the impact of capabilities on sustainable trade in Sri Lanka's export sector? What is the impact of strategies on sustainable trade in Sri Lanka's export sector? The influence of performance indicators on the sustainability of trade in Sri Lanka's export sector.

This study is crucial since it evaluates Sri Lanka's export sector's obstacles and opportunities in VUCA environments. This shows that resilient supply chains and sustainable trade practices may help Sri Lanka survive and grow in an uncertain and demanding global context while following ethical and environmentally aware trade standards.

In a volatile, unpredictable, complex, and ambiguous (VUCA) climate, resilient supply chains help Sri Lanka's export economy support sustainable commerce. Exports are crucial to Sri Lanka's economic prosperity. Understand how resilient supply networks can improve performance to protect a nation's economic resilience during volatile, unpredictable, complex, and ambiguous times. The study emphasizes ethical sourcing and environmental protection in global trade. Sri Lanka's strong supply networks make it a reliable and conscientious commercial partner, enabling market access and trade partnerships. Trust and long-term partnerships are essential for trading. Sustainable economic coalitions can result from strong supply networks. This study has major consequences for Sri Lankan trade officials and governments. Sri Lanka's export carbon footprint could be reduced by resilient supply chains that prioritize sustainability. This method protects livelihoods and boosts economic progress. In a globalized world, supply chain disruptions can have global repercussions. Sri Lanka's

commercial security depends on resilient supply networks addressing and mitigating global disturbances.

LITERATURE REVIEW

Resilient supply chains

The concept of resilient supply chains is examined in the literature, with a focus on their ability to withstand and adjust to disruptions while still maintaining essential operations (Ponomarov & Holcomb, 2009). Scholars have distinguished between two types of resilience: anticipatory resilience, which involves proactive measures taken to prevent disruptions, and reactive resilience, which involves responding to disruptions after they occur (Pettit et al., 2010). The authors Van Hoek et al. (2019) emphasize the organization's ability to adjust to dynamic situations and meet evolving demands. Additionally, Sheffi (2005) highlights the benefits of having alternative suppliers or resources to mitigate reliance on a sole source. The ability to promptly address disruptions in the supply chain is facilitated by transparency and the availability of real-time information (Ivanov and Dolgui, 2020). Additionally, resilience is enhanced by the establishment of collaborative relationships with suppliers, partners, and stakeholders, which allows for the sharing of risks and resources (Ivanov and Dolgui, 2020). The establishment of efficient risk identification and mitigation techniques is of paramount importance (Christopher & Peck, 2004). Furthermore, the use of sophisticated technologies such as the Internet of Things (IoT) and Artificial Intelligence (AI) enables the facilitation of real-time monitoring and decision-making processes (Kamble et al., 2018).

In addition, the utilization of resilience indices for assessing supply chain resilience across different dimensions has played a crucial role (Sikich et al., 2018). Furthermore, financial metrics, including cost-to-serve and return on assets, offer valuable insights into the financial resilience of supply chains (Ponomarov & Holcomb, 2009). Exemplary instances of case studies, such as the examination of the consequences of natural calamities like the earthquake and tsunami that occurred in Japan in 2011 (Sheffi & James Blayney Rice, 2005), effectively underscore the tangible ramifications of supply chain resilience. The COVID-19 pandemic has emphasized the necessity of maintaining resilient supply chains, highlighting weaknesses, and emphasizing the crucial significance of being able to adjust (Ivanov and Dolgui, 2020). Moreover, scholarly investigations conducted in various sectors, such as the automotive industry's endeavors to establish robust supply chains in response to intricate global networks

(Gupta et al., 2016), and the examination of challenges and resilience strategies within the food supply chain (Ušča & Talis Tisenkopfs, 2023), underscore the relevance of resilience principles across a wide range of contexts.

Resilient Supply Chains on Sustainable Trade

The confluence of resilient supply chains and sustainable trade has garnered considerable scholarly and public interest in recent times, propelled by escalating global uncertainties and mounting environmental apprehensions. Resilient supply chains, which are recognized for their capacity to endure interruptions while preserving critical operations (Ponomarov & Holcomb, 2009), have emerged as a strategic reaction to the growing occurrence and intensity of supply chain disruptions (Christopher & Peck, 2004). Sustainable trade, which incorporates economic, social, and environmental aspects and seeks to achieve a harmonious relationship between economic growth and environmental and social accountability (United Nations, 2015), is a response to the increasing consumer need for products that are obtained in a sustainable manner (Christopher & Peck, 2004). It is worth noting that the establishment of robust supply chains has the potential to positively impact sustainable commerce through the mitigation of environmental and social hazards (Alghamdi et al., 2019). Additionally, the implementation of sustainability practices, such as responsible sourcing and waste reduction, has been found to boost the resilience of supply chains (Dubey et al., 2019). The practical implications of integrating resilience and sustainability are illustrated through case studies from several businesses (Fernie et al., 2010; Gupta et al., 2016).

Within the framework of Sri Lanka's economy, which heavily relies on exports, the convergence of robust supply chains and sustainable commerce assumes significant importance. The economy of the nation is primarily dependent on exports, which encompass several sectors such as textiles, tea, and IT services. Consequently, this reliance on exports renders the nation vulnerable to potential disruptions on a global scale (Central Bank of Sri Lanka, 2021). Given the substantial growth observed in these export industries, it becomes crucial to examine the integration of resilient supply chains and sustainable trade within Sri Lanka's economic framework (Abeysekara et al., 2019).

Sustainable Trade in Sri Lanka's Export Sector in a VUCA World

The achievement of sustainable trade in Sri Lanka's export sector is contingent upon the imperative to align economic growth with environmental and social responsibility. The sector,

comprising various sectors such as textiles, tea, and IT services, plays a fundamental role in the economic structure of Sri Lanka. It makes substantial contributions to the nation's gross domestic product (GDP) and employment rates (Central Bank of Sri Lanka, 2021).

The export business in Sri Lanka faces significant problems in a VUCA world, characterized by increased volatility, uncertainty, complexity, and ambiguity (Bennett & Lemoine, 2014). The complex terrain of this environment is characterized by geopolitical tensions, natural calamities, market volatility, and regulatory changes, all of which present significant challenges for the export industry. The concept of sustainable commerce encompasses a comprehensive strategy that considers various dimensions, including economic, social, and environmental aspects (United Nations, 2015). Significantly, there exists a growing worldwide need for goods that are manufactured in a sustainable manner and obtained through ethical means, with a special emphasis on international markets. However, the export sector in Sri Lanka is currently facing a multitude of obstacles, which encompass various issues such as market interruptions, trade conflicts, and natural disasters. The inherent unpredictability of a volatile, uncertain, complex, and ambiguous (VUCA) world exacerbates the complexities associated with attaining sustainable trade objectives. The export sector of Sri Lanka operates within a complex and intricate landscape in a volatile, uncertain, complex, and ambiguous (VUCA) global environment. The implementation of sustainable trade practices plays a crucial role in achieving a balance between economic growth and responsible resource management. This sector presents several difficulties and opportunities that need to be addressed.

Resilient during vulnerabilities impact on sustainable trade

The maintenance of sustainable commerce by nations and businesses in the context of vulnerabilities is a pivotal factor to be considered within a linked and uncertain global landscape. In the context of globalization, the establishment of sustainable trade requires the ability to endure vulnerabilities and disruptions, while maintaining a steadfast commitment to environmental and social responsibility. The global trade industry is susceptible to several vulnerabilities, including but not limited to natural disasters, disruptions in supply chains, trade conflicts, and volatility in the market (World Economic Forum, 2021). As a result, these vulnerabilities have the potential to result in financial implications, environmental hazards, and societal complexities (Sheffi & James Blayney Rice, 2005). Resilience, in the context of trade, pertains to the capacity to effectively withstand and recover from adverse events, adapt to dynamic circumstances, and sustain critical trade operations (Ponomarov & Holcomb, 2009).

The implementation of resilience practices allows trade systems to endure and operate well in challenging circumstances, hence preserving economic stability (Pettit et al., 2010). In addition, it is worth noting that sustainable commerce entails the integration of economic growth alongside environmental and social responsibility, so establishing a harmonious alignment with the overarching objectives of global sustainability (World Economic Forum, 2021). The alignment is further reinforced by a noticeable shift in consumer tastes, wherein there is a growing inclination towards items that are sourced and manufactured in a sustainable manner (United Nations, 2015).

Resilience assumes a pivotal function in the realm of trade within the intricate terrain, as it adeptly mitigates hazards and guarantees uninterrupted operations throughout periods of vulnerability (Ivanov and Dolgui, 2020). According to Ivanov (2020), resilience plans consist of many measures such as diversifying suppliers, implementing digital technologies for real-time monitoring, and engaging in collaborative efforts with stakeholders. Significantly, a range of case studies across several industries exemplify the implementation of resilience techniques to sustain trade in the face of vulnerabilities. For example, the automobile industry has effectively implemented strategies to enhance supply chain resilience to effectively manage and overcome disturbances (Gupta et al., 2016). In an era marked by a multitude of uncertainties and weaknesses, the ability to maintain sustainable trade emerges as a matter of utmost significance. Resilience plays a crucial role in trade ecosystems, enabling both nations and enterprises to efficiently manage disturbances and harmonize economic expansion with environmental and social obligations (Sheffi & James Blayney Rice, 2005).

Impact of Capabilities on Sustainable Trade

Sustainable trade is a critical consideration in today's globalized world, as capabilities fundamentally determine a nation's ability to engage in and benefit from it. Capabilities encompass a wide range of factors, both tangible and intangible, including infrastructure, skilled labor, and technological advancements (World Trade Organization, 2021). These capabilities are essential for a nation to effectively participate in sustainable trade and comply with environmental and social standards (United Nations, 2015). Economic capabilities, such as financial stability and competitiveness, are pivotal in a nation's capacity to engage in sustainable trade (World Economic Forum, 2021). Moreover, technological capabilities, encompassing innovation and digitization, have gained increasing importance in sustainable trade practices, facilitating efficient supply chains, and minimizing environmental impact

(United Nations, 2015). In addition to economic and technological aspects, institutional and regulatory capabilities are critical for promoting ethical and sustainable trade (United Nations, 2015). The ability of a nation to develop and enforce environmental and social standards hinges on the strength of its institutional and regulatory frameworks (World Trade Organization, 2021). Furthermore, human capital development plays a crucial role in a nation's sustainable trade readiness. This involves investments in education and skills training, which are vital for a nation's workforce to engage in sustainable trade industries (World Economic Forum, 2021). Skilled labor is particularly indispensable for sectors prioritizing sustainability, such as renewable energy and eco-friendly manufacturing (United Nations, 2015).

Impact of Strategies on Sustainable Trade

In a VUCA (volatile, uncertain, complex, ambiguous) world, the impact of strategies on sustainable trade in Sri Lanka's export sector is crucial to ensuring long-term success and resilience (Maheswaranathan & Bhavan, 2022). Implementing sustainable trade strategies in Sri Lanka's export sector can help mitigate the risks and uncertainties posed by the VUCA world, safeguarding the country's economic growth and development (Deegahawature & Rajapaksha, 2020). Despite the challenges presented by this complex environment, trade has played an role in Sri Lanka's economic growth from 1970 to 2010 (Thirunavukkarasu et al., 2022). During this period, exports and their composition have positively influenced economic growth in Sri Lanka (Maheswaranathan & Bhavan, 2022).

Moreover, in today's globalized and competitive environment, an export-oriented economic strategy is considered essential for sustainable growth (Abubakar et al., 2021). Nevertheless, the lack of regional industrialization has influenced Sri Lanka's export sector, and the promotion of regional industrialization can further enhance sustainable trade (Kannangara et al., 2020). Therefore, it is important to consider opposing viewpoints regarding the impact of the export sector on Sri Lanka's economic growth. Some economists argue that overreliance on the export sector may lead to vulnerabilities and risks for the country's economy (Kannangara et al., 2020). They advocate for diversifying the economy and reducing dependence on exports to achieve more balanced and sustainable economic growth.

One concern is that the export-oriented strategy may make Sri Lanka's economy highly dependent on external factors, such as global market trends and shifts in demand, which can expose the country to external shocks and fluctuations, leaving it vulnerable to economic

instability (Kamble et al., 2018). During global economic downturns or recessions, heavy reliance on the export sector can result in a decline in exports. Furthermore, Deegahawature & Rajapaksha, (2020) highlights the importance of an export-oriented economic strategy in Sri Lanka as globalization and the free trade industry have encouraged countries, including Sri Lanka, to focus on competitiveness and export orientation (Kannangara et al., 2020). By adopting an export-oriented approach, Sri Lanka can capitalize on its comparative advantages, such as skilled labor or natural resources, to attract foreign investment and generate export revenue (Kannangara et al., 2020). The impact of strategies on sustainable trade in Sri Lanka's export sector in a VUCA world can be significant (Rajapakshe, 2018). In a volatile, uncertain, complex, and ambiguous world, the choice of strategies in Sri Lanka's export sector can have profound implications on its ability to sustain trade growth.

Impact of Performance metrics on Sustainable Trade

Performance metrics play a crucial role in analyzing and evaluating the impact of sustainable trade, providing valuable insights into the effectiveness and success of sustainable practices implemented by companies (Krouska et al., 2021). By establishing a set of product metrics based on the six elements of sustainability, including environmental impact, functionality, process manufacturing, re-manufacturing, and recycling, use of resources/economics, and social impact, companies can assess the sustainability performance of their manufactured products or processes (Gephart et al., 2021). This enables them to identify areas for improvement and make informed decisions to promote sustainable trade. To measure sustainable development comprehensively, organizations like the UN Commission on Sustainable Development use a comprehensive set of indicators that cover social, environmental, institutional, and economic aspects (Somé et al., 2022). By utilizing a mix of leading and lagging indicators, as well as qualitative and quantitative metrics, organizations can gain a holistic understanding of their sustainability performance.

Moreover, a balance between external and internal performance measures is necessary to effectively assess sustainability. External performance measures, such as customer satisfaction, serve as important indicators of the impact a product or process has on stakeholders and the wider community. Meanwhile, internal performance measures provide insights into the operational efficiency and resource utilization within the organization (Somé et al., 2022). In industries that operate at the process level, assessing environmental sustainability requires the identification, definition, selection, and composition of environmental performance indicators

for processes. These indicators help measure the environmental impact of various stages of production and enable companies to implement more eco-friendly practices (Gupta et al., 2016).

Collaboration between different organizations is also key to providing a comparable measurement of sustainable trade. Specific organizations, such as the United Nations Conference on Trade and Development and the International Institute for Sustainable Development, have developed indicators and methodologies to evaluate initiatives operating in the agriculture sector and measure the achievement of goals related to social, economic, and environmental impacts. These organizations utilize modeling techniques and indexes to provide easily understandable and comparable measurements. Furthermore, the measurement and management of sustainability performance should align with the purpose of external transparency (Sheffi & James Blayney Rice, 2005).

Critics, however, argue that the reliance on performance metrics and sustainability assessment tools can be a double-edged sword. While these tools aim to promote sustainable trade, they can also lead to the misrepresentation of a company's sustainability performance. For instance, companies may prioritize meeting certain metrics at the expense of other important aspects of sustainability (Youngjoo & Jang, 2020). This emphasizes the need to ensure that performance metrics encompass a wide range of indicators, covering not only environmental factors but also economic, social, and governance aspects of sustainability.

METHODOLOGY

Conceptual Framework
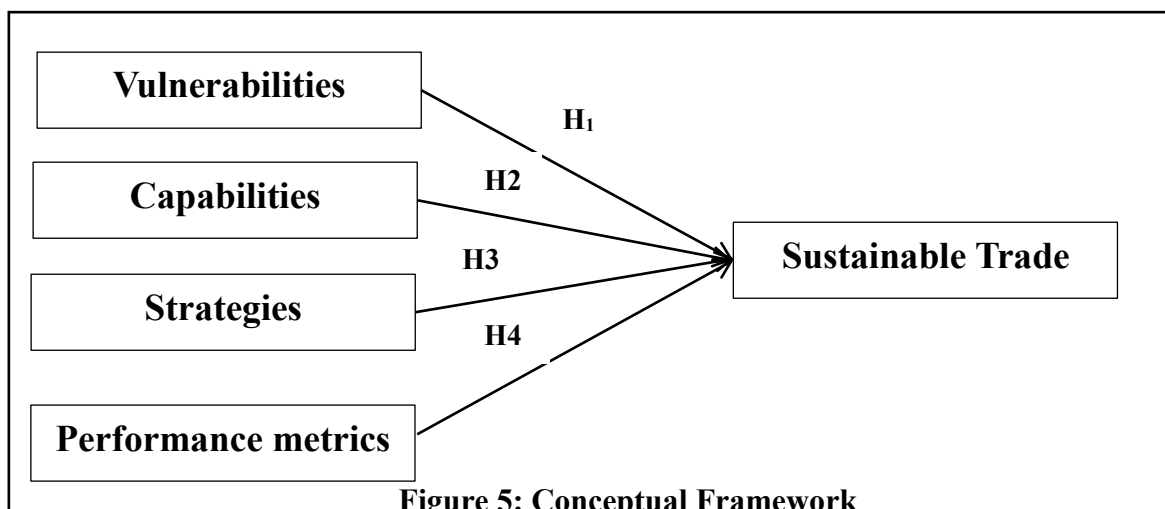
Figure 5: Conceptual Framework

Operationalization

The conceptual framework illustrates the comprehensive conceptual model and framework that has been meticulously developed. This framework is the culmination of key insights extracted from an extensive literature review, carefully integrated to provide a structured perspective for the study's focal point. Within this framework, the study delves into the intricate dynamics of Supply Chain Resilience (SCRES) by dissecting it into four fundamental Dimensions: Vulnerabilities, Capabilities, Strategies, and Performance Metrics. Meanwhile the dependent variable is Sustainable Trade. From the current study, it examines the impact of independent variables on the dependent variable.

Table 20: Variable Operationalization

Variable	Indicator	References	Measurements
Vulnerabilities	o Economic losses o Environmental risks o Social challenges	(Sheffi & James Blayney Rice, 2005), (Ponomarov & Holcomb, 2009)	
Capabilities	o Economic capabilities o Technological capabilities o Institutional and regulatory capabilities	(World Trade Organization, 2021), (United Nations, 2015)	5-point Likert scale
Strategies	o Export-oriented economic strategy o Sustainable trade strategies	(Deegahawature & Rajapaksha, 2020), (Maheswaranathan & Bhavan, 2022)	
Performance metrics	o Institutional o Economic aspects	(Krouska et al., 2021),	
Sustainable Trade	o Economic o Social o Environmental facets	(United Nations, 2015)	

Variable Operationalization shows the primary metrics utilized to determine the study model's key variables. A closer look shows that these crucial measures help distinguish between independent and influenced variables, particularly "Sustainable Trade," which can be further divided into Economic, Social, and Environmental components. An extensive literature review informs the selection of these measures, which define the research variables. The selection criteria have been rigorously validated to ensure enough evidence for the identified measures. The selection process also emphasizes these metrics' suitability for Sri Lanka. These measurements have also been proven quantifiable and assessable. This study's signature data gathering tool, the questionnaire, has two parts. The first component collects age, gender, and education data. The second section of the questionnaire evaluates independent variables, including vulnerabilities (7 questions), capabilities (7 questions), strategies (7 questions), performance metrics (7 questions), and sustainable trade (9 questions). These questions were carefully prepared using essential measurements for each research variable. The questionnaire also uses a 5-point Likert scale to capture and measure responses for both dependent and independent variable criteria, ensuring a structured and thorough data collecting and analysis process.

Hypotheses

Based on the analysis of relevant literature, the variables "Vulnerabilities, Capabilities, Strategies, and Performance metrics" have been identified as the independent factors, while "Sustainable Trade" has been identified as the dependent variable in the present research investigation. The formulation of an alternate hypothesis and a null hypothesis is based on the facts, with the aim of achieving the primary purpose of the investigation. The alternative hypotheses, denoted as H1, H2, H3, and H4, have been formulated to evaluate the statistical significance of the effects exerted by the independent factors on the dependent variable. Moreover, the analysis of the null hypothesis indicates that there is no statistically significant evidence to support the notion that the independent variable has an impact on the dependent variable.

> H1: There is an impact of being resilient during Vulnerabilities on Sustainable Trade in Sri Lanka's Export Sector.

> H2: There is an impact of Capabilities on Sustainable Trade in Sri Lanka's Export Sector.

H3: There is an impact of Strategies on Sustainable Trade in Sri Lanka's Export Sector.

H4: There is an impact of Performance metrics on Sustainable Trade in Sri Lanka's Export Sector.

Population and Sample Selection

The study's population encompasses several critical groups, namely Sri Lankan Export Companies, Supply Chain Professionals and Experts, and International Trade Partners and Organizations, all of whom are based within the Colombo district. A total of 250 questionnaires were thoughtfully distributed among these target respondents, utilizing both physical and email-based channels. The result of these efforts yielded a total of 198 valid responses, representing the valuable input of this select group.

DATA ANALYSIS

Demographic Factor Analysis

Table 21: Demographic Factor Analysis

Demographics	Categories	N	Percentage %
Gender	Male	90	45.5
	Female	108	54.5
Age	21 - 30 Years	126	63.6
	31 - 40 Years	54	27.3
	41 - 50 Years	12	6.1
	51 - 60 Years	6	3.0
Highest Education Level	Advanced Level	6	3.0
	Diploma	6	3.0
	Graduate	156	78.8
	Postgraduate	30	15.2
Designation	Executive	156	78.8

	Manager	30	15.2
	Owner	12	6.1

The highest respondents in the survey were females, totaling 108 respondents, which accounts for 54.5% of the total. Among the age groups, those aged 21 to 30 years constituted the largest segment, making up 63.6%, while individuals between 51 and 60 years accounted for the lowest percentage, at just 3%. This indicates that many survey participants were young, suggesting that an portion of employees and professionals in the export sector and international trade fall into this age bracket. Looking at the educational distribution of respondents, a substantial 78.8% reported having achieved a graduate-level education. In contrast, only six respondents each indicated possessing "advanced level" and "Diploma level" qualifications, with each category representing 3% of the dataset, marking the least frequent educational backgrounds. Furthermore, the data reveals that most respondents held executive titles, comprising 78.8% of the total. On the other hand, the fewest responses came from organization owners, with only 12 owners participating in the survey.

Descriptive Statistics

Table 22: Descriptive statistics

Variable	Indicator	Mean	SD
Vulnerabilities	VUL1	4.30	.971
	VUL2	4.30	.872
	VUL3	4.30	1.032
	VUL4	4.30	1.061
	VUL5	4.33	.945
	VUL6	4.48	.823
	VUL7	4.33	1.008
Capabilities	CAP1	4.12	1.040
	CAP2	4.18	1.089
	CAP3	4.15	1.161

	CAP4	4.21	1.069
	CAP5	4.24	1.077
	CAP6	4.21	1.069
	CAP7	4.30	1.061
Strategies	STR1	3.97	1.117
	STR2	4.21	1.040
	STR3	4.33	1.149
	STR4	4.39	1.016
	STR5	4.24	1.077
	STR6	4.12	.980
	STR7	4.24	1.184
Performance metrics	PM1	4.24	.957
	PM2	4.24	.988
	PM3	4.24	.924
	PM4	4.36	.982
	PM5	4.30	1.089
	PM6	4.33	1.008
	PM7	4.39	.954
Sustainable Trade	ST1	4.09	.935
	ST2	4.21	.980
	ST3	4.33	.912
	ST4	4.42	.957
	ST5	4.27	1.084
	ST6	4.33	1.066
	ST7	4.45	.893

ST8	4.36	1.012
ST9	4.45	.926

The computation of the mean and its application in descriptive statistics is a valuable methodology for understanding the central tendency of the data and making well-informed decisions based on this measure. When examining the descriptive statistics of the independent variables "Vulnerabilities, Capabilities, Strategies, Performance metrics," it is worth noting that the mean values for all seven questions fall within the range of 3.97 to 4.48. This indicates that most respondents have expressed agreement with the questions. The highest mean value within the Vulnerability variable is associated with the statement "VUL6 - A resilient supply chain typically leads to on-time deliveries and lower production costs." Within the Capabilities variable, the highest mean value is observed for the statement "CAP7 - The export sector's capabilities contribute positively to its supply chain resilience." As for the Strategies variable, the statement "STR4 - Strategies in place prioritize the development of local suppliers and resources" boasts the highest mean value at 4.39. Within the Performance metrics variable, the statement "PM7 - The export sector's performance metrics align with its strategic objectives for resilience" holds the highest mean value at 4.39. Turning to the dependent variable, Sustainable Trade, it's noteworthy that the two statements equally score the highest mean value of 4.45. These statements are "ST7 - The economic benefits of trade in Sri Lanka's export sector are increasingly being distributed more equitably among various players, contributing to reduced income inequality issues" and "ST9 - Policies and strategies are being developed to ensure a more balanced distribution of economic benefits and achieve a favorable trade balance within the export sector." Furthermore, it's worth mentioning that the standard deviation values for all the statements range between -2 and +2, indicating that the datasets fall comfortably within an acceptable range.

Reliability Test

Table 23: Reliability Test

Reliability Statistics		
Variable	Cronbach's Alpha	N of Items
Vulnerabilities	.928	7
Capabilities	.975	7

Strategies	.960	7
Performance metrics	.968	7
Sustainable Trade	.970	9

The findings of this study have been disseminated through publication, shedding light on both the constituent elements of scales and the characteristics of the measures. The reliability analysis conducted in the study is accessible through the provided link, offering a comprehensive view of scale reliability metrics and data concerning the interplay among these scales' components. Notably, the study demonstrates an level of consistency in terms of the scale's dependability. A critical component within the comprehensive framework of dependability analysis is the inclusion of Cronbach's Alpha. In the present sample, the reliability of Cronbach's Alpha is notably satisfactory, surpassing the threshold of 0.7. Specifically, the results of the reliability assessment, presented in tabular form at the outset of this document, indicate Cronbach's Alpha values of 0.928, 0.975, 0.960, 0.968, and 0.970 for the variables Vulnerabilities, Capabilities, Strategies, Performance metrics, and Sustainable Trade, respectively. These values comfortably exceed the required threshold of 0.7, signifying the reliability of the variables and underscoring the need for further research in this area.

Correlation Analysis

Table 24: Correlation Analysis

Correlations						
		Vulnerabilities	Capabilities	Strategies	Performance Metrics	Sustainability
Vulnerabilities	Pearson Correlation	1	.921[**]	.884[**]	.922[**]	.930[**]
	Sig. (2-tailed)		.000	.000	.000	.000
	N	198	198	198	198	198
Capabilities	Pearson Correlation	.921[**]	1	.896[**]	.892[**]	.889[**]

	Sig. (2-tailed)	.000		.000	.000	.000
	N	198	198	198	198	198
Strategies	Pearson Correlation	.884**	.896**	1	.860**	.887**
	Sig. (2-tailed)	.000	.000		.000	.000
	N	198	198	198	198	198
Performance Metrics	Pearson Correlation	.922**	.892**	.860**	1	.911**
	Sig. (2-tailed)	.000	.000	.000		.000
	N	198	198	198	198	198
Sustainability	Pearson Correlation	.930**	.889**	.887**	.911**	1
	Sig. (2-tailed)	.000	.000	.000	.000	
	N	198	198	198	198	198

**. Correlation is significant at the 0.01 level (2-tailed).

The variable correlation study provides a graphical representation of the relationship that exists between variables that are typically considered to be independent and those that are dependent. The properties of Vulnerabilities, Capabilities, Strategies, and Performance measures all have a positive correlation with the dependent variable, which in this case is Sustainability. It seems that these connections are extremely stable and reliable. The findings of the analysis of correlation reveal that the Pearson Correlation values for the Vulnerabilities, Capabilities, Strategies, and Performance metrics are 0.930, 0.889, and 0.887, respectively. The Performance metric has a Pearson Correlation value of 0.911. The values you see here were computed with the help of the findings from the correlation analysis. It can be seen from the fact that the Vulnerabilities variable has a Pearson correlation coefficient of 0.930 that it is highly connected to the concept of Sustainability. This is the relationship between the variables that are independent and those that are dependent.

Regression Analysis

Table 6: Model Summary

		Model Summary		
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.947[a]	.896	.894	.28573

a. Predictors: (Constant), Performance Metrics, Strategies, Capabilities, Vulnerabilities

The concept of "R Square" serves as a valuable metric, quantifying the degree to which an independent variable explains the variability of a dependent one. In this context, it becomes evident that independent factors bear responsibility for a substantial 89.6% of the variability observed in the dependent variable under study. Consequently, it can confidently assert that the model's reliability is supported. This assertion is substantiated by the fact that the R-Squared value, as demonstrated in the preceding table, surpasses the 50% threshold. This threshold signifies that the conceptual framework presented here is indeed a dependable and reliable model.

The determination of statistical significance was derived from the ANOVA table, as previously presented, yielding a notably low p-value of 0.000. This result led to the conclusion that the findings are statistically significant. Significantly, this value, being less than 0.005, provides strong evidence that the model's accuracy has indeed improved. The significance level falling below this threshold underscores the enhanced precision and reliability of the model.

Table 7: Regression Coefficients

		Coefficients[a]				
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.072	.119		.602	.548
	Vulnerabilities	.496	.081	.455	6.122	.000
	Capabilities	.004	.059	.005	.072	.942

Strategies	.213	.051		.236	4.205	.000
Performance_Metrics	.276	.061		.285	4.500	.000

a. Dependent Variable: Sustainability

The influence of independent variables on the dependent variable has been dissected, offering a comprehensive overview of this data. Notably, apart from the variable "capability," all other independent variables exert an impact on the dependent variable. Consequently, the p-value for these variables is less than 0.05, indicating the presence of external factors that exert a positive influence on the dependent variables. This underscores the importance of considering the influence of extraneous sources on the dependent variables in our analysis.

DISCUSSION

This study examines the impact of resilient supply chains on sustainable trade in Sri Lanka's export sector in a volatile, uncertain, complex, and ambiguous (VUCA) environment. The research aims to understand how these chains can help Sri Lanka's export businesses navigate challenges like geopolitical conflicts, natural disasters, market volatility, and regulatory changes. The study highlights the importance of supply chain resilience in a VUCA world, where sustainable trade is gaining prominence. Building resilient supply chains can give Sri Lanka a competitive advantage in the global market and inform policy decisions and business strategies for sustainable trade and economic growth.

The ability of nations and businesses to maintain sustainable trade in the face of vulnerabilities is a crucial consideration in an interconnected and uncertain world. Sustainable trade, in a globalized context, necessitates the capacity to withstand vulnerabilities and disruptions while continuing to prioritize environmental and social responsibility. Global trade is exposed to a range of vulnerabilities, such as natural disasters, supply chain disruptions, trade tensions, and market fluctuations (World Economic Forum, 2021). Consequently, these vulnerabilities can lead to economic losses, environmental risks, and social challenges (Sheffi & James Blayney Rice, 2005). Resilience, within the context of trade, refers to the ability to absorb shocks, adapt to changing conditions, and maintain essential trade functions (Ponomarov & Holcomb, 2009). As per the current study, it has been concluded that there is an impact of being resilient during Vulnerabilities on Sustainable Trade in Sri Lanka's Export Sector. Hence H_1 hypothesis accepted.

There is an impact of being resilient during Vulnerabilities on Sustainable Trade in Sri Lanka's Export Sector	Accept

Furthermore, human capital development plays a crucial role in a nation's sustainable trade readiness. This involves investments in education and skills training, which are vital for a nation's workforce to engage in sustainable trade industries (World Economic Forum, 2021). Skilled labor is particularly indispensable for sectors prioritizing sustainability, such as renewable energy and eco-friendly manufacturing (United Nations, 2015). As per the current study, it has been concluded that There is no significant impact of Capabilities on Sustainable Trade in Sri Lanka's Export Sector. Hence H_2 hypothesis rejected. As per literature extracted, the claim that capacities do not significantly affect Sri Lanka's export industry's sustainability is complex and open to interpretation, involving economics, commerce, and development (Ponomarov & Holcomb, 2009). This conjunction-based analysis deconstructs the statement and examines supporting and opposing arguments. Sri Lanka's export business has traditionally focused on textiles and garments, which don't require sophisticated technology. Therefore, technological advances may not have an impact on trade sustainability in some domains (van Hoek, 2019). The Sri Lankan economy focuses on exporting tea, rubber, and spices, where quality and quantity matter more than technology. The sustainability of commodity commerce may depend more on global demand and supply than local capacities (Abeysekara et al., 2019). External factors including global economic conditions, trade restrictions, and exchange rates can also affect Sri Lanka's export sector more than its local capabilities. Sri Lanka may be a price taker in the global economy, limiting its abilities' influence. However, Sri Lanka's export economy has been criticized for its overreliance on a few core goods and lack of diversification (Abeysekara et al., 2019). Research and development, innovation, and value addition may create new markets and goods, promoting sustainable commerce. In an increasingly competitive global market, quality control, international compliance, and ethical practises are essential. Failure to meet these requirements may result in trade obstacles and market share loss. Sri Lanka is also exploring information technology and tourism to broaden its export portfolio. Competent labour, strong infrastructure, and an innovative culture help maintain commerce and attract international investment in these areas (Central Bank of Sri Lanka, 2021). Capabilities may not have a big impact on Sri Lanka's export business in the short term, but they are vital to its long-term survival. Current investments in capability development may lead to future export industries that are strong and competitive.

There is no significant impact of Capabilities on Sustainable Trade in Sri Lanka's Export Sector.	Rejected

During global economic downturns or recessions, heavy reliance on the export sector can result in a decline in exports. Furthermore, Deegahawature & Rajapaksha, (2020) highlights the importance of an export-oriented economic strategy in Sri Lanka as globalization and the free trade industry have encouraged countries, including Sri Lanka, to focus on competitiveness and export orientation (Kannangara et al., 2020). As per the current study, it has been concluded that There is an impact of Strategies on Sustainable Trade in Sri Lanka's Export Sector. Hence H_3 hypothesis accepted.

There is an impact of Strategies on Sustainable Trade in Sri Lanka's Export Sector	Accept

Critics, however, argue that the reliance on performance metrics and sustainability assessment tools can be a double-edged sword. While these tools aim to promote sustainable trade, they can also lead to the misrepresentation of a company's sustainability performance. For instance, companies may prioritize meeting certain metrics at the expense of other important aspects of sustainability (Youngjoo & Jang, 2020). This emphasizes the need to ensure that performance metrics encompass a wide range of indicators, covering not only environmental factors but also economic, social, and governance aspects of sustainability (Gupta et al., 2016). As per the current study, it has been concluded that there is an impact of Performance metrics on Sustainable Trade in Sri Lanka's Export Sector. Hence H_4 hypothesis accepted.

There is an impact of Performance metrics on Sustainable Trade in Sri Lanka's Export Sector	Accept

CONCLSION

This study examines how resilient supply chains affect sustainable trade in Sri Lanka's export industry's VUCA environment. The study seeks to understand how these chains can help Sri Lankan exporters overcome natural disasters, market uncertainty, and regulatory changes. Supply chain resilience is vital in the unpredictable, uncertain, and increasingly sustainable

world of sustainable trade, according to the report. Strong supply chains may help Sri Lanka compete internationally and guide business and policy decisions that promote sustainable trade and economic growth. The effect of independent variables on the dependent variable has been investigated and summarized. All other independent factors, save "capability," significantly affect the dependent variable. It's important to understand how unrelated factors affect dependent variables in study.

Sri Lanka's export economy needs strong supply chains in a VUCA environment. The following strategies can increase trade sustainability in this tough environment: Lanka should actively seek new and diverse export markets to reduce dependence on a few key trading partners. Expanding to multiple markets reduces regional issues. Improve supply chain resilience by identifying weaknesses and contingencies. Diversifying suppliers, redundancy in critical components, and logistics and transportation network enhancements are examples. Encourage export innovation, especially in low-tech sectors. Automation, data analytics, and digital technology improve supply chain responsiveness. When possible, buy raw materials and intermediaries locally. Importing fewer essentials helps enhance supply networks. Encourage industry cooperation and information sharing to fix supply chains. Share market intelligence, risk assessments, and best practises. The Sri Lankan government should encourage businesses to invest in redundancy, modernization, and technology to improve supply chains. Reduce trade barriers and streamline customs to transfer products faster. Border delays may decrease. Build a skilled workforce for advanced technology and market development. This is achievable through education and occupational training.

In a volatile, unpredictable, complex, and ambiguous (VUCA) global climate, resilient supply chains' effects on sustainable commerce in Sri Lanka's export sector are crucial and under development. To further understand this problem, conduct case studies on Sri Lankan export firms that have created resilient supply chains. By examining the tactics, practises, and outcomes of multiple entities, optimal practises can be found for wider application. Strong supply chains improve trade volume, eliminate trade disruptions, and boost export competitiveness, according to this study. Assessment of financial effects of supply chain resilience investments is crucial. Create comprehensive risk assessment models for Sri Lankan exports. These models must account for climate change, political volatility, and global economic changes. Thus, these risks' effects on trade's long-term viability must be assessed. Global supply chain trends and their effects on Sri Lanka's export economy must be monitored.

This research examines how nearshoring, reshoring, and e-commerce affect trade sustainability. Following these guidelines, researchers can advance knowledge of supply chain resilience and its impact on sustainable commerce in Sri Lanka's export industry, especially in a volatile, uncertain, complicated, and ambiguous global environment.

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Determinants of Outsourcing Trajectory: A Literature Review

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ABSTRACT

Outsourcing refers to transferring clients' value chain activities to independent providers and procuring the necessary goods and services from them. Outsourcing has been used over the years both as a concept and a strategy, due to its ability to realize numerous benefits to business organisations. While outsourcing is considered as a fashionable management technique and a strategy to achieve competitive advantages of business organisations, the existing literature on the concept reports not only success stories, but also failure stories of outsourcing arrangements. Outsourcing trajectory to be considered as such succeeded or failed, it is because of how those success and failure factors exist or how those factors have been addressed within an outsourcing arrangement. While the existing literature comprises of research which has addressed the success and failure factors of outsourcing separately, the studies which discuss these factors together are no or less found. Having an overall picture of the determinants that will decide the success or failure of an outsourcing effort is important for the practitioner to plan and implement an outsourcing effort effectively without leaving any room for a failure. Accordingly, this research was carried out to find the answer to the research question 'What are the determinants of outsourcing trajectory that can be derived from success and failure factors of outsourcing?'. This research question was addressed through a comprehensive literature review which identified twenty-nine (29) success factors and thirty-two (32) failure factors and, a manual content analysis which resulted in twenty-three (23) factors as the determinants of outsourcing trajectory. The consideration of these determinants of outsourcing trajectory can enhance the chances of successes and minimize the failures of outsourcing arrangements, and also minimize the associated risks with such outsourcing failures. Further, the identified factors can be employed for future research to evaluate the significance of each of them to determine the success or the failure of an outsourcing arrangement.

Keywords: Outsourcing, Success factors, Failure factors, Determinants of outsourcing trajectory, Literature review

INTRODUCTION

Outsourcing can be defined as transferring of any defined business responsibility or an operation to another organisation (Smithson and Dickey, 2020). In outsourcing, an outside service provider is contracted by an organisation to procure necessary goods, services or processes that can otherwise be procured by itself through the in-house method (Olanrele et al.,

2013; Yin and Wang, 2008). The outsourcing strategy over in-house method has become popular with clients as it has the potential to generate numerous benefits to client organisations (Lahiri et al., 2022). Although such benefits can be gained by outsourcing, once it is implemented and managed properly, a number of studies report on issues of outsourcing and outsourcing failures (Molléri et al, 2023; Sreedevi and Tanwar, 2018; Zelga, 2018). According to Delen et al. (2016), there are number of factors which influence the success or failure i.e. trajectory of an outsourcing effort and having an understanding on those factors will result in minimal outsourcing failures. While most of the existing literature discusses the success and failure factors separately, this paper tries to identify the factors determining the trajectory of outsourcing based on both success and failure factors of outsourcing.

While this section introduced the study presented in this paper, the method used in this study is described in Section 2. In Section 3, a review of literature is presented followed by a discussion of findings in Section 4. Finally, conclusions derived through the study is presented in Section 5.

RESEARCH METHOD

In view of the existing literature on outsourcing, it was noticed that they have identified success and failure factors of outsourcing separately. While considering this as a gap of the existing literature on outsourcing pertains, a systematic literature review was conducted to fill the gap identified. According to Denyer and Tranfield (2009), systematic literature review is a specific methodology that locates existing studies, selects and evaluates contributions, analyses and synthesises data, and reports the evidence in a way that allows reasonably clear conclusions to be reached about what is and is not known. The research question that guided the literature review process of this study was 'What are the determinants of outsourcing trajectory that can be derived from success and failure factors of outsourcing?' and searching the articles for the review was conducted using the terms 'Determinants of outsourcing trajectory', 'Outsourcing', 'Success factors', and 'Failure factors'. Among the available search engines, 'Google Scholar', 'Scopus', 'Emerald', 'ScienceDirect' and 'Web of Science' were selected for this study and the search was conducted without limiting to a specific period of time. After that, the texts were read in full, and the articles those did not present relevant contributions to the area under consideration were excluded from the study. As the determinants of outsourcing trajectory could not be found directly from the available literature, the identified success and failure factors (presented in Table 1 and Table 2 respectively) were analysed adopting manual content

analysis to derive at the determinants of outsourcing trajectory (refer Table 3). The analysis of these factors revealed that the terminologies used by the authors were diverse and often similar in their sense. Therefore, it was necessary to catecorise the elements with similar meanings. Hence, in deriving the final list, the similar factors were grouped together and given a common term to avoid repetitions. Finally, the findings were reported with the highest level of detail possible in completing the systematic literature review process.

REVIEW OF LITERATURE

Overview of Outsourcing

Outsourcing is an arrangement in which, one organisation (the client) hires another organisation (the service provider) to perform a particular function/service on its behalf (Mohr et al., 2011). Here, based on a contractual agreement, client agrees to procure the functions/services from the supplier for the term of the contract. Outsourcing is not a novel concept to the modern business environment (Vaxevanou and Konstantopoulos, 2015). The origins of outsourcing can be traced back to the eighteenth-century England and it has been continuously in practice in a variety of forms. Outsourcing has received a special impetus in the 1970s, when corporations were considered to be under-performing and it was considered as a serious issue at that time (Rumelt, 1974 as cited in Kakabadse and Kakabadse, 2003). Hence, in the 1970s, organisations changed their vertical integration strategy to "outsourcing" with the primary aims of reducing costs and gaining control over diverse businesses (Harland et al., 2005).

Apart from cost savings and transferring responsivity, outsourcing has been recognised as a technique which is capable of providing numerous other organisational benefits as well. These include enabling the client organisation to focus purely on core business, allowing the client organisation to get the benefit of using vendor's competencies and facilities, increased flexibility in operations, improved quality, productivity and operational efficiencies, improved customer orientation and services, increased innovation as well as acting as a solution for lack of initial and major capital investments for service provision (Amos and Gadzekpo, 2016; Pratap, 2014; Bolumole et al., 2007; Liou and Chuang, 2010; Kremic et al., 2006; Sandhu et al., 2018; Sreedevi and Tanwar, 2018; Vaxevanou and Konstantopoulos, 2015). Due to these benefits, over the last 50 years, outsourcing has evolved from a method used to implement simple business tasks to a concept treated as a mechanism usable in response to competitive business environment (Sandhu et al., 2018; Zelga, 2018). Today, organisations outsource every

function that can be performed by external parties, from catering to cleaning services to business process and human resources management (Perunovic´ et al., 2012; Tjader et al., 2014 as cited in Sandhu et al., 2018).

Trajectory of Outsourcing with Success and Failure Factors

The success of outsourcing as perceived by (Mumford, 1994 as cited in Warne, 2003) is the capacity to produce the expected outcomes of outsourcing. Depending on the organisation's requirements, it can be stated as the achievement of goals such as cost saving, product/service delivery and compliance with legal requirements, etc. As Pratap (2014) mentioned, though outsourcing is expected to benefit the clients, in practice, numerous studies have shown a high proportion of outsourcing arrangements delivered results unacceptable to the client. Such inabilities cause dissatisfactions among the parties, and they lead towards outsourcing failures. Further, outsourcing decisions may not be sustainable because they could result in unintended consequences or outcomes (Entwistle 2005 as cited in Damanpour et al., 2019).

Table 1: Success Factors of Outsourcing

Success factors	Reference source
Effective strategic analysis and planning	Brown and Wilson, 2005; Bull,1996; Delen et al., 2016; Elmuti, 2003; Embleton and Wright, 1998; KMPG, 2018
Accurate definition of the scope of outsourcing project	Bull, 1996; Gonzalez et al., 2010; Ruzzier et al., 2008
Planned approach of the sourcing process	Delen et al., 2016; Elmuti, 2003
Selecting the right service provider	Brown and Wilson, 2005; Elmuti, 2003; Embleton and Wright, 1998; Gonzalez et al., 2010; KPMG, 2018; Ruzzier et al., 2008
Conducting a thorough and a complete due diligence	Power et al., 2006
Properly structured contract, solid and flexible contract	Bhattacharya et al., 2013; Brown and Wilson, 2005; Burdon and Bhalla, 2005; Cullen et al., 2005; Elmuti, 2003; Gonzalez et al., 2010; Khan and Khan, 2013; Usher, 2003; Ruzzier et al., 2008
Effective contract management	Alborz et al., 2003; Elmuti, 2003
Proper clarification of roles/responsibilities of each party	Brown and Wilson, 2005; Bull, 1996; Elmuti, 2003; Gonzalez et al., 2010; KPMG, 2018
Deeper understanding on each other's working culture and cultural alignment/compatibility with service provide, cross cultural understanding & sensitivity	Bhattacharya et al., 2013; Brown and Wilson, 2005; Smuts et al., 2015; Tucker and Ogungbemi, 2012
Effective management of client-provider relationship, a good-value-for-money relationship, trustworthy relationship management	Ali et al., 2022; Ngah et al., 2023; Alborz et al., 2003; Bhattacharya et al., 2013; Brown and Wilson, 2005; Burdon and Bhalla, 2005; Cullen et al., 2005; Elmuti, 2003; Embleton and

	Wright, 1998; Gonzalez et al., 2010; Khan and Khan, 2013; KPMG, 2018; ISG, 2012; Usher, 2003; Ruzzier et al., 2008
Establishing effective lines of communication between the client and provider organisations, effective and timely communication	Ali et al., 2022; Bairi and Manohar, 2011; Brown and Wilson, 2005; Elmuti, 2003; Gonzalez et al., 2010; KPMG, 2018
High and effective support and involvement by top management	Brown and Wilson, 2005; Burdon and Bhalla, 2005; Gonzalez et al., 2010
High morale and performance of the remaining employees	Embleton, and Wright, 1998; Elmuti, 2003
Getting the right people involved in managing outsourcing efforts	Brown and Wilson, 2005; Elmuti, 2003
Effective team work	Bairi and Manohar, 2011; KPMG, 2018
Careful attention to the issues faced by each party	Brown and Wilson, 2005
Adequate training provided to the people involved in outsourcing	Bairi and Manohar, 2011; Elmuti, 2003
Building organisational support for the initiative through provision of adequate infrastructure and facilities essential	Elmuti, 2003; ISG, 2012
Defining meaningful incentives, monitoring and reporting service levels, adequate and objective performance criteria and feedback, effective performance management, effective use of performance incentives and penalties, flexible SLAs	Ali et al., 2022; Alborz et al., 2003; Bairi and Manohar, 2011; Elmuti, 2003; ISG, 2012; Reid-Thomas and Phillips, 2005
Better governance structures, using proper feedback and control mechanisms	Ali et al., 2022; Alborz et al., 2003; KPMG, 2018; Mohamed, et al., 2015; Yan, 2018
Effective knowledge management, effective and smooth knowledge transferring/sharing, Bidirectional transfer of knowledge	Ali et al., 2022; Alborz et al., 2003; Bairi and Manohar, 2011; Kess et al., 2007, Zelga, 2018
Client and provider capabilities, organisational capabilities	Wang et al., 2020; Goles, 2003; Lee, 2001; Miozzo and Grimshaw, 2011
Mutual co-dependency among client and provider; Mutual interdependence and shared values	Ali et al., 2022; Rogers, 2005
Financial capacity of the client organisation; Financial stability	Ali et al., 2020; Hou et al., 2016
Better baseline costs	KPMG, 2018
Effective user change support	Delen et al., 2016
Ensuring the flexibility of anticipating change	Pratap, 2014
User satisfaction	Bairi and Manohar, 2011; Fraihat, 2006
Managing across the lifecycle	Cullen et al., 2005

Across studies, significant proportion of researchers have reported instances of outsourcing failures and bringing operations back in-house (Barthelemy, 2003; Lok and Baldry, 2016; Olympics and Buckles, 2013; Pratap, 2014). Further, as Hui and Tsang (2004 as cited in Ikediashi et al., 2014) highlighted, the decision to outsource is a complex one fraught with uncertainties. Further, as per Frost (2000 as cited in Al-hakim (2005), outsourcing to a certain service provider is an initiative which was not tested previously and therefore, it is difficult to

come to a prior assurance that it will surely be succeeded. However, existing literature discuss that there are certain factors that determine the trajectory of outsourcing towards a success or a failure. As large risks are involved if an outsourcing arrangement is not successful (Ishizaka and Blakiston, 2012), it is important to determine how a successful outsourcing arrangement can be achieved by identifying the underlying factors and effectively addressing them.

A thorough probing into the existing literature resulted in identifying a list of success and failure factors discussed by previous researchers. Where it could be noted that the similar factors have been mentioned by different authors in different terms, those factors were grouped and mentioned in a common term which gives the best meanings. The determined success factors and failure factors have been summarised in Tables 1 and 2 respectively and they have been discussed in Section 4.

Table 2: Failure Factors of Outsourcing

Failure factors	Reference source
Lack of strategic vision and strategic planning	Al-hakim, 2005; Barthelemy, 2003; Delen et al., 2016; Elmuti, 2003; Hou et al., 2016; Mohr et al., 2011; Olympics and Buckles, 2013
Incomplete and ambiguous definitions and inconsistent requirements	Smuts et al., 2015
Inadequate comprehensive planning, not having planned approach for outsourcing process, rushing through the initiative	Barthelemy, 2003; Delen et al.,2016; Elmuti, 2003; Mohr et al., 2011; Khan and Khan, 2017; Olympics and Buckles, 2013
Selecting the wrong service provider, poor selection process, a lack of comprehensive evaluations in selecting suitable service provider	Al-hakim, 2005; Barthelemy, 2003; Liou and Chuang, 2010; Olympics and Buckles, 2013
Not conducting proper due diligence	Alborz et al., 2004
Poor terms of contract, not having a solid contract	Al-hakim, 2005; Barthelemy, 2003; Delen et al., 2016
Poor contract Management	Delen et al., 2016; Olympics and Buckles, 2013
Lack of work understanding	Al-hakim, 2005; Barthelemy, 2003; Elmuti, 2003; Olympics and Buckles, 2013
Not appreciating cultural differences	Khan and Khan, 2017; Power et al., 2004; Barthelemy, 2003
Poor client-provider relationship	Molléri et al., 2023; Barthelemy, 2003; Power et al., 2004
Lack of proper communication mechanism	Al-hakim, 2005; Barthelemy, 2003; Elmuti, 2003; Khan and Khan, 2017; Power et al., 2004
Lack of management commitment	Ali et al., 2020; Al-hakim, 2005; Barthelemy, 2003; Elmuti, 2003; Power et al., 2004
Decline in the morale and performance of the remaining employees	Elmuti, 2003

Lack of teamwork environment	Al-hakim, 2005
Cross functional problems	Barthelemy, 2003
Lack of training	Al-hakim, 2005
Lack of resources and supporting infrastructure	Khan and Khan, 2017; Elmuti, 2003; Power et al., 2004
Poor performance management	Al-hakim, 2005
Inadequate policies, standards and control systems	Molléri et al., 2023; Al-hakim, 2005; Barthelemy, 2003'; Elmuti, 2003
Lack of knowledge, skills and capabilities of service providers	Al-hakim, 2005; Elmuti, 2003; Power et al., 2004
Incompatible/high and hidden costs	Molléri et al., 2023; Al-hakim, 2005; Elmuti, 2003
Difficulties in knowledge transferring	Sreedevi and Tanwar, 2018
Ineffective user support	Delen et al., 2016
Lack of flexibility	Al-hakim, 2005
Over dependency on provider	Al-hakim, 2005
Budget constraints of the client organisation	Hou et al., 2016
User dissatisfaction	Al-hakim, 2005
Failure to manage user expectations	Khan and Khan, 2017
Unsatisfactory performance of the outsourcing service provider, low service quality	Molléri et al., 2023; Lok and Baldry, 2015; Pratap, 2014
High complaint rate of the client	Al-hakim, 2005
Contractual inflexibility	Khan and Khan, 2017
High turn-over of vendor employees	Khan and Khan, 2017

DISCUSSION OF FINDINGS

Deriving the determinants of outsourcing trajectory with success and failure factors

As it is summarised in Table 1, a total of twenty-nine (29) factors could be identified as success factors of outsourcing whereas Table 2 summarises thirty-two (32) failure factors. After thoroughly going through the themes discussed in those factors, the review of literature resulted in twenty-three (23) factors that determine the outsourcing trajectory i.e. the factors that determine the success or failure of an outsourcing effort. Similar factors were grouped together and given a common term in deriving the final list of determinants. The identified factors are depicted in Table 3 and discussed here in after.

Strategic Analysis

According to Barthélemy (2003) as cited in Lok and Bladry (2016) one of the problems that is responsible for most failed outsourcing efforts is that outsourcing activities that should not be

outsourced. Organisations may have different objectives that need to be fulfilled through outsourcing. Whatever the reasons they are, since outsourcing has a long-lasting impact on the organisation and wrong outsourcing decisions are costly, it is important for client organisation to determine what they are outsourcing, what their goals and objectives are, and why they are outsourcing (Alborz et al., 2003). Smuts, Kotzé, van der Merwe, and Loock (2015) mentioned that successful outsourcing arrangements are more likely when an organisation has strategically determined that outsourcing is an effective tool through appropriate evaluation processes. If an organisation's sourcing strategy is not clear from the start and it is with lack of strategic vision, the organisation can find itself in a failed outsourced effort (Alborz et al., 2003; Al-hakim, 2005; Barthelemy, 2003; Delen et al., 2016) and therefore how strategic analysis is carried out can be identified as an important determinant of outsourcing trajectory.

Table 3: Determinants of Outsourcing Trajectory Derived from the Review

Identified success factors	Identified failure factors	Derived determinants of outsourcing trajectory
Effective strategic analysis and planning	Lack of strategic vision and strategic planning	Strategic analysis
Accurate definition of scope of outsourcing project and specifications	Incomplete and ambiguous definitions and inconsistent requirements	Scope definition
Planned approach of the sourcing process, managing across the life cycle	Inadequate specifications and outsourcing plans, rushing through the initiative	Adequate planning of outsourcing process
Selecting the right service provider	Selecting the wrong service provider, poor selection process, a lack of comprehensive evaluations in selecting suitable service provider	Selection of the provider
Conducting a thorough and a complete due diligence	Not conducting proper due diligence	Conducting due diligence
Properly structured contract, solid and flexible contract	Poor terms of contract, not having a solid contract; contractual inflexibility	Contract development
Effective contract management	Poor contract Management	Contract management
Proper clarification of roles/ responsibilities of each party	Lack of work understanding	Clarification of roles and responsibilities/ work understanding
High and effective support and involvement by top management	Lack of management support and commitment	Senior Management commitment and involvement
Deeper understanding on each other's working culture and cultural alignment with service provider	Not appreciating cultural differences	Cultural alignment among client and provider organisations

Establishing effective lines of communication between the client and provider organisations	Lack of proper communication mechanism/ lack of client provider relationship	Level of communication and availability of communication mechanisms
Mutual co-dependency among client and provider	Over dependency on provider	Inter- dependence among client and provider organisations
Effective management of client-provider relationship, working relationship	Poor client-provider relationship	Working relationship
Effective knowledge management; effective knowledge transferring/sharing	Difficulties in knowledge transferring	Knowledge sharing and knowledge management
Defining meaningful incentives, Monitoring and reporting service levels, Adequate and objective performance criteria and feedback, Effective Performance management, Effective use of performance incentives and penalties	Poor performance management	Performance management and availability of Service Level Agreements (SLAs)
High morale and performance of the remaining employees; Getting the right people involved in managing outsourcing efforts, Effective team work; Adequate training provided to the people involved in outsourcing	Decline in the morale and performance of the remaining employees; Lack of team work environment; Lack of training, high turn-over of vendor employees	Workforce management
Better baseline costs	Incompatible and hidden costs	Cost management
Better governance structures; using proper feedback and control mechanisms	Inadequate policies, standards and control systems	Governance
Building organisational support for the initiative through provision of adequate infrastructure and facilities essential; Financial capacity of the client organisation	Lack of resources and supporting infrastructure, budget constraints of the client organisation	Building organisational support/ provision of infrastructure and other facilities
Ensuring the flexibility of anticipating change, Effective user change support	Ineffective user support, lack of flexibility	Change management and flexibility
Service level, user satisfaction	User dissatisfaction, failure to manage user expectations, unsatisfactory performance of the outsourcing service provider, low service quality, high complaint rate of the client	Achievement of performance objectives and user satisfaction
Careful attention to the issues faced by each party	Cross functional problems	Attention given to the issues faced by each party
High client and provider capabilities; organisational capabilities	Lack of knowledge, skills and capabilities of service providers	Client and provider capabilities

Scope Definition

Accurate definition of scope of an outsourcing project and specifications have been cited as a basic condition for outsourcing success in a number of studies. However, as McIvor (2008 as

cited in Gonzalez, Gasco and Llopis, 2010) highlighted, most of the organisations enter into outsourcing agreements with only a vague idea of what they want to obtain from the provider and also without fully understanding the nature of the outsourced task and its linkages with other parts of the business. According to Smuts et al. (2015), incomplete and ambiguous definitions and inconsistent requirements are a threat to proper requirements management whereas detailed process ensures the unambiguous definition of the project methodology, scope, schedule, deliverables, systematic and conclusive empirical evidence, and a clear understanding by both parties. Therefore, this determinant plays an important role in determining the outsourcing trajectory.

Adequate Planning of Outsourcing Process

Every successful relationship lies a rigorous planning and preparation process (Bull, 1996). Therefore, as mentioned by Guterl (1996 as cited in Elmuti, 2003), developing a comprehensive plan outlining detailed expectations, requirements, and expected benefits during all phases of outsourcing activities may be the key to successful sourcing efforts. Hence, employing a planned approach (Delen et al., 2016) for outsourcing has been cited as a success factor for outsourcing whereas inadequate and sketchy plans (Barthelemy, 2003; Elmuti, 2003) and rushing through the initiative without adequate planning (Mohr et al., 2011) have been cited as failure factors. This indicates that the planning of the outsourcing effort takes an important place in determining outsourcing trajectory.

Selection of the Provider

According to Barthélemy (2001 as cited in Gonzales et al., 2010), the trajectory of outsourcing can largely depend on selection of provider. Changing service provider several times incur huge cost and, as Embleton and Wright (1998) suggested, it is worthwhile therefore to spend time and money to choose the correct supplier at the first time, by effectively evaluating and determining the suppliers' profiles and conducting PFIs, RFPs and required site visits. These evaluations provide a mean to determine whether a potential supplier is able to deliver solution based on the defined requirements (Alborz et al., 2003). It is essential that the right providers are selected based on certain criteria. As Ersoya and Doganb (2020) mentioned, price, quality and delivery criteria can be identified as the main criteria in selecting providers. In addition, numerous criteria including credibility, expertise, reliability (Elmuti, 2003), stability (McFarlan and Nolan, 1995 as cited in Gonzales et al., 2010), along with reputation (Barthélemy, 2001 as cited in Gonzales et al., 2010) are also used in provider selection.

Due Diligence

According to Alborz et al. (2004), due diligence is an objective assessment and involves certain preplanning activities performed by the client and service provider at the beginning. The client's due diligence basically involves assessing the size and complexity of services, evaluating and selecting a supplier, and assessing the supplier's cultural fit whereas, the due diligence conducted by provider involves verifying the accuracy of the client's information in order to make appropriate adjustments in resource structure, initial proposed solution, and the final pricing (Alborz et al., 2004). The results of the due diligence undertaken by these two parties are ultimately fed into the final outsourcing agreement and hence, the finalised outsourcing contract is the result of detailed due diligence (Power et al., 2006; Melby and Bryan, 2019). Outsourcing is generally a long-term arrangement and the decision for outsourcing is taken with a client's certain objectives. Therefore, it is important to conduct due diligence by both client and provider before entering into the agreement so that the achievement of previously set objectives can be ensured (Melby and Bryan, 2019). Therefore, complete and thorough due diligence process tailored to the outsourced operation is a necessary step for success. On the other hand, failure to conduct due diligence activities will result in disadvantages such as hidden costs and discrepancies which will arise during operationalisation and that can jeopardise the relationship (Alborz et al., 2004). Hence, conducting due diligence is an important determinant of outsourcing trajectory.

Contract Development

Outsourcing is contract intensive in nature (Deckelman, 1998 as cited in Zhu et al., 2001). According to Solli-Saether (2006, p. 201 as cited in Bhattacharya et al., 2013), outsourcing contract is a legally bound institutional framework in which each party's rights, duties, and responsibilities are codified and the goals, policies, and strategies are specified. It is an important cooperative document which lays the basis for shaping the outsourcing relationship (Zelga, 2018). Moreover, it helps both parties to fulfil their obligations by incorporating clauses to deal with uncertainties and disputes (Osei-Bryson and Ngwenyama 2006, as cited in Bhattacharya et al., 2013). Handley and Benton (2013) as cited in Khan and Khan (2017) mentioned two ways how a complete contract ensures outsourcing success. First, complete specifications of commitments and practices reduce the risk and uncertainty. And, second, inter-organisational resource efficiency through coordination may reduce the risk of outsourcing. In addition to the above, a number of researchers (Brown and Wilson, 2005; Burdon and Bhalla, 2005; Cullen et al., 2005; Gonzalez et al., 2010; Khan and Khan, 2017;

Usher, 2003; Ruzzier et al., 2008) over the years have mentioned that a successful outsourcing process relies upon a good contract. On the other hand, poor contract structure/design as an influencing factor for outsourcing failures has also been cited largely in the extant literature (Al-hakim, 2005; Barthelemy, 2003; Delen et al., 2016) proving that the contract structure is a determinant of outsourcing trajectory.

Contract Management

As perceived by Cullen and Willcocks (2003 as cited in Alborz et al., 2003), a contract comprises of both the design and implementation activities necessary throughout the life of the outsourcing arrangement. Hence, it is through contract management that success is ultimately determined. In a similar vein, Gong et al. (2007) indicated that a properly structured/ designed contract alone cannot guarantee a successful outcome and it requires an active contract management during its operationalisation. Here, contract management refers to the management of entire outsourcing relationship in a constructive and positive manner and it includes ongoing monitoring and reporting of delivered outsourced services in terms of quality, performance, and cost against the predefined criteria in the contract. While the success of outsourcing is adversely affected by the incompleteness of contracts as mentioned above, as per Beulen and Ribbers (2003), the negative effects of the incompleteness of contracts can be offset through contract management. Due to these reasons, contract management has been cited as an important determinant of outsourcing trajectory (Olympics and Buckles, 2013).

Clarification of Roles and Responsibilities/Work Understanding

As it is reported in the literature, failed outsourcing arrangements have experienced unclear expectations/unclear objectives (Olympics and Buckles, 2013; Elmuti, 2003) and lack of work understanding (Al-hakim, 2014). Further, the provider's understanding of clients' objectives and clarification of roles/responsibilities, buyers and providers have been reported as contributing factors for outsourcing success (Gonzalez, et al., 2010, Brown and Wilson, 2005; Elmuti, 2003; Bull, 1996). As Gonzalez et al. (2010) discussed, the success of outsourcing is basically dependent on up to what extent the provider can achieve client's objectives. Therefore, providers with a good understanding and an interest in the outsourcing firm's business will be in a better position to achieve the objectives sought by client through outsourcing.

Senior Management Commitment and Involvement

Senior management support is considered a prerequisite for every successful outsourcing arrangement because it leads the initiative and drive for change from the top down (Lee and Kim 1999 as cited in Alborz et al., 2003). According to Iacovou and Nakatsu (2008) as cited in Khan and Khan (2017), the top management support is essential in terms of securing the needed resources and gaining cooperation across organisational groups, and for enhancing the legitimacy of an outsourcing project. For this, the client organisation should assign dedicated management with a strategic understanding of outsourcing partnership goals, as well as with the capability to conclude sophisticated negotiation (Smuts et al., 2015). However, as Smuts et al. (2015) pointed out, clear engagement of the top management of the provider organiasation in the outsourcing arrangement is also required for outsourcing success. Similarly, the support received/involvement of top management has been repeatedly described as a factor that determines either good or bad performance of outsourcing as well (Gonzalez et al., 2010; Power, Bonifazi and Desouza, 2004).

Cultural Alignment Among Client and Provider Organisations

Booty (2006) as cited in Tucker and Ogungbemi (2012) mentioned that the outsourcing initiatives often result in outsourced employees from service providers who come into the client organisation with pre-ingrained culture in them from their employers (service providers). They have most likely imbibed the culture of their employer and the culture of other client organisations they have worked with over the course of their careers. As Tucker and Ogungbemi (2012, p.616) further highlighted in their research, discrepancy in the cultures of service provider and client organisation may cause the outsourced employee to deliver below target and find it difficult to integrate with the client organisation where an in-house colleague blends in with relative ease. Hence, not appreciating cultural differences between client and provider organisations has been mentioned as a factor leading to outsourcing failure (Power et al., 2004). Similarly, recognising cultural alignment with the provider (Brown and Wilson, 2005); deeper understanding of each other's working culture (Smuts et al., 2015); cultural compatibility (Bhattacharya et al., 2013); cultural fit (Tucker and Ogungbemi, 2012) have been mentioned as factors positively affect outsourcing success. Hence, based on available literature, cultural alignment among client and provider organisations can be recognised as another important determinant of outsourcing trajectory.

Level of Communication and Availability of Communication Mechanisms

According to Bairi and Manohar (2011), communication is the simplest and most powerful business rule though it falls down in most of the outsourcing arrangements. This is because

frequent client-provider contacts (Gonzalez et al., 2010) and well-coordinated effort among cross-functional areas (Elmuti, 2003) is essential for successful operation of outsourcing. A good communication is critical to the success of any outsourcing project (Brown and Wilson, 2005) whereas ineffective communication acts as a threat if there is ineffective interaction between the parties (Smuts, 2015). As Brown and Wilson (2005) discussed, how parties into the outsourcing arrangement communicate depends on the outsourcing contract and the complexity of the services being delivered. Further, simple, well-specified services require day-to-day operational contacts and formal performance reporting and invoicing whereas when the services increase in complexity, more in-depth communication is required. These may include joint planning of service delivery and problem resolution, discussion of proposed innovations or changes in approach, consultation on staffing changes, and so on. This can be supplemented by regular monthly reporting, to show performance against standards, pricing, and problems encountered.

Interdependence Among Client and Provider Organisations

As Smuts et al. (2015) mentioned, inter-dependence refers to the degree of dependency of the activities of client organisation from the operations of the vendor organisation. Further to the authors, this degree of dependency presents a clear bidirectional nature business and mutual understanding. Therefore, the service provider must understand the importance of the services provided by them to the successful operation of the client organisation. However, organisations expect too much from their service providers and this over dependency on provider is a factor that leads to outsourcing failures (Al-hakim, 2005).

Working Relationship

According to Handley and Benton (2009 as cited in Pratap, 2014), though legal contracts are an essential part of outsourcing arrangements, they cannot handle all uncertainties alone. Hence, outsourcing seemingly is only successful when relations are effective and functioning (Kern and Willcocks, 2000 as cited in Sridarran and Fernando, 2014). As per Usher (2003), the relationship is a qualitative aspect which is not mostly determined or driven by the procurement method and not always something that can be created and maintained. This is because it inherently relies on the single most unpredictable variable i.e. people. Therefore, as Alborz et al. (2003) highlighted, the working relationship as a factor that is complex and dynamic. This complexity encompasses relational, social, and human characteristics, since each individual brings different background, experience, style, and culture into the outsourcing engagement. Therefore, a good provider should stress the importance of a close working

relationship, to avoid any feelings of loss of control (Bull, 1996) and adequately invest on time for its success (Usher, 2003).

Knowledge Sharing and Knowledge Management

As mentioned by Kess et al. (2007), knowledge transfer involves conveying and diffusing knowledge throughout an organisation. Effective knowledge transfer helps to leverage the ways an organisation solves its problems and strengthen its performance. Hence, as per the researcher, effective knowledge transfer manifests itself through increasing the value of a firm's knowledge assets and better organisational performance. According to Cohen and Prusak (2001) as cited in Alborz et al. (2003), when clients share their knowledge with the provider in an outsourcing arrangement, they demonstrate trust and trust builds commitment. The more commitment expressed by an organisation, the stronger the relationship becomes. On the other hand, difficulties in transferring knowledge and lack of knowledge transfer damages the relationship among client and service provider (Sreedevi and Tanwar, 2018). Though sharing knowledge presents a difficult challenge during the outsourcing engagement (Alborz et al., 2003), having a knowledge management system is essentail to facilitate effective and smooth knowledge exchange (Bairi and Manohar., 2011). Hence, knowledge sharing and knowledge management can be identified as other determinants of outsourcing trajectory.

Performance Management and Availability of Service Level Agreements (SLAs)

The importance of performance management and performance monitoring have been mentioned by a large number of researchers (Alborz et al., 2003; Bhattacharya et al., 2013; Delen et al., 2016; Elmuti, 2003; KPMG, 2018) as a crucial factor for the success of any outsourcing arrangement. Similarly, situations where outsourcing engagements suffered due to poor performance management also have been reported in the literature (Alborz et al., 2003; Al-hakim, 2005). As discussed by Alborz et al (2003), as for any kind of business relationship, outsourcing also requires oversight and periodic review in order to hold the service provider organisation towards its obligation. This is important because the overall satisfaction of client towards its service provider mainly depends on up to what extent the service provider fulfils its performance requirements. As the author discussed in detail, performance monitoring informs the client organisations whether its objectives have been met, what the discrepancies are, what controls need to be in place, and, finally, confirms the success. In addition, it also helps provider organisations to assess the level of customer satisfaction and areas for continuous improvement. As Smuts et al. (2015) mentioned, for proper contract performance

management, it is required to have well-defined Service Level Agreements (SLAs), metrics and measures. Role of the service provider (or staff) need to be measured against the performance targets of meeting SLA and achieving these agreed targets demonstrates delivery of a professional service and ensures that customers enjoy the highest standards of service (Bairi and Manohar, 2011). In addition, the performance management system should be backed with effective and meaningful performance incentives and penalties (Elmuti, 2003; Information Service Group [ISG], 2012; Reid-Thomas and Phillips, 2005) as well.

Workforce Management

According to Chen and Chen (2014), most businesses focus only on customers while generally neglecting employee satisfaction. The workforce of the outsourcing arrangement is the people who actually execute the outsourcing arrangement and therefore, managing the workforce in a way that achieves objectives of outsourcing can be identified as a factor that determines outsourcing trajectory. Burdon and Bhalla (2005) mentioned that when selecting an appropriate outsourcing provider, managers need to evaluate the vendor's ability to provide excellence in workforce management firsthand. Further, Elmuti (2003) also highlighted the importance of acquiring the right people, with the right skills involved in all phases of outsourcing activities. Hence, during initial evaluations, it is required to determine who will take leadership responsibility, perform the analysis, and make the employee related decisions. Moreover, as per Brown and Wilson (2005), there should be a proper mix of retained in-house staff and outsourced operations as well. However, lack of morale and performance of the remaining employees (Elmuti, 2003); high complaint rate of the employees (Al-hakim, 2005); high employee turnover, lack of loyalty of staff (International Facility Management Association [IFMA], 2006); a lack of vendor quality employees and poor employee management (Smuts et al., 2015) have been mentioned in extant literature as factors that hinder outsourcing success. The employees engaged in outsourcing should receive specific training that includes a complete understanding of the business goals of the contract, the specific performance criteria agree to, and their individual roles (Elmuti, 2003). Hence, employee management activities have been mentioned as a factor that affects outsourcing trajectory.

Cost Management

A research conducted by (Al-hakim, 2005), identified two failure factors related to the cost management of a client organisation namely; incompatible cost/benefit trade off and high hidden cost. Conversely, the contribution of cost/ financial aspect in determining success or

failure of outsourcing has also been cited in literature indicating cost management as an important factor of outsourcing trajectory. As mentioned by Smuts et al. (2015), cost saving /optimisation is one of the key motives of outsourcing and therefore, organisations must enable detailed monitoring and management of the financials and financial assumptions made in the outsource business case. Further, matters related to cost management also need to be given special attention.

Governance

Kern and Willcocks (2001 as cited in Alborz et al., 2003) and Mohamed et al. (2015) mentioned governance of an outsourcing arrangement as a factor that is vital for service performance and thus, outsourcing success. The governance in an outsourcing arrangement (Alborz et al., 2003) comprises the senior management's role and support, management structure and teams, management style, management skills, and the establishment of appropriate processes and procedures (communication, change management, etc.). The purpose of a particular management structure here is for addressing the ongoing needs of managing the engagement (Klepper and Jones, 1998 as cited in Alborz et al., 2004) and generally this structure is a management team composed of both parties to the outsourcing engagement i.e. client and service provider. Skill refers to the ability and experience of an individual within an organisation for producing results with respect to outsourcing. According to Jones (2001 as cited in Alborz et al., 2003), in outsourcing, typically, the individual manager becomes a catalyst, a communicator, and plays a facilitator's role rather than the previous one of hands-on manager. Therefore, as the researchers highlighted, it requires managers to have strong interpersonal and communication skills, to be able to influence and, most importantly, negotiate outwards across organisational boundaries within both client and supplier organisations. Management style with regards to governance refers to the patterns of behaviour of individual managers, from senior managers to line managers responsible for day-to- day operation. The importance of a suitable management style lies in its ability to cultivate an environment for continuous improvement, which can then increase the quality of the relationship, service, and performance (Alborz et al., 2004). However, an improper governance exists including poor internal policies and standards (Al-hakim, 2005); and inadequate control systems (Olympics and Buckles, 2013; Barthelemy, 2003; Elmuti, 2003), etc. towards the poor management of outsourcing contracts and result in slow decision-making cycles, lack of proper programme management and disempowered outsource team members (Smuts et al., 2015).

Building Organisational Support/ Provision of Infrastructure and Other Facilities

In order to make sure that the outsourcing initiative is successful, building organisational support for the outsourcing initiative (ISG, 2012) and provision of adequate infrastructure and facilities (Elmuti, 2003) are essential requirements. On the other hand, lack of supporting infrastructure and resource provision are the barriers for success of outsourcing (Elmuti, 2003; Hou et al., 2016; Power et al., 2004). Based on research done by Hou et al. (2016) specially focusing on tight budget constraints of the client organisation, financial resources available in the client organisation can also be identified as a factor contributing to this.

Change Management and Flexibility

Outsourcing can bring about changes in working patterns, organisational culture and management styles which can highly affect the activities of the client organisation (Sridarran and Fernando, 2014). Therefore, in order to avoid such disruptions, organisations need to adopt measured approaches towards such changes. Further, according to Sridarran and Fernando (2016), unmanaged changes occurred due to outsourcing can cause issues such as cultural clashes between client and service provider, poor mutual understanding, poor accountability, etc. In relation to the change management, controlled transfer of assets and staff and effective user change support (Delen et al., 2016) have also been cited. Apart from the changes that have taken place when moving from inhouse arrangement to outsourced operations, researches have discussed the importance of managing the changes taken place throughout outsourcing life cycle as well. According to Elmuti (2003), unsuccessful firms seem to be afraid of changes and as Pratap (2014) mentioned, many outsourcing arrangements run into conflict because they cannot handle new demands made by environmental uncertainties. Hence, management of change also can be identified as a factor that needs to be managed in order to ensure a successful trajectory.

Achievement of Performance Objectives and User Satisfaction

Greaver (1999 as cited in Warne, 2003) mentioned that successful outsourcing is superior performance and achieving customer satisfaction. Hence, successful outsourcing can be achieved by meeting the desired organisational goals expected through outsourcing without compromising the satisfaction of stakeholders. Moreover, according to Warne (2003), the desired goals can be identified in relation to cost effectiveness, schedule constraints, product delivery, compliance with legal requirement and fulfilling legislative/ executive intent, etc. As per the views of the Smuts and the researchers (Smuts et al., 2015), outsourced services must

not only be delivered to expectations, specifications and quality, but also, they should be improved continuously. Therefore, it requires detailed thorough reviews of all deliverables with industry standards in order to ensure high quality and to institutionalise best practices (Smuts et al., 2015). However, according to previous literature, most of the outsourcing arrangements have failed or are faced with issues, due to the unsatisfactory performance of their outsourcing service providers (Lok and Baldry, 2015; Pratap, 2014). User dissatisfaction due to low service quality and high complaint rate of the client (Al-hakim, 2005) have also been mentioned as factors leading to failed outsourced attempts indicating the user satisfaction as an important determinant of outsourcing trajectory.

Attention Given to the Issues faced by Each Party

As pointed out by Zelga (2018), a crucial element in the outsourcing agreement is that it never be detailed enough to regulate every single issue in outsourcing. Though the agreement is the device based on which, both parties refer in conflict situations, looking for solutions to existing problems or confronting unknown issues, there can be numerous issues that the parties to the outsourcing agreement have to undergo throughout the outsourcing process. According to Bull (1996), it is impossible to plan for every situation, but both parties can agree on how particular types of problems should be addressed and by whom when they arise. Hence, attention given to the issues occurred during outsourcing engagement is an important factor that determines outsourcing success/ failure, which requires significant attention (Brown and Wilson, 2005; Gonzalez et al., 2010).

Client Provider Capabilities

According to Yan (2018), organisational capability is an important factor that determines the effective governance of an outsourcing arrangement which finally lead towards success or failure of an outsourcing project. As mentioned by Ranganathan and Balaji (2007) cited in Yan (2018), client's capability is defined as the extent to which a client firm is able to effectively manage outsourcing relationships, and this includes a client's ability to manage the relationship with experienced staff, effective processes, tools and technologies. On the other hand, the main capabilities of a provider include human resources management capability, risk management and compliance capability, and adaptability. Since the capability of both parties play an important role in outsourcing trajectory, as Bengtsson and Dabhilkar (2009) as cited in Pratap (2014) suggested, advantages of outsourcing can be better maintained by continuing to invest

in related operational capabilities instead of depending solely on the supplier to manage the process.

Following the above discussion, it can be stated that the successful performance of an outsourcing engagement is a result of a series of factors that need to be managed on purpose. Accordingly, from the starting point of outsourcing, which is strategizing phase, till its completion, there are number of factors that should be looked into by an organisation. Further, it could be noted that the majority of the available literature sources on outsourcing have discussed the factors like strategic analysis and selection of functions to be outsourced, adequate planning, scope definition, selection of service provider, contract development, contract management, top management commitment, clarification of roles and responsibilities/ work understanding, communication and knowledge management as determinants of outsourcing trajectory implying their high significance in an outsourcing arrangement. However, the empirical findings show the impact of the rest of the factors on outsourcing and therefore neglecting them would result in negative outcomes. Therefore, it is suggested to give careful attention to all the factors identified from the initiation stage of an outsourcing effort.

CONCLUSION

The successful results of outsourcing are not inherent, but it is required to make it happen through a careful attention and a substantial investment on managerial care and time. Achieving successful outsourcing or guiding outsourcing efforts towards successful trajectory is all about inculcating the success factors and eliminating the failure factors of outsourcing. Therefore, it is required to be aware of these two types of factors proactively in order to achieve objectives sought through an outsourcing effort. An extensive review of literature done in the present study by identifying twenty-eight (28) success factors and thirty-one (31) failure factors of outsourcing respectively. Finally, the review helped deriving twenty-three (23) factors as the determinants of outsourcing trajectory. This study contributed to the research community to update their knowledge on failure factors and success factors of an outsourcing arrangement and finally the determinants of an outsourcing trajectory. The determinants of outsourcing trajectory could be considered as the factors that an organisation should focus on implementing its outsourcing initiatives. Consideration of these factors prior to the implementation of outsourcing could help practitioners to proactively manage their outsourcing strategies in a way that those factors are addressed effectively. In addition, consideration of these factors as determinants of outsourcing trajectory could also guide practitioners to assess their current

outsourcing strategies and to take corrective measures appropriately. Such considerations could minimise issues that can arise during the life cycle of outsourcing and possible risks associated with outsourcing failures. The present study also marks for further research to know how those factors could behave in different outsourcing settings as well as to know the relative significance of each such factor on successful or failed outsourcing projects.

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Industry 5.0 Technologies for Supply Chain Management through Triple Bottom Line Approach in Companies of Sri Lanka for Economic Growth and Socio-Environmental Protection

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ABSTRACT

In the midst of blazing Global environmental concerns- climate changes, global warming risking the planet, Industry 5.0 generates hyper-personalized, human centric solutions resulting resilient, sustainable, regenerative circular economic businesses protecting the people-planet-prosperity by moving away from neo-liberal capitalism of maximizing profit realizing the Transformative Vision for Europe -climate neutral world emphasizing the European Commission Green Deal. In Industry 5.0, embedded supply 5.0, Collaborative Robots (Cobots), Artificial Intelligence (AI), Blockchain, and Digital Twins offer data-driven predictive analytical decisions for hybridized human centric industrial architypes and societal infrastructure ensuring environmental protection. Industry 5.0 embedded human centric Supply Chain 5.0 caters to the hyper-personalized customer needs, with the right amalgamation of human creativity and machine efficiency. Digitization and human collaboration and the hybrid human–machine model of Supply Chain 5.0 create resilient green supply chains uncompromising competitiveness and profitability. How can Supply Chain 5.0 interplay with society, in order to create a super-smart society achieving climatic goals resulting more sustainable environment are unexplored sporadic research territory yet.

The main objective of this research is to utilize Triple Bottom Line-People Planet and Profit to investigate the implementation issues of industry 5.0 in Sri Lankan companies through deductive thematic top- down qualitative analysis of case studies of 12 giant companies with robust supply Chains representing the registered in the National Chamber of Commerce (2019) ensuring no greater biases of the researcher's preconceived notions of inquiry. Findings revealed that Companies maintain status quo due to complexities of paradigmatic transition of supply chains into supply chain 5.0, lack of industry 5.0 maturity models, and inadequately upskilled IT professionals and IT productivity paradox. Therefore, state visionary policy for the human centric resilient sustainable green supply chains and upskilling professionals to embrace supply chain 5.0 are a sine qua non for inculcating the triple bottom line concept in supply chains -people planet profit. The insight shed by the conceptual framework to uncover the ways that Industry 5.0 technologies be interoperable across the supply chains fostering society 5.0 -Super Smart Society are the future research avenues with dearth of global investigations. Finally, the Industry 5.0 conceptual framework designed, interoperable across the supply chain to create a super smart society -society 5.0 will minimize Greenhouse Gas Emissions and Adverse Climatic Changes emphasized by United Nations -Transforming our world- 2030.

Keywords: Industry 5.0, Supply Chain 5.0, Human Centric Sustainable Supply Chains, Triple Bottom Line, Super Smart Society

INTRODUCTION

Global environmental concerns and the Sri Lankan supply chain environmental initiatives

Being a well-developed continent- United States of America   the Total U.S. Emissions in 2021 is approximately 6,340 Million Metric Tons of CO_2 equivalent and greenhouse gasses make the planet warmer and "thickening the Earth's atmospheric blanket (Transforming our world - the 2030 Agenda for Sustainable Development- global warming potentials (GWPs) and Fluorinated gases emitted even in smaller quantities, which are referred as high-GWP gases because, for a given amount of mass, they trap substantially more heat than CO_2.and other greenhouse gases typically in thousands https://www.epa.gov/ghgemissions/overview-greenhouse-gases. Moreover, in Industrial processes, the fossil fuel combustion component of various industrial processes accounted for 15% of total U.S. CO_2 emissions and 12% of total U.S. greenhouse gas emissions in 2021. Therefore, United Nations Environmental Protection Agency (2023) is constantly experimenting the prevention of Greenhouse Gas Emissions – Fluorinated Gases, N2O emitted from Transportation, fossil fuel combustion which can remain in the Air for thousands of years (Global Warming Potential- GWP). If these harmful effects are ignored by the globe there would be no mankind on earth in future.

Consequently, European Commission Geen Deal 2030 has announced Industry 5.0-an effective solution to prevent earth form environmental hazards by introducing humanistic industrial practices protecting the people planet prosperity and then the profit. Sri Lanka In this regard has no exception and can blaze the trail to implement industry 5.0 embedded supply chain 5.0 for societal friendly humanistic supply chains. Priyashani L. N and Gunarathne G.C.I. (2021) have shown that there is a significant positive relationship between Green Supply Chain Management (GSCM) practices and organizational performance. Enhanced GSCM practices will result in greater environmental, operational and financial performance through minimization of harmful air emission, solid and water wastage and decreasing the hazardous materials consumption, environmental accidents.

Criticality of Supply Chain Management for the companies to achieve integration of supply and demand

Aabid M, Majeed A, Thashika D (2017) stated that Council of supply chain management professionals (CSCMP) defined supply chain as "Supply Chain Management encompasses the planning and management of all activities involved in sourcing and procurement, conversion,

and all logistics management activities. Importantly, it also includes coordination and collaboration with channel partners, which can be suppliers, intermediaries, third-party service providers, and customers.. Supply Chain Management is an integrating function with primary responsibility for linking major business functions and business processes within and across companies into a cohesive and high performing business matching the supply and demand.

However, whether industry 5.0 embedded supply Chain 5.0 can reduce the environmental pollutions and can provide humanistic supply chain solutions have rarely been investigated.

Industry 5.0 and the sociotechnical transformation through Human Centric sustainability solutions

According to João Barataa, *, Ina Kayserb (2023) Industry 5.0 is the phenomenon of sociotechnical transformation of industries defined as a humanized vision of technological transformations in industry, balancing the needs of the global society with the sustainable optimization of energy consumption, materials processing, and products which has been prominently experimented by top three continents India, China, and the USA.

Industry 5.0 empowers people to generate green productions

Saeid Nahavandi (2019) in Industry 5.0—A Human-Centric Solution Sustainability have stated that, during the 2nd industrial revolution world has faced a massive increase in environmental pollution. The manufacturing industry should focus on controlling different aspects of waste generation and management eliminating adverse impacts on the environment from its operation. The international organizations like the UN, WHO urge to create and environmentally friendly organizations. Unfortunately, Industry 4.0 neither have a strong focus on environmental protection, nor has it focused technologies to improve the global environmental sustainability, even though many different AI algorithms have been used to investigate the sustainability during the last decade. Laura Lachvajderová et. al. (2022) has justified that through European Commission's invention of Industry 5.0- the Fifth Industrial Revolution, better meet the economic and the special environmental requirements of "green production" for carbon neutral, energy-efficient industry (European Commission, 2021).

Futuristic trends of Industry 5.0 embedded Supply Chain 5.0

In the examination of The Reconciliation between Humans and Machines, Guilherme F. Frederico (2020) has shown that Supply Chain 5.0 phenomenon emerges as an important concept in the futuristic view of supply chains, reconfigured and managed from futuristic

trends, since there is not only a dearth of investigations both academic and practitioners' sides, but also even Industry 4.0 is still on middle stage of emergence.

The criticality of Industry 5.0 in creating personalized human centric products with human engagement

In contrast, industry 5.0 (Banu OZKESER,2018) products/services, which join forces man and machine, empower people to realize the basic human prefer human touch in personalized products since the customers mostly demand for unique products with distinctive human craftsmanship which can only be made through human involvement – human engagement. - personal imprint of human designers and craft created by digital transformation of Industry 5.0 over industry 4.0 sophisticated technologies.

The profit driven approach of Industry 4.0 technologies is not sustainable for long term

In contrast, Naseem, M.H.; Yang, J.(2021) have shown that through diverse disruptive technologies, Industry 4.0 has a vital impact on the sustainability of the logistics as well as the supply chain network in enterprises in establishing the concept of future-oriented intelligent factory -the smart factory-the digital factory that consists of a completely integrated automated manufacturing system without human interventions. Moreover, Banu OZKESER (2018) stated that Industry 4.0 embedded supply offers timely delivery trucks arrivals and the forklifts deliver the parts straight to the assembly line station because of the due determination of creating inexpensive, high-quality products that provide appearance of uniqueness, today's mass customized unequal products.

As stated by Marina Crnjac Zizic et. al. (2022) Industry 4.0 is based on the concept of smart factories. The smart factory initiative consists of disruptive technologies such as internet of things(IOT), cloud computing, Cyber Physical Systems, Artificial intelligence, Augmented reality simulation, Autonomous Robots -Human Robot interactions. Even though, these state of art technologies enable the connectivity of the virtual and real world in order to achieve better results in production with maximum profit, this completely profit-driven approach is not sustainable for the long term. Finally as shown by Saeid Nahavandi (2019), While the researchers of industry 4.0 struggle to link AI algorithms with environmental management, the lack of strong focus and action leads to the need for a better technological solution to save the environmental sustainability of the globe through Industry 5.0.

THEORETICAL LENS

Triple Bottom line

Timothy F. Slaper & Tanya J. Hall (2011) have stated that According to Elkington, J. (1994) the Triple Bottom Line (TBL) is defined as an accounting principle that integrates three magnitudes of - social, environmental and financial performance which diverges from traditional reporting systems as it includes ecological and social measures that enhanced the standard of measurement accuracy. The TBL dimensions of three Ps: people, planet and profits which captures the heart of sustainability by measuring the impact of an organization's activities in the globe including both its profitability and shareholder values and especially the social, human and environmental capital."

Industry 5.0 typically fulfills the concept of triple bottom line -Human-centric approach in Industry 5.0

Marina Crnjac Zizic et. al. (2022) has shown Instead of taking technology as a crucial element, the document of European Commission has identified three key drivers as the center of new industrial paradigm- Industry 5.0 differentiating from industry 4.0

Human-centric approach, which places human needs at the heart of the production process, asking what technology can do for workers and how can it be useful, Sustainability, which emphasizes on reuse, repurpose, and recycle of natural resources resulting reduction of waste and environmental pollution Resilience, which assures robustness in industrial production which offers support through adaptable production capacities and flexible processes, especially during crisis. Finally, TBL framework enables firms to assess the consequences of their decisions in long-run perspective.

Moreover, as stated by Dmitry Ivanov (2023) Industry 5.0 covers four areas-organization, management, technology, and performance assessment. Industry 5.0 spans three levels: society level, network level, and plant level establishing a new triple bottom line resulting, human well-being, sustainable society and resilient value creations.

Moreover, Vincenzo Varriale et. al. (2023) has utilized the triple bottom line (3BL) perspective to justify the application of Industry 5.0 digital technologies for sustainable Supply Chain Management (SCM) practices.

Therefore, the present researcher utilizes Triple Bottom Line concept as the theoretical lens to investigate the robustness Industry 5.0 -Technologies for sustainable Supply Chain Management Practices in Sri Lankan Companies ensuring Economic Growth and Scio Environmental Protection

Research Gap

The evolution of industry 4.0 to industry 5.0 and the interplay among Industry 4.0, Industry 5.0 and Society 5.0.

Guilherme F. Frederico(2021) has shown, In parallel with the industry 5.0 concept, an approach proposed by Japan called Society 5.0 has also attracted attention from the scientific and practical audience. The terminology Society 5.0, also known as Super Smart Society, has been initially presented in the Fifth Science and Technology Basic Plan, which has been elaborated by the Japanese Council of Science, Technology and Innovation in 2016

Guilherme F. Frederico(2021) has further shown the interplay among Industry 4.0, Industry 5.0 and Society 5.0. Industry 5.0 is focused on allowing a Society 5.0 to create a sustainable human-centered society by utilizing the technologies from Industry 4.0, while Industry 4.0 is more concerned with the application of disruptive technologies. Consequently, it is challenging to create a Society 5.0 only by incorporating the disruptive technologies from Industry 4.0 since Society 5.0 goes beyond the boundaries of technological and organizational transformation of the industrial system blazing its trail more towards social and human aspects to achieve a sustainable environment in this technological context.

Hence, Society 5.0 uses advanced technologies to connect people and things, share knowledge and information, thereby create new social business chains contributing more values to the society Finally, Society 5.0 frees humans from exhausting routine work by exploring the advantages of technologies of Industry 4.0

Industry 5.0 embedded supply chain 5.0 can create the digital replica of SCM

Praveen Kumar Reddy Maddikunta (2021) have shown that the state of art technologies in Industry 5.0 like Digital Twins(DT), Cobots, 5G, Machine Learning , IoT, Edge Computing , etc. amalgamated with the smart human innovations, can assist the industries in matching demand and supplies by faster delivering the personalized and customized products enabling the supply chain management to integrate mass customizations, into their production systems

emphasizing the key concept in Industry 5.0. Finally, DT can create a digital replica of the SCM that consists of assets, warehouses, inventory positions, and logistics

Through the lens of the viable supply chain model, the reconfigurable supply chain, and human-centric ecosystems, Dmitry Ivanov (2023) has conceived model of Industry 5.0 uncovering the major dimensions that characterize Industry 5.0 as a technological-organizational framework primarily the major technological principles of Industry 5.0 such as collaboration, coordination, communication, automation, data analytics processing, and identification.

According to Supply Chain brain (2023) digitization and human collaboration are key to build resilience into supply chain. The hybrid human–machine model of Supply Chain 5.0 helps companies withstand disruption without compromising competitiveness or profitability practices.

Furthermore, in global context, Vincenzo Varriale et. al (2023) have shown that when considering the potential of digital technologies in SCM operations, digital transformation in SCM has mainly focused on the design of technology infrastructures and their integration according to Industry 4.0 principles paying lesser attention to sustainability aspects of SCM. Impact of disruptive technologies of Industry 5.0, in the supply chain management encourage the researchers in further conceptual and empirical works.

Industry 5.0 and the "Green Deal" fulfill human and planetary needs

Sandrine Dixson-Declève et al. (2021) have shown that An EU-wide industrial strategy focused on the constituent elements of Industry 5.0, would unleash Europe's industrial potential and reward resilient, sustainable, regenerative and circular economic business conduct fulfilling the human and planetary needs -Green Deal being the core of Industry 5.0 rather than just innovation for profit through short term overproduction and consumption models determined by the current growth paradigm

Amr Adel (2022) has stated that Industry 5.0 is changing the business paradigm since it will decrease emphasis on the technology and assume that the progress is based on collaboration among the humans and machines. In modern business with the paid technological developments, industry 5.0 is required for gaining competitive advantages as well as economic growth for the factory.

Cobots -Collaborative Robots A companion for the human to share the brain in Industry 5.0

Furthermore, Praveen Kumar Reddy Maddikunta et. al. (2021) has stated that Cobots (Collaborative Robots) can collaboratively share human brain and play a critical role in SCM which are routine/dangerous such as packaging, routine quality checks, carrying of heavy goods, etc. streamlining routinized inventory management, that humans hesitate to do & reducing costs, whereas the expertise of the humans can be used in more complex jobs in the SCM life cycle.

When considering this transformation Güğerçin, S. & Güğerçin, U. (2021). Examining how Employees Survive In the era of Industry 5.0 by 2025, a new business with the hybridization of automation systems with humans, robots, and algorithms will emerge. Consequently, the skills required to work will change, which will result in skills gaps. In order to prevent the skills gaps to occur, the in-demand skills should be identified.

Supply Chain 4.0 is still in embryonic

Despite the above technological advancements, Frederico, G.F et. al(2019) stated that Supply Chain 4.0 approach is still embryony (Xue-Ming Yuan and Anrong Xue, 2023) in academia being more extensively explored. As Supply Chain 4.0 has the potential to disruptively transform traditional supply chains and how they are developed and managed, there are opportunities for significant academic research contributions (Doluweera L.K, 2022)

They further stated that the role of human in digitalized SCM applications and practices rest on on humancentric problems, especially in the exploration of the level of transformation of power and the decision rights of SCM to machine learning and AI (prescriptive vs predictive) and the excessive trust on big data and machine learning insights that could suffocate innovation and collaboration efforts in the supply chains.

Moreover, Frederico, G.F (2021) in assessing the transformation from supply chain 4.0 to supply chain 5.0 has stated that, even though industry 4.0 in production planning and control, strategic management, organizational structure, sustainability and lean manufacturing, in supply chain context, have been investigated, there is a dearth of research to investigate the impact of Industry 4.0 and its disruptive technologies on the supply chains.

Finally, Frederico, G.F (2021) have shown that industry5.0 related literature is scarce and discoveries are being emerged since Industry 5.0 is still in an embryonic and ideal stage.

Sri Lanka has only embarked in to industry 4.0 necessitating for simultaneous integration of economical, ecological, and social measures of operations for a sustainable supply chain.

Lakmali G.D.E. et. al. (2020) has stated that examining the applications of industry 4.0 in apparel industry and analysis of existing Industry 4.0 readiness assessment models Industry 4.0 enhances process functions by providing real-time visibility for smooth production flow. Before aligning with Industry 4.0, there is an urgent need for assisting companies to improve their capabilities

When implementing Industry 4.0 in real-world enterprise environments, the problems such as lack of strategic guidance, perception about highly complex Industry 4.0 concepts, uncertainty about outcomes of Industry 4.0 applications in the matter of benefits and costs, failure to assess Industry 4.0 capability and readiness of the company are major issues.

Lakmali G.D.E. et. al. (2020) further stated that in formulating Industry 4.0 readiness assessment model can help organizations to determine their state of readiness in the adoption of Industry 4.0 technologies, identify the gaps and opportunities for productivity improvement and development of feasible strategies such as readiness and maturity assessment models-IMPULS—Industrie 4.0 Readiness (2015) (Lichtblau et al., 2015), Industry 4.0/Digital Operations Self-Assessment (2016) (PricewaterhouseCoopers, 2016), The Connected Enterprise Maturity Model (2014) (Rockwell Automation, 2014). However, the properties of each model are different and also there is no standard and well-accepted Industry 4.0 readiness assessment model (Akdil et al., 2018, Gokalp et al., 2017, Schumacher et al., 2016).

Jayatilake, H.S.B. Withanaarachchi, A.(2016) stated that some companies have a positive attitude towards industry 4.0 because of the workshops conducted for their employees found that the highly skilled and the knowledgeable workforce in the IT sector would be a key opportunity to adopt the concepts like Industry 4.0 in Sri Lanka as they take up any challenge to develop innovative solutions to the apparel industry.

Malsinghe M.T.D. et al (2022) have investigated on operational excellence (OpX) models of sustainable supply chains (SSCs) in Sri Lankan manufacturing organizations have shown that the simultaneous integration of economical, ecological, and social measures of operations in a supply chain as the basic concept in a sustainable supply chain (SSC) of organizations By amalgamating the TBL concept that aims on sustainable consumption, effective management

of natural resources optimization, organizations strive to straightly integrate the sustainability paradigm in order to design their supply chains.

Even though, in the midst of the positive developments in supply chains through industry 4.0 and industry 5.0 technologies, and Industry 5.0, unleashes Europe's industrial potential through resilient, sustainable, regenerative and circular economic business conduct fulfilling the human and planetary needs –"Green Deal" being the core of Industry 5.0 rather than just innovation for profit through short term (Sandrine Dixson-Declève et al., 2021), industry 5.0 embedded supply chain 5.0 is still a visionary concept and embedding industry 5.0 in supply chains is being experimented (Guilherme F. Frederico 2021) and even Supply Chain 4.0 is still in embryony(Xue-Ming Yuan and Anrong Xue, 2023)

Moreover, there is a paucity of theoretical and empirical studies identifying the broad capabilities that affect the supply chain management firm's ability to simultaneously pursue economic, environmental and social success and worldwide research in this direction are sporadic.

PROBLEM STATEMENT

By considering above information the present researcher justified that researches related to embedding state of art technologies of Industry 5.0 to generate human centric reliant sustainable supply chains satisfying Global Environmental Concerns and the challenges faced by the Sri Lankan Companies in implementing human centric sustainable supply chains are in lacuna.

Research Questions.

RQ1—What are the constructs which form the concept of Industry 5.0? RQ2—How can Industry 5.0 s constructs be aligned with the supply chain context? RQ3-To what extent Industry 5.0 technology-centric advancements are of human-centric and resulting sustainability and resilience in supply chains? RQ4-What are the barriers existing on the way to implement supply chain 5.0 in Sri Lankan companies?

LITERATURE REVIEW

In a 2021 policy brief, the European Commission describes Industry 5.0 as "more futureproof, resilient, sustainable, and people-centric" phenomenon. According, to EU AI regulations, and crises such as disrupted supply chains, climate change and shortage of skilled workers, broaden

the focus and question the effects and opportunities of digitalization with a view to the next evolutionary step in the development of Industry 4.0, namely Industry 5.0

RQ1-What are the constructs which form the concept of Industry 5.0? and RQ3-To what extent Industry 5.0 technology-centric advancements are of human-centric and resulting sustainability and resilience in supply chains?

Criticality of emerging Industry 5.0 for social environmental and economic sustainability

Regina Lenart-Gansiniec (2019), stated that companies in the midst of strong competitive pressure and challenge of struggle to improve efficiency struggle to meet the constantly growing market demand for personalized and innovative products. Therefore, the organization should advance the level of integration, communication, and cooperation between business processes, which is, associated with the adoption of incremental and radical innovations and implementation of cutting-edge business models which requires new key professional skills competencies from the workforce for an effective digital transformation by the present and future (Borowski, P.F,2021).

In examining the State-of-the-Art technologies, in Industry 5.0 and Triple Bottom Line Approach in Supply Chain Management: Vincenzo Varriale et. al (2023) stated that the concept of Industry 5.0 has been theorized by advancing the existing Industry 4.0 approach by embedding the Immersive environments, classification of digital transition towards a sustainable, human-centric and resilient approach through the recognition of the state of art technologies such as Geospatial technology, 3D printing and blockchain which are more promising for environmental sustainability, while blockchain, geospatial technologies and the IoT which assures the social sustainability and gaining economic sustainability.

The goals of United Nations 2030 Agenda have emphasized that sustainable development is no longer a choice, but rather obligatory for the existence of firms, societies and communities through digital transformation to improve the sustainable development strategies since, sustainability has become a fundamental necessity in business strategy, products and processes. All organizations adopt digital technologies to strengthen their sustainability performance on operations. Sustainability issues associated with Industry 4.0 have encouraged SCM scholars to develop a more sustainable theorization and approach to operations management bearing supply chain 5.0.

Industry 4.0 lacks sustainability measures and human centricity

According to the European Commission since Industry 4.0 lacks specific characteristics such as promoting social welfare, improving the circular economy and preventing environmental disasters, the Industry 4.0 paradigm cannot be practical solutions for a sustainable industrial transformation and to address the current social, economic and environmental issues.

Therefore, this new perspective created the industry 5.0 agenda that integrates the technological rewards of Industry 4.0 with the objectives of environmental protection, social welfare and economic growth.

Vincenzo Varriale (2023) has stated that researchers have investigated how the industry 4.0 paradigm is mainly driven by the rapid technological advancement and productivity improvement have theorized to make production systems hyper-connected by sharing devices and machines resulting automate production processes.

Industry 4.0 has adopted various technologies in manufacturing systems and SCM such as AI, cloud computing, robotics, big data, blockchain, virtual reality, 3D printing, blockchain and RFID to focus on the theme of Smart Manufacturing enabling the minimization of logistics and production costs and improved quality management leading to increased efficiency and productivity.

Although Industry 4.0 experts can support sustainable development at the micro-organization level through optimal energy utilization, transportation and consumed resources, they have disregarded many sustainability issues such as the digital gap, autonomy in the workplace and overconsumption of resources creating the necessity of a human centric sustainable resilient industry 5.0 phenomenon.

In respect to the construct Innovation and Technologies, according to Guilherme F. Frederico (2021) IoT, big data analytics, 3D printing, cloud computing, robotics, blockchain, augmented reality, and artificial intelligence are the dominant technologies existing in industry 4.0. These Industry 4.0 technologies are the scaffolding for the implementation of Supply Chain 5.0 since industry 4.0 technologies persist in Supply Chain 5.0, and artificial intelligence is enhanced.

However, Surajit Bag et.al. (2018) stated that there have been limited research in the area of managing supply chain network sustainability through Industry 4.0 technologies. Industry 5.0 is a solution to the problems that have been caused by Industry 4.0. Difficulties associated with Industry 4.0, are effectively addressed by Industry 5.0. (Mona Mohamed et al.2023)

Industry 5.0 technology has and interplay and coexistence with Industry 4.0

As shown by Xun Xu et. al(2021), the introduction of Industry 5.0 is based on the observation or assumption that Industry 4.0 focuses less on the original principles of social fairness and sustainability. Instead it focuses more on digitalization and AI-driven technologies for increasing the efficiency and flexibility of production. On the contrary Industry 5.0 emphasizes, the criticality of research and innovation to support the industry to ensure humanity within planetary boundaries in its longevity.

However, Vincenzo Varriale et al (2023) have stated that Industry 4.0s technologies are the scaffolding for implementing the industry 5.0 approach remedying the sustainability issues of SCM, which defines the digital technologies that are more promising according to the 3BL index. Furthermore, blockchain, Internet of Things (IoT), additive manufacturing and artificial intelligence (AI), can radically change traditional manufacturing processes and SCM ensuring the accelerated digital transformation to improve the sustainability of companies which has become a fundamental prerogative business strategy.

Marina Crnjac Zizic et. al. (2022) stated that smart factory which governs the industry 4.0 are the key drivers of industry 5.0 such as IOT, Cloud computing, Artificial intelligence augmented reality and cyber physical Systems.

Cyber-physical system (CPS) is defined as a system that can interact with people through new modalities through an integrated computational and physical capabilities. Augmented reality (AR) is the real-time use of information in the virtual form of text, graphics, audio and other virtual enhancements amalgamated with real-world objects. AR is combined with human abilities to provide complementary tools efficiently to promote the manufacturing tasks. Abderahman Rejeb et.al (2021) have shown AR can add value in five main areas, namely warehousing, manufacturing, sales and outdoor logistics, planning and design and human resource management

Simulation- which is a powerful tool in the field of digitalization lead to more comprehensive, efficient, embedded, and cost-effective modeling of existing or proposed manufacturing systems, in order to identify potential problems or conflicts, and to identify opportunities and solve current problems, by providing a virtual sandbox environment that gives a deeper understanding of complex operations and relationships enabling risk-free exploration of ideas and alternatives for robust decision making.

Technologies in industry 5.0 for sustainable emerging practices in supply chain Management considering the triple bottom line (3BL) perspective by utilizing the3BL index

Vincenzo Varriale et al (2023) has shown that 3D printing, artificial intelligence, blockchain, computing, digital applications, geospatial technologies, Internet are the most prominently SCM oriented technologies that enables sustainable supply chain management

3D printing -Environmental benefits of 3D printing is Reducing carbon emissions, Reuse of waste material, Material savings & Reduction in energy consumption, Economic advantages are Reducing product and energy costs [Reducing product development time, while Improved product satisfaction is the social benefit.

Artificial intelligence – AI offers the data-driven predictive analytics to assist decision making in highly complex, nonlinear, and multistage production. the multitude data incoming from different sensors in a production system is filtered and analyzes them in order to support the cyber-physical system. (Marina Crnjac Zizic et. al. 2022)

Environmental -sustainability of AI -Optimizing resource consumption Reduction of environmental pollution through optimized routing Reducing waste of perishable products, Economic sustainability of AI- Improved collaboration with supply chain partners better planning and control of demand forecasting. Social sustainability- Better planning and increased safety for the worker

Blockchain -Due to its sophisticated security systems, blockchain technology, can ensure compliance with environmental standards and responsible sourcing by increasing traceability and transparency in supply chains by creating a collaborative peer-to-peer marketplace, while avoiding fraud or opportunistic behavior, in complex trading mechanisms enabling the selection of green suppliers. Furthermore, distributed ledger can be adopted in a perishable supply chain to match supply and demand, leading to less product loss assuring consumer trust and more sustainable higher quality products.

When considering the Sustainable aspects of implementing blockchain in SCM Environmental benefits are -Tracking resource consumption, minimizing perishable product waste Recycling programs. Economic -Improved collaboration with supply chain partners Automation of operations management Reducing time and costs for specific activities Social -benefits are Tracking fair workplace practices and Reducing fraud and opportunistic behavior.

Cloud computing - supports the Internet of Things, enabling the access to large datasets and its processing to generate new useful information through different types of reports. Even though the cybersecurity is critical issue, it consists of security mechanisms, policies guidelines, best practices, risk approaches, and crucial technologies to protect the cyber environment, organization, and user's assets. Marina Crnjac Zizic et. al. (2022).From an economic and social perspective, cloud technology creates sustainable emerging business models which use mobile applications based on cloud and edge computing technology ensuring enhanced supply chains connection efficiency among the multiple parties.

Sustainable aspects of implementing cloud computing in SCM-Environmental -Tracking the carbon footprint and Improved reuse and recycling programs Economic- Improved collaboration with SCM partners Production monitoring Inventory monitoring, Improved machine maintenance & performance and social benefits are Tracking product origins.

Digital applications-Various emerging sustainable practices can be achieved through digital applications such as mobile and web applications and social media. The use of social media platforms can connect buyers and suppliers ensuring the social sustainability, since digital applications can easily detect information on safety risks and child labor in the SCM

Sustainable aspects of implementing digital applications in SCM- Environmental- Reducing food waste Energy reduction programs Economic- Improved efficiency in logistics management Faster new product development **Social** -Monitoring child labor and workplace risks Transparency and traceability of purchased products Improved customer satisfaction

Geospatial technologies

Geospatial technologies-can be employed for several aspects of environmental, social and economic sustainability. For instance, satellite remote sensing mechanisms combined with georeferenced data can assist production systems to understand how soil quality and fertilizer affect productivity resulting effective agricultural policy.

Considering the social perspective, the deforestation risks can be traced by remote. For economic sustainability, GPS can track transport vehicles in transit through the entire supply chain for route optimization by determining the quickest routes for the deliveries to prevent perishability, reduce transport costs, minimizing the carbon footprint and fuel use, CO2 emissions resulting the green supply chain models. GIS with spatial data shows the cartographic information of natural resources, logistical networks of industrial sites. When

Sustainable aspects of implementing geospatial technologies in SCM. Environmental benefits -improved soil protection and monitoring Reducing CO2 emissions, Economic- Optimization of routing for vehicles and fleet Optimal identification of production sites. Social benefits - Tracking and monitoring illegal activities.

Immersive Environments- is a spectrum of novel technologies used to create sustainable supply chains. For instance, not only the digital twins can simulate and anticipate the replacement of batteries in electric vehicles and analyze traffic congestion, carbon emission and logistics information but also it can be used to monitor the engines of a machines in order to control its performance and avoid higher fuel consumption, increase in greenhouse gas emissions.

For social sustainability, based on the response of the physical, biochemical and physiological states digital twins can forecast the expiries of perishable products. consumers' attention can be attracted to sustainable products by using Augmented Reality inside the shops. Sustainable aspects of implementing immersive environments in SCM. While the environmental concerns – are reducing CO2 emissions and consumption of polluting materials for production, and reducing energy consumption, Economic concerns are the production efficiency, Cost reduction and Product life cycle monitoring. Finally the Social benefits are the enhanced customer satisfaction and carrying out awareness of acquired products

Internet of Things (IOT)

IOT, encompasses services and data that enable the communication between objects by embedding the intelligence into objects thereby, turning into smart objects that collect information from the environment enabling interaction or the control the physical world through interconnected networks to exchange data and information Marina Crnjac Zizic et. al. (2022)

Considering the SCM, sustainable aspects, IoT-based architecture, collects and processes mass data volumes to improve the working conditions, safety, health and welfare of people. Through IOT, supply chain actors and retailers, can excavate information about the sustainability of supply chains, such as acceptable working practices, occupational health, and circumvent the issues of machinery breakdowns and prevent using defective raw materials for logistics and manufacturing operations.

In Economic point of view, IOT sensory mechanisms can automate the replenishment of products. They can capture stocking units on the wholesalers' shelves and utilize automated

reordering to reduce delivery times. Complex sensory mechanisms can detect and monitor objects in real time- its location, departure, arrival time and adverse circumstances that harm the quality of the product. Ensuring product traceability, safety and transparency as well

Open and Crowd-Based Platforms -Recently, there are several applications based on open, collaborative and crowd-based platforms that promote sustainable practices in SCM. For example, open-source technologies enable specific solutions for agriculture to provide goods and services to small farms for free. Sustainable aspects of implementing open and crowd-based platform in SCM. Environmental-Reducing $CO2$ emissions Pollution monitoring Economic- Optimising resource consumption Social benefits are Increasing quality of life

Proximity Technologies- Extensive utilization of Proximity technologies embeds SCM with sustainable practices. In both economic and social perspectives, information and evidences about products features can be detected by RFID sensors. QR codes on the product label empowers consumers to see data on origin, manufacture and processes. RFID can effectively be used to resolve conflicts raised between suppliers and retailers, especially due to inaccurate inventory information. Pallets with RFID permit real-time information gathering to ensure product transparency traceability, and security ensuring the RFID enables the circular economy by reducing waste satisfying environmental concerns Optimising inventory management Tracking products conditions ensure the Economic concerns and finally generating the social benefits- of transparency on product origin.

Robotics-Robotics is increasingly being used in manufacturing processes to improve the efficiency of operations, but also to favor sustainable emerging practices -self-directed freight trucks can enhance delivery reliability, transparency in transportation resulting increased customer satisfaction. Robotic drones can be managed by a script that allows the user to monitor and plan the route guaranteeing last-mile delivery reducing labor costs. Additionally, they could refuel trucks along the optimal routes Considering the Economic concerns, improved delivery reliability, reducing labor costs improved delivery planning, reduced transport costs are the crucial advantages Sustainable delivery choices, increased customer satisfaction. Reducing $CO2$ emissions is one of the major Environmental concerns. Finally European Commission (2021) Industry 5.0: Towards more sustainable, resilient and human-centric industry emphasized that Digitalization provides industry unprecedented opportunities. Digital technologies such as artificial intelligence (AI) or robotics allow radical workplace

innovation, optimizing human-machine interactions will capitalize on the added value human workers bring to the factory floor.

RQ2—How can Industry 5.0 s constructs be aligned with the supply chain context?

Formulation of interrelated constructs for industry 5.0- when moving from supply chain 4.0 to supply chain 5.0 -criticality of Industry strategy, innovation and technology, society and sustainability and transition issues

Frederico, G.F. (2021) has proposed an alignment industry 5.0 with the supply chain context being the basis for the incipient Supply Chain 5.0 framework, even though Industry 5.0 is still in an embryonic and ideal stage and literature is scarce.

Industry Strategy - Industry 5.0 concept will redefine and reengineer the efficient utilization of skilled people in the manufacturing scenario. There is a relevant consensus that the era of robotics and automation in previous industrial revolutions brought about paradigm shifts in the manufacturing industry worldwide. According to futurists, Industry 5.0, amalgamate human touch or personalization through co-working between humans and robots.

Innovation and technologies - Industry 5.0 moving from technologies as the scaffolding for creating an Industry 5.0 environment, although they belong to the current age of Industry 4.0. New technology approaches integrated with those already applied in Industry 4.0 are required, since innovations human centrality of technologies and intelligent autonomous systems for brain -machine interface plays a crucial role in Industry 5.0.

Society and Sustainability-Industry 5.0 includes two visions: one is the interaction between humans and robots and the other is approaching issues related to the bioeconomy, which is more related to the sustainability issue achieving the vision of society 5.0 transforming from digital manufacturing to digital society- Society 5.0. Industry 5.0, concentrates on more sustainable development.

Transition Issues-The transition from a fully technological to a balanced human-centric perspective is being considered as one of the main challenges and the industry 4.0 paradigm to be overcome. One prominent emerging issue is human–robot co-working (COBOTS) and its implications from the organizational and human relations side-psychological, social, ethical, learning, legal, and regulatory issues.

Moreover, Supply Chain 4.0 enables a mass customization advantage and also enable greater performance in supply chain's processes through enhanced transparency, responsiveness, flexibility, waste reductions, and efficiency. Considering industry strategy- Supply Chain 5.0 (Guilherme F. Frederico ,2020) while possessing these technological aspects for performance improvements, it successfully achieves the balanced human–technological environment, mainly allowed by Cobots (collaborative robots). In addition to innovation and technology in industry 4.0 technologies, in Supply Chain 5.0 new technological advancements have emerged, such as collaborative robots (cobots), multi-agent systems and technologies, digital ecosystems, complex adaptative systems, 4D printing, 5D printing, 3D scanning, holography, intelligent autonomous systems, energetics and particularly the Enhanced AI

Finally, Regarding the society and sustainability – "creating a super digital smart society" being the core of supply chain 5.0 The interaction between Supply Chain 5.0 s technologies and approach and smart society must be designed to create a most advanced sustainable environment in both organizations and societies. When considering the Transition issues in relation to Supply Chain 5.0- leadership support, digital infrastructure, strategic alignment, and people skills and training are ever essential. these issues become more complex and comprehensive in supply chain 5.0,by psychological issues, workers' safety, social, ethical, learning, and legal and regulatory issues. Lastly, the main challenge is the change from a fully technological to a balanced human-centric perspective.

Conceptual framework for effective implementation of supply chain 5.0 based on literature review for designing the in-depth structured interviews
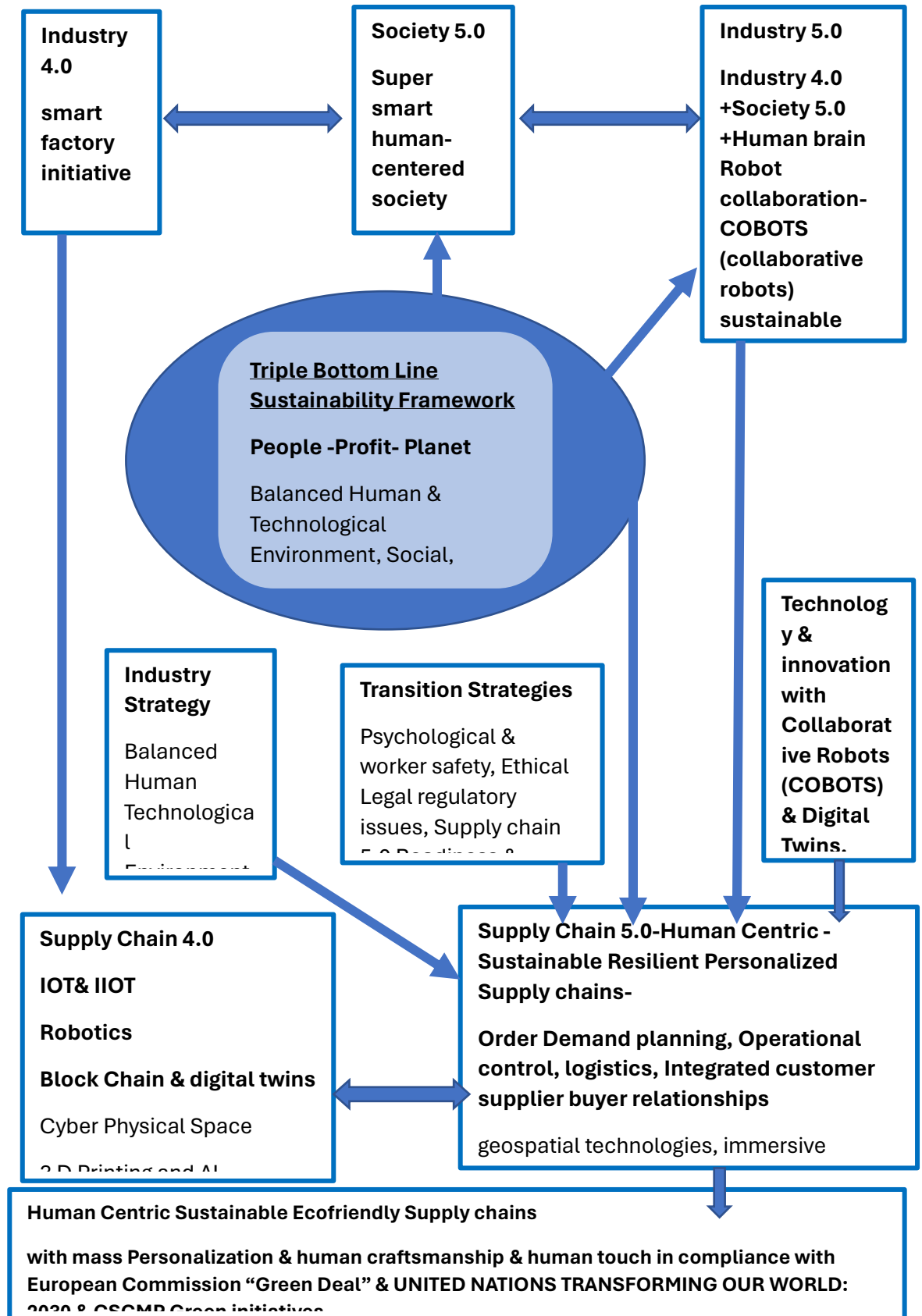
RESEARCH METHODOLOGY

The research methodology is based on qualitative theoretical deductive thematic top- down analysis of case studies of 12 giant companies with well-established supply Chain Management Practices registered in the National Chamber of Commerce (2019) which represent the spectrum of industry in Sri Lanka ensuring no greater bias toward verification of the researcher's preconceived notions than other methods of inquiry.

In-depth interviews were followed by a structured questionnaire-based survey developed for the CEOs and senior chief information technology officers the company directors of supply chain management and company executives who make strategic decisions. Rhetorical prevalence of quotes said by the prospects were annualized for the objective judgments of subjective quotes given in in-depth interviews minimizing interview biases.

Structured questionnaire focused on the company's readiness for embracing the industry 5.0 embedded supply chain 5.0. The ethical considerations was assured by confidentiality, anonymity of the prospects.

These prospects were provided with concise idea and definitions of key terms of industry 4.0, industry 5.0, supply chain 5.0 and Supply Chain sustainability and the dynamics of the Triple Bottom Line concept (3BL) in order to enable them to better comprehend the interview questions of Industry 5.0.

FINDINGS AND THE DISCUSSION

The investigation of the CASE study with face-to-face in-depth interviews with company CEOs and executives followed by a structured questionnaire revealed many surprising findings

RQ4-What are the barriers existing on the way to implement supply chain 5.0 in Sri Lankan companies?

Thematic analysis revealed that all companies are reluctant to invest huge cost in attracting retaining and compensating ICT savvy talented professionals which is indispensable in adoption of Industry 5.0 embedded supply chains.

Among the -Industry strategy, innovation technologies, Society and sustainability and transition issues, the least concern has been given to the Society and sustainability by the companies except company A & G.

Even though they have a positive attitude about supply chain 5.0 neither they are well informed about industry 5.0 nor about supply chain 5.0 or super smart concept. Together with Transition issues and fear of technology issues especially the unforeseen security threats of data transmission encourage ½ the companies to maintain status quo. However, Company I, has advanced towards SCADA (SIEMENS SIMATIC *WinCC,* Automated system for Supervisory Control and Data Acquisition) together with SAP ERP solutions fulfil their manufacturing and distribution process

Moreover, many companies have their own philosophies of up to which degree they should embark in to industry 4.0 and industry 5.0 for sustainable resilient supply chains which has become a great hindrance to develop integrated supply chains.

Company H ERP solutions – Jinasena Infortech Locally designed and tailor made to them.Covers manufacturing order management and distribution and Dialog Vehicle Monitoring system - A Real-Time GPS driven Smart vehicle tracking system- monitoring Speed mobility Fuel efficiency and breakdown and unaware of industry 5.0 embedded supply chain management

Company J- Bulldozer Power generators exporters distributors and maintenance utilizes Computer governed AI embedded engine control systems for excavators and generators located in 5star hotels with engine control units for remote monitoring systems together with battery level observation sensors for monitoring customer machines.

Company best utilizes Internet of things, Cloud Computing applications Big Data technologies AI embedded supply chain management and Cyber Physical systems to detect battery levels of bulldozer machines and electrical generators located in 5star hotels.   Virtual reality glasses are used for repairs- The VR glasses use a technology called head-tracking, which changes the field of vision as a person turns their head

Even the Most prominent companies with well-established supply chain management practices are in infancy in establishing human centric hyper customized supply chain 5.0. However Company A, Company C Company G Company and company I   have only concentrated in embracing supply chain 4.0.

Company B has implemented IIOT & Cloud based Warehouse management systems –Energy Services -the Best Exporter – Marine and Offshore Engineering Services Sector

Company C successfully runs Major Digitalization -SAP solutions -Warehouse Management Systems -public Cloud based operation work load planning and forecasting and GPS sensing

systems and IOT applications Data warehousing data cleaning, data integration, and data *consolidations* Dashboard -SPU - Snippet Processing Unit (SPU) and Transportation Management Systems

Strategy to align Industry 5.0 s constructs with the supply chain context

Supply Chain 4.0 has its own strategy, consisting of a vast spectrum of disruptive technologies embedded with AI, and essential competencies to face the challenges in implementing these disruptive technologies, and implications in terms of the performance of the supply chain processes. In contrast

On the contrary, Supply Chain 5.0 while possessing this technological aspect, it gives its prominence to produce a balanced human–technological environment, mainly through Cobots (collaborative robots).While Supply Chain 4.0 achieves a mass customization advantage through a greater supply chain performance initiatives in terms of transparency, responsiveness, flexibility, waste reductions, and efficiency in all processes, in addition to these performance improvements Supply Chain 5.0 add more value to supply chains by a mass personalization of products and services

In depth interviews with sample prospects revealed that companies have not thought adequately of amalgamation of industry 5.0 in their supply chains such as Drone deliveries for warehouse management which will minimize environmental pollution and fossil fuel consumption, digital twins and augmented realities in Manufacturing processes Cyber physical Space together with IIOT for machine to machine communication for monitoring production processes and they are in infancy

However, Only Company A has advanced towards the triple bottom line concept People profit and Planet.

Company G (Sri Lankan subsidiary of a global supply chain) has successfully implemented Net Zero Eco delivery & many supply chain 4.0 technologies and gradually migrating to supply Chain 5.0

At present it utilizes GT NEXUS - Unified global platform for supply chain management - Gain greater visibility, agility, and control of supply to meet today's dynamic demand. Assure supply, improve on-time delivery, and boost service levels, while simultaneously reducing lead times, costs, and inventory throughout the supply chain, block chain technologies for high securities and drone deliveries

Purchase Order visibility embedded with AI, RFID identification are the major areas of digitalization of supply chain

Company L -A company which has fully implemented Industry 3.0- a huge trend the era of robotics in which human tasks are highly performed by robotics but with the human touch

Big data, Microsoft Data Visualization and business intelligence for Trend analysis, IIOT is effectively utilized for dashboard concepts and strategic management and monitoring of global supply chains, RFID technology is not compatible with metallic spare parts storing inventorying spares since RFID magnetized fields react with the spares

Innovation of Connected Autonomous Shared Electric (CASE)- cars, made it a reality in company L has embarked ERP systems that provides tailor made solutions –(developed by IFS -Swedish) consists of server management ,distribution Human resource management finance Customer Relationship Management of single flatform, Micro 365 -cloud-powered productivity platform for communication is implemented. Block chain has not been utilized since transactions are not complex

The degree of human centricity in Industry 5.0 technology-centric advancements resulting in sustainability and resilience in supply chains

Company A with the greatest achievement of "Green certification for AI " utilizes IOT and AI embedded (ORELGO) – vehicle selection -point of routes analysis consists of vehicle rating systems, ORELBUY Point of Sales digital valets for distributors, Manufacturing plants with Machine Learning Autonomous Automobiles, Default detection robots, Autonomous Mobile Robots and Optimization of business output through office automation. Success behind the company is shared vision higher employee contribution through employee upskilling and reskilling in AI machine learning and augmented reality and 3D printing

Company I, H and J have optimized its environmental pollution through the implementation of AI embedded systems for minimum vehicle emission of transportation

Company I -has successfully implemented SCADA – SIEMENS SIMATIC *WinCC*, Automated system for Supervisory Control and Data Acquisition for plan factory automation. SCADA is a computer-based system for gathering and analyzing real-time data to monitor and control equipment that deals with critical and time-sensitive materials or events together with ERP solutions company maintains the Status quo sans embarking in to new technologies since escalating profit gains through existing automation

The barriers existing on the way to implement supply chain 5.0 in Sri Lankan companies,

The thematic analysis of the in-depth interviews revealed that unawareness about rewards of Industry 5.0 embedded supply chain is the greatest barrier to embrace industry 5.0 resulted in companies remain in status quo.

Company D & E is purely relying on (Locally developed widely accepted by many logistics firms) -Gensoft Software –Gensoft Logistics ERP is a comprehensive, Modular enterprise level application that combines all the operations and functions of Logistics service provider into integrated system- The software provides Freight Forwarding, Documentation, consolidation, Track and Trace container management NVOCC Shipping line and Feeder Vessel operations Customer Relationship Management Billing & finance accounts, customs clearing, Alerts & notifications and Tracking cargo via destination ports updates through GPS trackers for container tracking systems and are ever ready to maintain status quo without running the risk of innovating supply chain 5.0 with opaque returns on investment

Company F & K are giant well established manufacturing plants with a global supply chain has limited its attention to SAP ERP solutions and Tally ERP 9 software –more concentration in Cost efficiency and inventory optimization, IOT Business Model connecting the whole sellers and the Customer Relationship Management, Cloud computing, AI based applications in manufacturing process, Augmented Reality in design and optimization in manufacturing and the secret behind this limitation is the unaware of the benefits gained by the supply chain 5.0 for a sustainable resilient human centric supply chains

Even though the company has embarked into Lean inventorying Sri Lankan subsidiary has neither concentrated in industry 5.0 nor Supply chain 5.0 since they are amazingly unaware of such sophisticated state-of-the-art technologies. Maintaining status quo, opaque return on investment in Industry 5.0 leading to ICT Paradox, unawareness of the benefits of embracing Industry 5.0, huge investment in acquisition retention compensation and development of IT savvy talent pool are the major themes discovered through rhetorical prevalences in the thematic analysis.

CONCLUSION

According to Maija Breque et. al.(2021) in Industry 5.0 Towards a sustainable, human-centric and resilient European Industry , Policy brief European one of the most crucial paradigmatic transitions characterizing Industry 5.0 is the shift of focus from technology-driven progress to

a thorough human-centric approach by going beyond for profit. This wider purpose constitutes three core elements: human-centricity, sustainability and resilience. In a globalized world, a narrow focus on profit fails to account for environmental and societal costs and benefits. For industry to become the provider of true prosperity, its true purpose must include social, environmental and societal considerations. This includes responsible innovation, not only aimed at increasing cost-efficiency and maximizing profit, but also increasing prosperity for all involved: investors, workers, consumers, society, and the environment.

ICT paradox is the second most crucial barrier quoted by the company owners and CEOs for implementation of industry 5.0 embedded supply chains

When considering the companies examined by the present Reacher, Fear of Quantum Leaf needed, Low realization of long-term futuristic success and the misconception of Superiors of the organizations that Industry 5.0 embedded supply chains are not the best solution earned for massive dollar investment when compared with other investment decisions are in line with the IT Productivity Paradox "There is no relation between spending for computers, profits and productivity." Macdonald Stuart (2001)

Furthermore, business owners feel they should not even embrace Industry 4.0 since the awareness of benefits of such implementation is unclear to them, it is similar to findings of Rahamaddulla, S.R.B et. al. (2021) who stated that, some business owners are confused on the current trend of industrial digitalization, and are clueless on how to implement due to lack of tailored models that suit their companies. Since Supply chain 4.0 technologies are prominent in supply chain 5.0, researchers should firstly eliminate issues and challenges in supply chin 4.0.- 20 technical, sociocultural, technological and financial, environmental, and legal challenges that require further studies to eliminate them to achieve supply chain efficiency (Felipe de Campos Martins et. al., 2020).

Supply chain 5.0 maturity models should be derived from Industry 5.0 Maturity models

Supply chain 5.0 Reediness and Maturity Models are rare since Supply chain 5.0 and the standards is an evolutionary. Formulation and development in speculation, of industry 5.0 embedded Supply chain 5.0 maturity models by modifying a well-defined maturity model (Çınar, Z.M.; Zeeshan, Q.; Korhan, O.,2021) is a sine qua non.

As shown by Franziska Hein-Pensel et. al.(2023) maturity models (MMs) a valuable tool for shaping the strategically aligned digitalization transition of companies to see whether the

existing MMs for Industry 4.0 address the specific requirements of Industry 5.0. MMs sufficiently assesses the human-centered approach along with the assessment of readiness for disruptive technologies in SMEs. Hence industry 5.0 maturity models should be speculated in the near future. Studies show that a poor innovation culture, lack of financial and human resources and to drive the process of digital transformation., Employee's new skill acquisition is central to the overall transformation success of the companies.

Vipin Kumar Bagria (2022) stated that Readiness and implementation monitoring models of Industry 5.0 enable the quantification and qualification of its readiness level, based on variety of parameters. The ease and speed with which these emerging technologies can be used vary greatly. incorporating Industry 5.0 into the business models, is essential for accurate self-assessment of the level of preparedness. To accomplish this goal, companies should address the challenges of digital transformation, assess the enabling technologies for Industry 5.0, identify the barriers to adoption.

Talent Acquisition and development of professionals

Therefore, state statutory body for ICT policy design - Sri Lanka Information Communication Technology Agency (ICTA) and other State Policy initiatives for implementation of the human centric resilient sustainable green friendly supply chain Management practices and a building shared vision through learning organization concept (Senge P.M 1990) and upskilling and reskilling professions to harness supply chain 5.0 are a sine qua non for achieving the triple bottom line in supply chains -people, planet and the profit

IMPLICATIONS

Since Supply chain 5.0 -supply chain with a green friendly (European Commission Green Deal) in compliance with blazing Global environment concerns- climate changes, global warming risking biological support systems, societies and the planet (united nations transforming our world: the 2030 agenda) are embryony the companies visited by the present researcher and the in depth interview findings were inadequate for hypothesis development and a statistical analysis and limited the present researcher's investigation to a case study analysis.

FUTURE RESEARCH AVENUES

New developments of research are crucial to a deeper understanding of the industry 5.0 phenomenon in supply chains.

As shown by Vincenzo Varriale et al. (2023), by utilizing 3PL index, proper Identification of Digital Technologies mostly contributed to sustainable practices in SCM, in their prominence such as Block Chain Geospatial, IOT, 3D printing, open crowded based platforms appropriate to Sri Lankan companies with supply chains is an unexperimented arena.

The techniques to make Industry 5.0 technologies interoperable across the supply chains, the means to Supply Chain 5.0 interplay with society, to a super-smart society. The new initiatives to develop innovation ecosystems that foster the amalgamation of Industry 5.0 programs in supply chains and, the innovative experiments in enhancing the achievement of climate goals through Supply Chain 5.0, resulting a more sustainable environment, are less well investigated arenas and further research is ever essential

Finally, redesigning the supply chain's members roles, proper skill development of professionals needed to make the Society 5.0 reality for supply chain sustainability create future research avenues which are indispensable to establish worldwide humancentric sustainable supply chains encouraging people-plant and then the profit

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Impact of job satisfaction on turnover intention among employees: a comparative study of private and public banks employees in Sri Lanka

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ABSTRACT

Employee performance depends majorly on job satisfaction. Satisfied employees result in employee retention while job dissatisfaction creates turnover intention among employees. Although studies have been performed regarding job satisfaction and turnover intention in other countries, only a handful of studies have been conducted in the Sri Lankan context. Among those studies, research with reference to the banking sector is minimal. A deficiency of literature exists in terms of comparative research as the aforementioned studies have considered only public banks. Therefore, this study aimed at examining the impact of job satisfaction on turnover intention of employees in commercial banks of Sri Lanka. The current study used a sample of 151 bank employees in Colombo district. Data was collected using a questionnaire, created by adapting indicators from Job Satisfaction Survey and Turnover Intention Scale (TIS-6). An exploratory factor analysis was performed in identifying the four reflective latent factors as pay, promotion, nature of work and supervision. Data was analyzed through a Covariance-Based, Higher order Structural Equation Modeling (SEM), using the SPSS AMOS version 23. The study found that, job satisfaction has a significant negative impact on turnover intention of banking employees. Identified four latent factors were found to be positively related to job satisfaction. Moderation analysis found that, gender and work setting do not alter the relationship between job satisfaction and turnover intention. Male employees reported a lower job satisfaction compared to females and job satisfaction of private sector employees was higher in comparison to public sector. Aligned with the study findings, enhancing job satisfaction through adequate compensation, clear promotion criterion, positive work environment and stronger supervision are potential policy implications to reduce the turnover intention of employees.

Keywords: Commercial banks, Employee performance, Gender, Job satisfaction, Turnover intention

INTRODUCTION

In the era of intense competition, the success and the goal achievement of an organization depends on the employees of that organization. Therefore, employees are the most important asset of any organization (Guest, 2001). The performance of an employee is largely influenced

by job satisfaction. Job satisfaction is identified as an emotional response which defines the degree to which people like their job (Siegal & Lance, 1987). According to Locke (1969), job satisfaction is a positive or a pleasurable reaction which results from the appraisal of one's job, job achievement or job experiences. Hence, it is composed with feelings and attitudes about variety of intrinsic and extrinsic elements towards the job they perform and the organization or the sector they work for. Employee job satisfaction is determined by various factors such as good pay, nature of work, work life balance, supervision, job security, promotions, compensation, and etc. Job satisfaction is important to each and every employee regardless of the occupation, the sector of employment and the designation. By ensuring the job satisfaction of employees, work places would receive immense benefits. Satisfied employees benefit the work place with increased profits, higher productivity, lower turnover and loyalty (Lee & Way, 2016).

Among the numerous employment sectors in Sri Lanka, the banking sector acquires a remarkable position, as it dominates the Sri Lankan financial system and play a significant role in providing liquidity for the entire economy. Moreover, the banking sector which comprises both the public and private banks, provides employment opportunities to the community. With the current financial crisis, the importance of the financial system stability is widely discussed. Therefore, in order to achieve financial system stability or the financial system soundness, it is important to ensure the soundness of the banking sector (Mendis, 2017). Ensuring the employees are satisfied in banks is crucial for maintaining the soundness of the banks as it determines the performance of banks as well as the performance of the Sri Lankan economy.

According to Armstrong (2006), Negative and unfavourable attitudes towards the job is identified as job dissatisfaction. In other words, the absence of job satisfaction or employee being not satisfied indicates job dissatisfaction. Due to the job dissatisfaction, disappointment and lack of interest may emerge among the employees leading to several negative consequences in the work place such as job stress, low job involvement, low commitment to the organization, lack of productivity, conflicts, procrastination, poor performance and work life imbalances. In addition to these negative consequences, job dissatisfaction develops employee turnover intention which adversely influence the growth, and the sustainability of any organization (Alam, 2019). Turnover intention is defined as the likelihood of an employee to leave the job which she or he currently engage in. According to Mahdi et al. (2012), employee turnover intention increases the cost of recruiting new employees. Moreover, it would reduce the productivity as the new employee needs time to get adjusted to the new

working environment and to be familiar with the job role. Therefore, it is vital for the organization to be aware of the facets which are contributing to the employee job satisfaction (Seta et al., 2000). Human resource, on the other hand, is considered to be the key driver of competitive advantage for any organization (Pfeffer, 2005). Hence, it is important for the banks as well as to the other organizations to retain qualified, motivated, committed and satisfied employees within their organizations to ensure effective and efficient performance of the organization (Alam, 2019).

Therefore, this study attempts to examine the impact of job satisfaction on the turnover intention of employees in the banking sector which comprises both public and private banks. Moreover, this study would also assess the factors which are contributing to the job satisfaction of employees and any difference of the perceived job satisfaction based on gender and work setting of the employees.

Accordingly, the research problem addressed under this study is "Does the job satisfaction has a significant negative impact on the turnover intention of banking employees?"

LITERATURE REVIEW

Determinants of job satisfaction (Uniformity in space)

Job satisfaction and turnover intention possess a rich literature as those two concepts had been the topic of many researchers pertaining to different geographical locations and various employment sectors. Shaheen (2014) revealed that, People, promotion, work, pay and supervision are the key factors which affect the job satisfaction of the employees in the government hospitals in Islamabad and Rawalpindi.

Influence of gender in determining the job satisfaction

In a Chinese study on gender differences, Miao et al., (2017) revealed that female doctors have higher job quality and greater job satisfaction compared to the male counterparts. On the contrary, a study which was conducted in Pakistan revealed that, male medical officers were more satisfied than the female medical officers. The statistical results of this study claimed that, gender is a factor leading to significant differences in overall job satisfaction of medical officers (Shaheen, 2014).

Influence of work setting in determining the job satisfaction

Apart from gender, work setting can also impact on the employees' job satisfaction. A study which was carried out in Limpopo province in South Africa, claimed that, the public sector possesses a higher turnover intention compared to the private sector (Pietersen & Oni, 2014). Conversely, Matei and Fataciune (2016) concluded that employee job satisfaction was higher in private sector compared to the public sector in Romania.

Importance of job satisfaction as an antecedent of turnover intention

Tnay et al., (2013) performed a study to examine the impact of job satisfaction and organizational commitment on the turnover intention. The study found that, job satisfaction is a primary antecedent of turnover intent and a significant inverse relationship exists between the job satisfaction and the turnover intent. Moreover, the study concluded that, organizational commitment does not possess a significant impact on turnover intention (Tnay et al., 2013). Another study in Pakistan, investigated the antecedents of turnover intentions by considering job satisfaction, distributive justice, perceived organizational support and affective commitment as the predictors and the turnover intention as the dependent variable of the study (Ashraf, 2016). They indicated that, the predictors were negatively correlated and impact the turnover intention and the strength of job satisfaction in predicting the turnover intention was higher compared to the other independent variables.

The impact of job satisfaction on the turnover intention

Numerous studies have disclosed that an inverse relationship exists between job satisfaction and turnover intention. (Chin, 2018; Rahman & Iqbal, 2013). A recent study which was conducted in the private higher education sector in Iraq revealed that, job satisfaction has a negative impact on the turnover intention of the employees and the impact is significant (Serin et al., 2022). In contrast, a study in an international school in Indonesia claimed that, the negative relationship between job satisfaction and turnover intention is not significant and job satisfaction did not directly affect the school teachers' turnover intention (Kartika & Purba, 2018).

Studies in the Sri Lankan context

Although the existing literature evident that studies have been performed regarding job satisfaction and the turnover intention in other countries, there are only few studies that have

been conducted in Sri Lanka associating job satisfaction and the turnover intention. Perera and Madagamage (2018) explored how job satisfaction and organizational commitment influence on the turnover intention of employees in the hospitality industry of Sri Lanka. Findings of the study revealed that, a moderate inverse relationship exist between the job satisfaction and the turnover intention of the employees in the Sri Lankan hospitality industry. Gamage (2021) examined the job satisfaction and turnover intention of trainee team members of a leading apparel manufacturing firm in Sri Lanka and revealed that, a significant negative relationship exist between job satisfaction and turnover intention of trainee team members. Nonetheless, among those few studies, there is only few research that have been conducted with reference to the banking sector. Such studies have considered only the public banks in Sri Lanka (Lakmali & Jayasekara, 2020).

Methodologies that have been used in previous studies

Correlational analysis, multiple regression analysis, One-way ANOVA and principal component analysis have been widely used in examining the relationship between job satisfaction and the turnover intention of employees (Abbas & Iqbal, 2020; Ayalew, 2016; Deri et al., 2021).

The existing literature comprises results which are inconsistent with each other. In the Sri Lankan context, there is a lack of literature pertain to job satisfaction and turnover intention in terms of a to a comparative research which considers both the private and public banks. In order to fill this gap existing in the literature, this paper will examine the impact of job satisfaction on turnover intention of both private and public banks.

METHODOLOGY

Research approach : The research approach was the deductive approach as it is quantitative research which includes testing of hypotheses in a cause-and effect order (Basias & Pollais, 2018). Due to its status as the commercial capital of Sri Lanka and its high concentration of bank employees compared to the other districts, banking employees in the Colombo district was the target population of the study. The study considered both the male bank employees and females bank employees. Moreover, employees were considered from both the private banks and public banks.

Sample size : According to the sample requirement in Structural Equation Modeling, the sample size for the study was determined. It is considered that, the minimum sample size for conducting Structural Equation Modeling is 100-150 (Tabachnick & Fidell, 2001; Tinsley &

Tinsley, 1987). Accordingly, the study collected data from 151 bank employees as the sample size considering the time constraint.

A non-probability convenience sampling method was used as the sampling technique and the sample comprised 93 males and 58 females. Out of the 151 bank employees, 85 were from the private sector and 66 were from the public sector.

Variables in the study and the relationships among variables : According to the aim of the study, the independent variable of the study was job satisfaction and the dependent variable was turnover intention. Both the independent and dependent variables are latent variables Hence, job satisfaction was measured through four variables; pay promotion, nature of work and supervision, which were identified through the literature review of the study. Studies have proved high internal consistency and validity among the four independent variables (Spector, 1985; Tsounis & Sarafis, 2018). Hence, various relationships can be identified among the variables of the study.

When an employee is adequately compensated, the employee is motivated within the organization which reflects that pay affects the nature of work performed by the employee. Promotion is involved with offering higher wages to the employee and significant advancements in the work which is performed by the employee. Therefore, promotion affects both the pay and nature of work. When an employee is motivated and finds the job meaningful, it enhances the performance of that particular employee leading to salary increments and promotions. Therefore, nature of work affects pay as well as promotion. A strong supervision contributes to create a positive working environment to the employee. Hence, supervision in organization affects the nature of work.

The dependent variable, turnover intention was measured through the "Turnover Intention Scale (TIS-6)". It was selected due to the high reliability of the scale ($\alpha = 0.80$) which was validated by Bothma and Roodt in 2013. Therefore, TIS-6 which comprises 6 indicators was used in the study on a five-point Likert scale to measure the turnover intention of banking employees.

Data collection and analytical tools : The study was mainly based on primary data which was gathered through a self-administered questionnaire which included Likert scale and closed ended questions. The questionnaire was circulated through the banking employees in the Colombo district through a google form. The questionnaire was designed by combining the Job

Satisfaction Survey (JSS) which was developed by Spector in 1985 and the Turnover Intention Scale (TIS-6) which was developed by Roodt,2004. According to the variables of the study 16 indicators were adapted from the JSS to the questionnaire to measure the job satisfaction and one additional indicator was created by the researcher for each variable as the contribution of the researcher. In total, 20 indicators were assessed on a five-point Likert scale. Indicators of the variables of the study are presented in Table 1.

Table 1: Indicators of the variables of the study

Variable	Indicators	Name
Pay	I feel I am being paid a fair amount for the work I do.	PAY1
	Raises are too few and far between.	PAY2
	I feel unappreciated by the organization when I think about what they pay me.	PAY3
	I feel satisfied with my chances for salary increases.	PAY4
	I feel satisfied about the process used to determine my raises.	PAY5
Promotion	There is really too little chance for promotion on my job.	PRO1
	Those who do well on the job stand a fair chance of being promoted.	PRO2
	People get ahead as fast here as they do in other places.	PRO3
	I am satisfied with my chances for promotion.	PRO4
	I am satisfied with the way how promotions are given out on this job.	PRO5
Nature of Work	I sometimes feel my job is meaningless.	NOW1
	I like doing the things I do at work.	NOW2
	I feel a sense of pride in doing my job.	NOW3
	My job is enjoyable.	NOW4
	I feel positive and motivated within the work place.	NOW5
Supervision	My supervisor is quite competent in doing his/her job.	SUP1
	My supervisor is unfair to me.	SUP2
	My supervisor shows too little interest in the feelings of subordinates.	SUP3
	I like my supervisor.	SUP4

	When I have problems or concerns, my supervisor is able to address them.	SUP5
Turnover Intention	How often have you considered leaving your job?	TI 1
	To what extent is your current job satisfying your personal needs	TI 2
	How often are you frustrated when not given the opportunity at work to achieve your personal work-related goals?	TI 3
	How often do you dream about getting another job that will better suit your personal needs?	TI 4
	How likely are you to accept another job at the same level of compensation should it be offered to you?	TI 5
	How often do you look forward to another day at work?	TI 6

Initially, the Statistical Package for Social Science (SPSS) version 26 was used in data cleaning to detect missing values and unengaged responses. Data was subjected to test the reliability and the validity. The descriptive statistics were applied to analyze the demographic profile of the respondents and an exploratory factor analysis (EFA) was performed to identify the factors from the relations among observed variables. EFA is only appropriate for reflective latent factors. The independent variables of the study were reflective and latent (Spector, 1985). Hence, an EFA was performed and the convergent validity as well as the discriminant validity were tested.

Structural Equation Modeling (SEM)

The hypotheses tested in the study were analyzed using the Structural Equation Modeling (SEM) which was performed using the SPSS AMOS version 23 (Analysis of Moment Structures). The study used the CB-SEM approach in estimating the structural equation model as the indicators of the variables in the study are reflective. Confirmatory factor analysis (CFA) was computed using the software AMOS 23 to test the measurement models.

Higher / Second order Confirmatory Factor Analysis (CFA)

According to the objectives of the study, a Higher/Second order modeling was performed as the SEM analysis, considering job satisfaction as the higher order construct. Pay, promotion, nature of work, supervision and turnover intention were the lower order constructs of the study.

A moderation analysis was performed through a path analysis and the impact of categorical variables on job satisfaction was tested using AMOS.

Hypotheses of the study

Hypothesis 1: Job satisfaction has a significant negative impact on turnover intention

Hypothesis 2: Pay is positively related to job satisfaction

Hypothesis 3: Promotion is positively related to job satisfaction

Hypothesis 4: Nature of work is positively related to job satisfaction

Hypothesis 5: Supervision is positively related to job satisfaction

Hypothesis 6: Gender moderates the relationship between job satisfaction and turnover intention

Hypothesis 7: Work setting moderates the relationship between job satisfaction and turnover intention

DATA ANALYSIS AND RESULTS

Data set and survey responses

The collected data was subjected to data cleaning to identify missing data, outliers, and unengaged responses. The data set recorded no outliers and no missing data. Unengaged responses were checked through the standard deviation and no unengaged responses were detected. Hence, the data reflected a valid sample with higher quality allowing the survey results to proceed with the further analysis.

Demographic profile of the respondents

Out of the sample of 151 respondents, 93 respondents were males representing 61.6 % and 58 were females representing 38.4%. Majority of the respondents are employed in private banks which is 85 respondents, representing 56.3% of the total sample. Meanwhile, 66 respondents are employed in public banks in the Colombo district.

Exploratory Factor Analysis (EFA)

The initial EFA was performed based on the eigen value which is greater than 1 and it proposed six factors which contradicts with the conceptual framework. Hence, the researcher proceeds with a new EFA based on fixed number of factors expecting to acquire four factors as per the conceptual framework. The indicators were loaded into four factors and two indicators (PAY3

and PAY5) reported cross loadings. PAY3 was acceptable but PAY5 was not acceptable as it does not possess a difference of more than 0.2 between the loadings. Hence, the researcher repeated the EFA by removing the indicator PAY5.

Table 2: Pattern Matrix

	Factor			
	1	2	3	4
NOW1	0.512			
NOW2	0.816			
NOW3	0.555			
NOW4	0.851			
NOW5	0.707			
PAY1				0.813
PAY2				0.674
PAY3	0.307			0.578
PAY4				0.418
PRO1			0.743	
PRO2			0.584	
PRO3			0.704	
PRO4			0.791	
PRO5			0.7	
SUP1		0.516		
SUP2		0.839		
SUP3		0.869		
SUP4		0.774		
SUP5	0.301	0.512		

The results from the new analysis confirmed the four-dimensional structure which is theoretically defined in the conceptual framework. The Kaiser-Meyer-Olkin Measure of sampling adequacy was 0.806 which is considered as meritorious. Bartlett's Test of Sphericity was significant indicating the variables relate to one another enough to perform a meaningful EFA. Hence, the set of observed data were adequate and appropriate to run the EFA All communalities were over the required value of 0.40 and the four factors explained a total of 52.580 percent of the variance in the model. All the factor loadings were reported above 0.45 establishing the convergent validity. In the pattern matrix, all the other variables load significantly only on one factor except PAY3 and SUP1 which reported cross-loadings.

Nevertheless, cross-loadings were differed by more than 0.2 allowing them to remain in the model. Hence, the discriminant validity was established.

Structural Equation Modeling (SEM) – Higher/ Second order Modeling

Confirmatory factor analysis (CFA) was computed using AMOS to test the measurement models to determine whether the observed variables are adequate indicators of the latent variables (Anderson & Gerbing, 1988).

Figure 1: Measurement Model for Lower order constructs
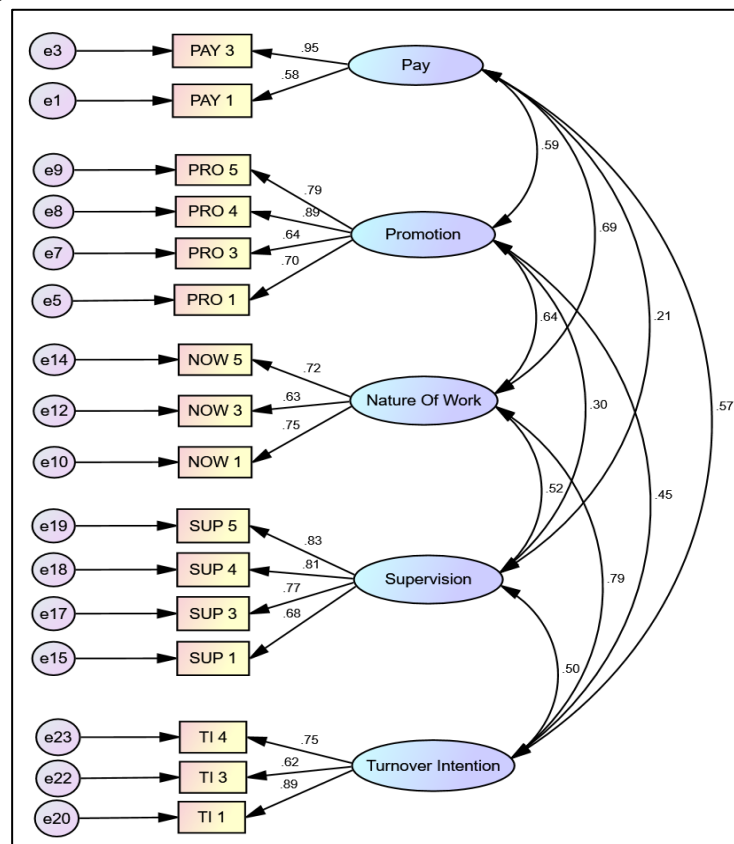
Factor loadings which are greater than 0.50 are better at explaining the latent constructs in the research (Hair et al, 2010). Accordingly, 10 indicators were removed due to their low factor loadings which were less than 0.5. The remaining indicators possessed loadings greater than 0.50.

Goodness of fit of the measurement model for lower order constructs

The model's overall goodness of fit was assessed by using the absolute fit indices, incremental indices and parsimony fit indices. All the observed values were within their respective acceptance levels (Hair et al. 2010; Ullman, 2001; Hu and Bentler, 1999). Results for the model are presented in Table 3.

Table 3: Results of the Goodness of fit of the Measurement Model

Model-fit Index	Fit Indices	Acceptable value/adequate fit	Obtained Value
Absolute fit indices	CMIN/DF	<3 or <5	1.708
	GFI	>0.8	0.882
	AGFI	>0.8	0.829
	RMSEA	<0.1	0.069
Incremental fit indices	TLI	>0.9	0.923
	CFI	>0.9	0.940
	IFI	>0.9	0.941
Parsimony fit indices	PNFI	>0.5	0.680
	PCFI	>0.5	0.736

According to the table 3, the calculated values for the five-factor model or the lower order constructs of the study (pay, promotion, nature of work, supervision and turnover intention) yielded good fit for the data verifying the overall goodness of fit of the measurement model.

Validity and reliability of the measurement model for lower order constructs

The individual standardized factor loadings of all the scale indicators were greater than the adequate level of 0.50 (Awang, 2012). The values of the Average Variance Extracted were above the threshold value of 0.50 (Fornell & Larcker, 1981). Hence, the convergent validity of the measurement model was established. Composite reliability was computed for each latent construct to assess the construct reliability. The values were above the minimum threshold of 0.70 (Hair et al., 2010), confirming that each latent construct in the study possesses reliability. The discriminant validity of the measurement model was assessed using the Heterotrait - Monotrait (HTMT) ratio. The ratios were in the required limit which is less than 0.85 (Henseler et al., 2015) Therefore, the discriminant validity of the measurement model was established.

Figure 2: Higher order Measurement Model
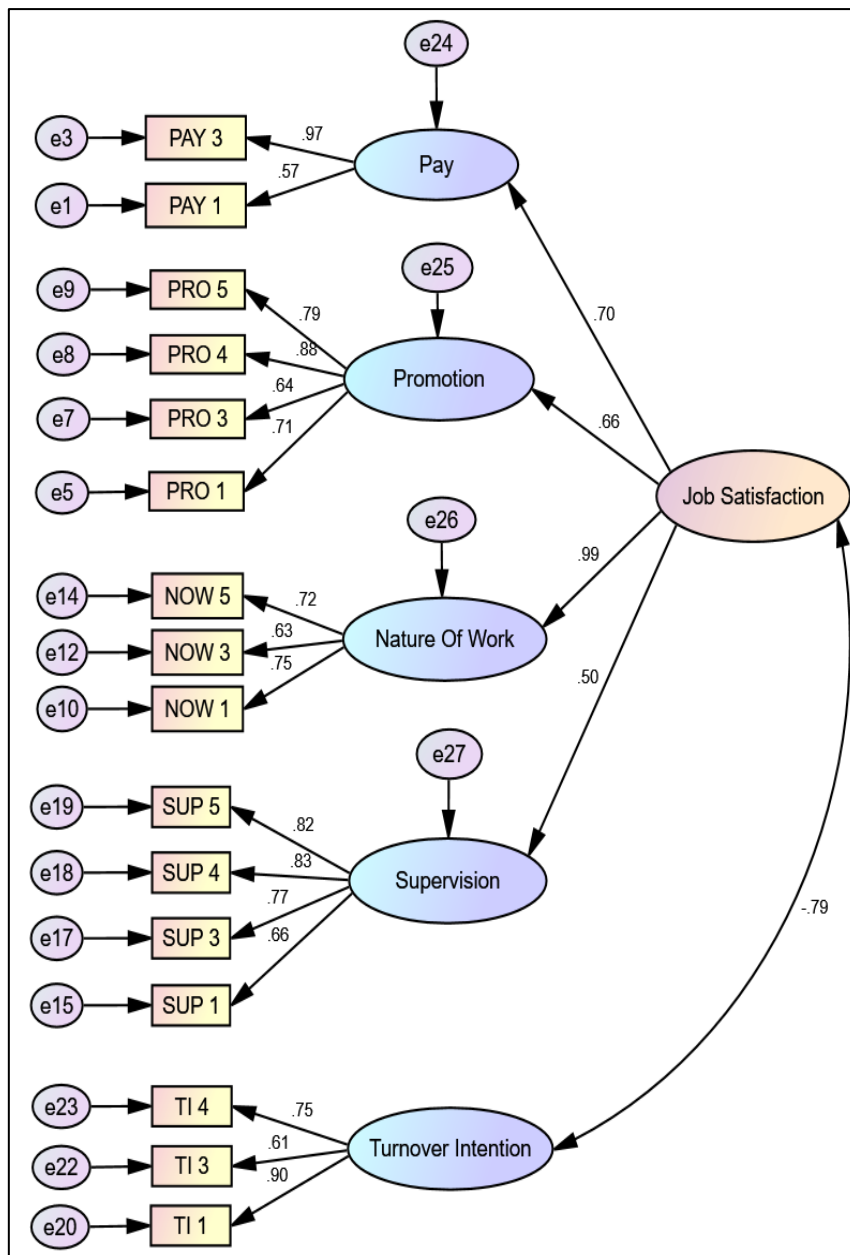
Goodness of fit of the higher order measurement model

The observed value for absolute fit indices, incremental indices and parsimony fit indices were within their respective common acceptance levels indicating an adequate fit of the model (Hair et al., 2010; Ullman, 2001; Hu and Bentler, 1999).

Table 4: Results of the Goodness of fit of the Measurement Model

Model-fit Index	Fit Indices	Acceptable value/adequate fit	Obtained Value
Absolute fit indices	CMIN/DF	<3 or <5	1.795
	GFI	>0.8	0.872
	AGFI	>0.8	0.825
	RMSEA	<0.1	0.073
Incremental fit indices	TLI	>0.9	0.913
	CFI	>0.9	0.929
	IFI	>0.9	0.930
Parsimony fit indices	PNFI	>0.5	0.705
	PCFI	>0.5	0.766

According to the table 4, the absolute fit indices indicate that, CMIN/DF is 1.795 which is less than 5, GFI is 0.872 which is greater than 0.8 and closer to 1, AGFI is 0.825 which is greater than 0.8 and RMSEA is 0.073 which is less than 0.1. Therefore, the model is absolutely fit. The incremental fit indices present that, TLI is 0.913, CFI is 0.929 and the IFI is 0.930. All the values are greater than 0.9 and it indicates that, the model is incrementally fit.

The parsimony fit indices, PNFI is 0.705 and PCFI is 0.766. Both the values are greater than 0.5 and confirmed that the model is parsimoniously fit. Therefore, the calculated values for the six-factor model (pay, promotion, nature of work, supervision, turnover intention and job satisfaction) yielded good fit for the data, confirming the overall goodness of fit of the higher order measurement model.

Validity and reliability of the Higher order Measurement model

The convergent value of the higher order measurement model was established as the calculated AVE value was 0.539The calculated CR values was 0.815 which was above the minimum threshold of 0.70 (Hair et al., 2010). Therefore, the construct reliability of the higher order measurement model was verified. The HTMT ratio of the higher-order measurement model was -0.806 and the absolute value was taken into consideration. The calculated the HTMT ratio was in the required limit of less than 0.85 (Henseler et al., 2015). Therefore, the discriminant validity of the higher-order measurement model was established.

Structural Model Assessment

The structural model assesses the relationships between the constructs. In other words, it assesses how well the data fit a model which describes the relationships between independent and dependent variables (Tarigan & Ariani, 2015).

Based on the final measurement model which is the higher-order measurement model, the structural model was generated through AMOS to test the relationships.

Figure 3: Structural Model
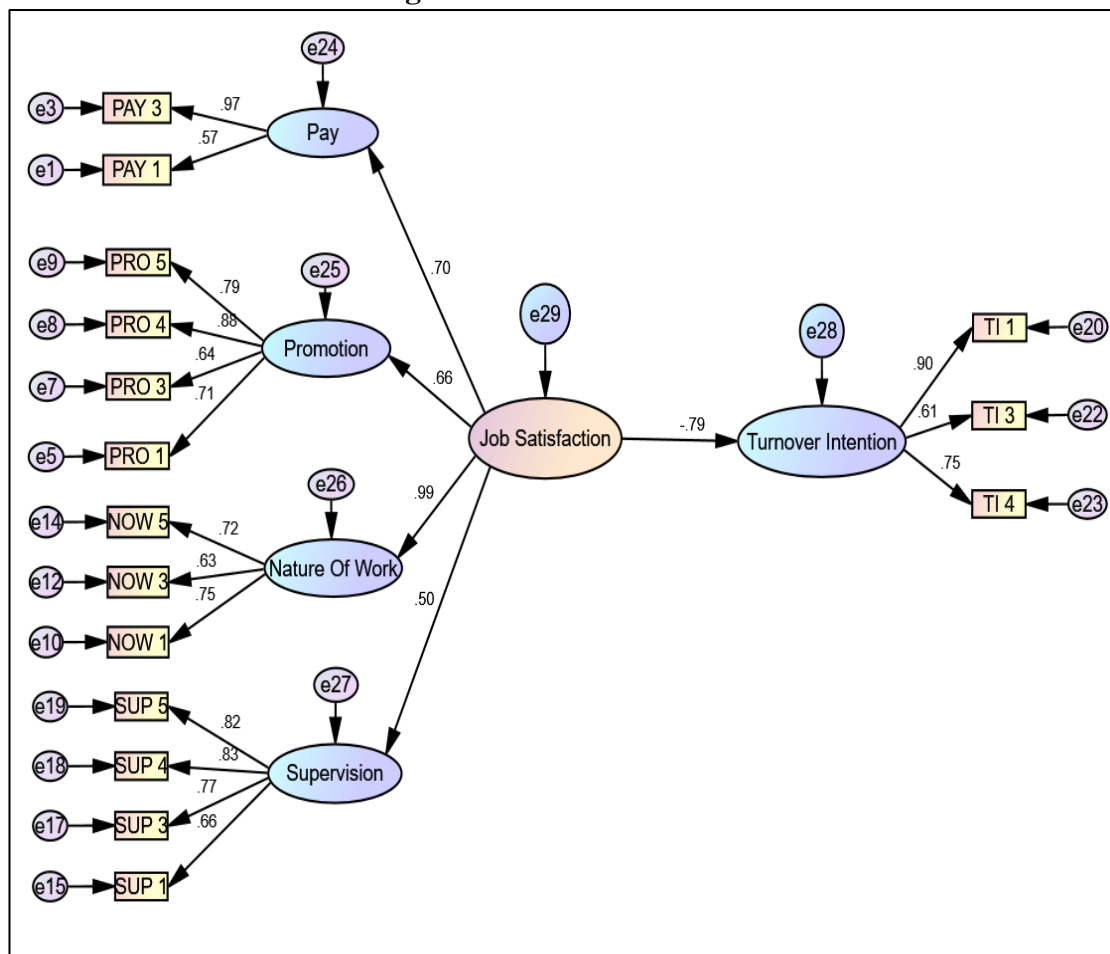
Goodness of fit of the Structural Model

According to the table 4, the value for CMIN/DF is 1.813 which is less than 5 and RMSEA is 0.074, which is in the required limit of less than 0.1. The fit indices GFI and AGFI are not provided by AMOS in the structural model. Hence, the observed values indicate that, the structural model is absolutely fit.

Table 5: Results of the Goodness of fit of the Structural Model

Model-fit Index	Fit Indices	Acceptable value/adequate fit	Obtained Value
Absolute fit indices	CMIN/DF	<3 or <5	1.813
	RMSEA	<0.1	0.074
Incremental fit indices	TLI	>0.9	0.911
	CFI	>0.9	0.928
	IFI	>0.9	0.929
Parsimony fit indices	PNFI	>0.5	0.698
	PCFI	>0.5	0.758

The incremental fit indices TLI is 0.911, CFI is 0.928 and IFI is 0.929. All the observed values are greater than the adequate fit which is 0.9 and this indicates that, the structural model is incrementally fit.

The value for PNFI is 0.698 and PCFI is 0.758. Both the observed values are greater than 0.5 which indicates that, the structural model is parsimoniously fit. Therefore, the observed values of the model fit indices yielded good fit for the data, confirming the overall goodness of fit of the structural model.

Testing of hypotheses

Following a perfect fit of the structural model to the data, the five hypotheses of the study which were built according to the conceptual framework, were tested through the standardized path coefficients.

Table 6: Path coefficients of the Structural Model

Path / Hypothesized relationship	Standardized path coefficients	P- value	Decision
Turnover intention - Job Satisfaction	-0.793	0.001	Supported
Pay - Job Satisfaction	0.704	0.001	Supported
Promotion - Job Satisfaction	0.662	0.001	Supported
Nature of Work - Job Satisfaction	0.987	0.001	Supported
Supervision - Job Satisfaction	0.499	0.001	Supported

The study mainly assessed the impact of job satisfaction on turnover intention of bank employees. According to the table 6, the value of the standardized path coefficient of job satisfaction and turnover intention was -0.793 and it was significant as the P-value was less than 0.05. Hence, empirically supporting the Hypothesis 1, the result indicates that job satisfaction has a significant negative effect on turnover intention (β = -0.793, p < 0.05). The standardized path coefficient of job satisfaction and pay was 0.704 and it depicted a P- value which is less than 0.05. Accordingly, the Hypothesis 2 was supported, indicating that pay is positively related to job satisfaction (β = 0.704, p < 0.05). Job satisfaction and promotion reported 0.662 as the standardized path coefficient and its P- value was less than 0.05. Therefore, the result supported the Hypothesis 3 which claims that, promotion is positively related to job satisfaction (β = 0.662, p < 0.05). The value of the standardized path coefficient of job satisfaction and nature of work was 0.987 and its P- value was less than 0.05. Hence, the Hypothesis 4 was supported through the result, indicating that nature of work is positively related to job satisfaction (β = 0.987, p < 0.05). Finally, job satisfaction and supervision reported a standardized path coefficient of 0.499 which is significant as the p-value was less than 0.05. Therefore, the Hypothesis 5 was supported by the result of the study claiming that, supervision is positively related to job satisfaction (β = 0.499, p < 0.05).

Moderation Analysis

Moderation analysis was performed using the interaction term method to test the moderating effect of the two categorical moderators in the study; gender and work setting. The interaction term was generated by multiplying the categorical variable with the mean centered independent variable which is the Job satisfaction.

Roles of gender as the categorical moderator

The standardized path coefficient of the interaction term is -0.237 which is not significant. Hence, the Hypothesis 6 which posits that, gender moderates the relationship between job satisfaction and turnover intention was not supported (β = -0.237, p > 0.05).

Hypothesized paths	Standardized path coefficients	p- value	Decision
Turnover intention - Job satisfaction	-0.412	0.30	

Turnover intention - Gender	0.14	0.829	
Turnover intention - Interaction	-0.237	0.211	Not supported

Table 7: Results of the moderation analysis for gender

Role of work setting as the categorical moderator

The standardized path coefficient of the interaction term which was generated by multiplying the mean centered job satisfaction with work setting is -0.70. It is not significant as the p-value is greater than 0.05. Hence, the Hypothesis 7 was not supported, indicating that, work setting does not moderate the relationship between job satisfaction and turnover intention (β = -0.70, $p > 0.05$).

Table 8: Results of the moderation analysis for work setting

Hypothesized paths	Standardized path coefficients	p- value	Decision
Turnover intention - Job satisfaction	-0.745	$p < 0.01$	
Turnover intention - Work setting	0.158	0.010	
Turnover intention - Interaction	-0.70	0.705	Not supported

Impact of categorical predictor variables on job satisfaction

In order to compare the job satisfaction among bank employees based upon their gender and work setting or the type of bank which they are employed, the impact of categorical predictor variables on job satisfaction was analyzed.

Table 9: Impact of gender and work setting on job satisfaction

Impact	Estimate	p-value
JS - Gender_1	-0.046	0.647
JS - Type_1	0.170	0.79

"Gender_1" represents male bank employees. The negative coefficient of -0.046 indicates that, male bank employees have a lower job satisfaction in comparison to female bank employees. However, the impact of gender on job satisfaction is insignificant as the p-value is greater than 0.05

"Type_1" represents the private banks and the coefficient is positive which is 0.170. This value indicates that, employees in private banks possess a higher job satisfaction compared to the employees in public banks. Nonetheless, the impact is insignificant as the p-value is greater than 0.05.

DISCUSSION

Supporting the Hypothesis 1, findings of the structural equation model indicated that, job satisfaction has a significant negative effect on turnover intention. It is similar to the findings of the study which was conducted in the private commercial banks in Bangladesh (Rahman & Iqbal, 2013).

Hypotheses 2, 3, 4 and 5 of the study were supported through the results of the structural equation model, indicating that, pay, promotion, nature of work and supervision are positively related to job satisfaction. This indicates that, higher compensation, increased promotion opportunities, better nature of work and stronger supervision leads to higher satisfaction among the employees. This positive relationship is in line with the findings of the previous study which was conducted in Nigeria which explored the job satisfaction and turnover intention along with the facets of job satisfaction (Mbah & Ikemefuna, 2012).

Findings of the moderation analysis indicated that, gender does not moderate the relationship between job satisfaction and turnover intention as the path coefficient of the interaction term was not significant. Hence the hypothesis 6 of the study was not supported. This finding is similar to the findings of the study which was conducted in Cameroon, to test the moderating effect of gender in the relationship between job satisfaction and turnover intention (Emmanuel & Agaha, 2021). Nevertheless, a study which was conducted in the hospital industry of Turkey concluded that, gender moderates the relationship between job satisfaction and turnover intention (Mete & Sokmen, 2017).

Hypothesis 7 was also not supported through the results of the moderation analysis as the path coefficient of the interaction term was not significant. Hence, it indicated that, work setting or the type of bank which the employees are employed does not moderate the relationship between job satisfaction and turnover intention. This finding is in line with the findings of the Serbian study regarding the relationship between job satisfaction and turnover intention of private and public sector employees (Mihajlov & Mihijlov, 2016).

Results from assessing the impact of categorical predictor variables on job satisfaction, indicated that male bank employees have a lower job satisfaction in comparison to the female bank employees. It is similar to the results of the study which was performed in China regarding the job satisfaction among medical professionals (Miao & Bian, 2017).

Moreover, findings indicated that employees in private banks possess a higher job satisfaction compared to the public bank employees. This finding is in line with the results presented in the study which was performed in Romania regarding the degree of job satisfaction of public and private sector employees (Matei & Fataciune, 2016).

CONCLUSION AND IMPLICATIONS

The study results have fulfilled the aim of the study concluding that, job satisfaction has a significant negative impact on turnover intention of banking employees. Moreover, the study has confirmed that, pay, promotion, nature of work and supervision are positively related to job satisfaction of the banking employees. Performing the moderation analysis, study has claimed that, gender and work setting do not alter the relationship between job satisfaction and turnover intention. Comparing the job satisfaction perceived by employees, study has concluded that, male bank employees possess a lower job satisfaction compared to the female bank employees. Furthermore, the study found that, employees in private banks possess higher job satisfaction in comparison to the employees in public banks. Therefore, the current findings contribute to expand the existing knowledge regarding job satisfaction and turnover intention of banking employees in Sri Lanka, considering both the private banks and public banks in the Colombo district through a structural equation modeling which has not been widely used in the existing literature pertain to job satisfaction and turnover intention.

Based on the study findings, enhancing job satisfaction through adequate compensation, clear promotion criterion, positive work environment and stronger supervision are potential policy implications to reduce the turnover intention of employees

LIMITATIONS AND FUTURE RESEARCH DIRECTIONS

This study was conducted specifically in the banking sector of Sri Lanka, with a limited sample of 151 bank employees in the Colombo district. Hence, the generalizability of the findings is limited and cannot provide conclusions to the entire workforce of banking employees in Sri

Lanka. Therefore, it would be worthwhile to conduct studies nationwide, considering the entire workforce of banks in Sri Lanka. Apart from job satisfaction, future research may consider other variables such as organizational commitment which contributes to employee turnover intention and may consider other employment sectors.

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Conceptualizing the Impact of Green HRM Practices on Organizational Investment Decisions: Theoretical Insights into the Mediating Role of Employee Green Behavior

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ABSTRACT

In contemporary scholarly discussions, the integration of environmentally focused human resource management (Green HRM) and organizational investment choices surface as a critical field of study. It emphasizes a paradigm where organizational goals and environmental conservation intertwine. However, the understanding of the impact of green HRM within organizational investment is still evolving, requiring deeper insights into how sustainable HR strategies can reshape organizational investment landscapes.

This study traverses the rich interface of organizational behavior and environmental awareness to unravel how green HR strategies are linked to organizational investment decisions. Through meticulous literature review following the methods by Smith and Lewis (2016), the synthesis of ecological responsibility, employee conduct, and institutional investment philosophies is explored, aiming to identify the relationship between green HR initiatives and strategic financial choices of organizations.

Organizational investment decisions are crucial in business strategy, reflecting the strategic allocation of resources for long-term sustainability, intertwining with the organizational approach towards environmental stewardship. The study delves into how employee green behavior acts as potential intermediary, transforming green HRM practices into environmentally conscious investment choices.

The review unveils the importance of cultivating an environment to encourage employee's environmentally friendly behaviors, acting as a link between eco-HRM and sustainable financial choices. This includes exploration into how individual ecological predispositions translate into collective eco-friendly actions within organizations, subsequently influencing investment strategies.

A proposed conceptual model explores the relationship between green HRM practices, employee green behavior, and organizational investment decisions. It is hypothesized that organizations implementing robust green HRM practices are likely to make investment decisions favoring environmental conservation and sustainability. Furthermore, employee green behavior may serve as a pivotal mediating factor, translating eco-friendly human resource strategies into sustainable investment choices.

This exploration assumes heightened significance in an era where environmental concerns have assumed paramount importance. It offers profound insights that resonate not only within

the realmsof future research but also in practical applications embedded within organizational strategies andoperations. The ultimate aim is to orchestrate a harmonious alignment between organizational investments and the overarching goals of environmental sustainability.

Keywords: green HRM practices, organizational investment decisions, employee green behavior

INTRODUCTION

In the ever-evolving landscape of academic discourse, the integration of Green Human Resource Management (Green HRM) with organizational investment choices is emerging as a pivotal fieldof study. Jackson et al. (2011) and Turner and Parker (2021) emphasize this transformative model where the fundamental goals of an organization and the guiding principles of environmental conservation seamlessly intertwine, as advocated by Elkington (1997). Both academia and the corporate realm are bearing witness to a burgeoning interest in the subtle interplay between eco- conscious HR initiatives and the meticulous investment decisions orchestrated by organizations, as highlighted by Eisenberg et al. (2006) and Jabbour and Santos (2008). Green HRM stands as a sophisticated embodiment of environmental considerations within the organizational framework, with its overarching aim being the cultivation of a corporate culture harmonious with environmental wisdom and sustainability, as articulated by Clarkson (2007) andGuerci and Pedrini (2014).

However, amidst the burgeoning emphasis on green initiatives, the profound impact of green HRM practices on organizational investments remains a multifaceted enigma, a realm teeming with uncharted dimensions and latent opportunities yearning to be unearthed, as Pfeffer (2005) observes. This realization unfurls the imperative need to embark on a profound exploration, one that seeks to unravel the intricate ways in which sustainable HRM strategies can indelibly shape and elevate the organizational investment landscape, as suggested by Wright and McMahan (2011). This journey offers a fertile ground for innovative approaches in organizational strategy and operational design, beckoning researchers and practitioners alike to explore uncharted territory, as noted by Jensen and Meckling (1976).

Within the labyrinthine corridors of this exploration, comprehending the pivotal role played by employees' environmentally friendly behavior assumes paramount significance, as underscored byO'Donohue and Torugsa (2016). It is increasingly recognized that these behaviors wield considerable influence, potentially serving as mediators that bridge the realms of green HRM andorganizational investment choices, as emphasized by Smith and Turner

(2015). Indeed, a harmonious relationship between employee green behavior and green HRM practices has the transformative power to steer organizational investments towards more sustainable trajectories, aselucidated by Kim et al. (2017).

This exploration of a contemporary subject seeks to traverse the multifaceted intersection of organizational behavior and environmental consciousness, as discussed by Turner et al. (2017). Itendeavors to draw forth refined insights and untangle the intricate threads that weave environmentally sensitive HR strategies into the intricate fabric of organizational investment considerations, as highlighted by Berrone et al. (2013). By delving into these complex interrelationships, we aspire to unveil the hitherto unseen facets and latent potentials residing within Green HRM's ability to sculpt and mold organizational investment decisions and strategies,as per Renwick et al. (2013).

It is undeniably paramount for organizations to grasp the essence of amalgamating environmental concerns with operational and strategic considerations, as Porter (1985) contends. This holds particularly true in today's global context, where environmental degradation and the specter of climate change loom large as pressing issues, as emphasized by Guenster et al. (2011). By converging green HRM practices with sound investment decisions, organizations can aspire not only to contribute to the noble cause of environmental conservation but also to realize the profoundbenefits of enhanced organizational performance and sustainable growth, as advocated by Thompson et al. (2013).

Hence, it becomes evident that this research endeavor transcends the boundaries of mere academia,as recognized by Fredrickson (2001). It stands as an imperative, poised to address real-world problems and contribute substantively to the knowledge base encompassing the intricate ways in which green HRM practices intricately influence organizational behavior and investment decisions, as articulated by Paauwe and Boselie (2005). The anticipation rests in the belief that theexploration and conceptualization of such impacts will not merely yield theoretical insights but will also blaze a trail for future empirical inquiries and practical implementations, ushering in a new era of corporate environmental responsibility and sustainability, as per Bansal and Song (2017).

LITERATURE REVIEW

Renwick et al. (2013) have opened up a fascinating avenue for research by inquiring into the realmof green HRM practices and their subsequent influence on thefinancial decisions made

by organizations. This area signifies a remarkable shift towards organizational strategies that prioritize environmental consciousness. This body of research has unveiled a symbiotic relationship between the promotion of environmental responsibility, the active involvement of employees, and the strategic outlook of investments, underscoring the vitalimportance of adopting ecologically responsible strategies within organizations.

Jackson et al. (2011) and Paillé et al. (2014) argue that green HRM practices serve as the robust framework upon which the values related to ecological sustainability are constructed. Within the organizational context, these practices play a pivotal role in nurturing a strong sense of environmental stewardship. It is of paramount importance to champion and endorse these practices as they act as a bridge, connecting green HRM practices to the sustainable financial endeavors ofan organization.

Daily et al. (2009) and Ones and Dilchert (2012) emphasize the pivotal role played by employee green behavior in understanding the dynamic interplay of green HRM practices and investment philosophies. This behavior forms the nucleus around which the intricate amalgamation of individual environmental preferences into collective eco-conscious actions revolves within organizational settings. These actions, in turn, have a profound influence on the investment strategies an organization chooses to pursue, thus transforming green HRM practices into a driving force behind ecologically conscious investment decisions.

Ehnert et al. (2014) and Jabbour et al. (2013) argue that to comprehensively explore the intricate interactions between green HRM practices and organizational financial strategies, a nuanced andmeticulous approach is indispensable. This intricate relationship is characterized by multifaceted dynamics, intricately woven with subtle variations and untapped potentials. It is, therefore, imperative to harmonize green HRM practices with the overarching philosophies of the organization and the prevailing market conditions to fully harness their transformative potential.

Kim et al. (2017) and Guenster et al. (2011) assert that the reverberations of green HRM practicesripple far beyond the boundaries of organizations, extending their influence into broader socio- economic domains. They act as a reflection of evolving societal trends, the ever-changingpreferences of consumers, and the dynamic shifts in market trends. Ultimately, they exert a significant shaping influence on investment paradigms, thereby highlighting their pivotal role in steering the course of sustainable financial decisions.

Berrone et al. (2013) note that this extensive exploration into the realm of green HRM

practices and their implications for organizational investments remains fertile ground with numerous unexplored dimensions. Furthermore, the escalating significance accorded to green HRM practices in the strategic blueprints of organizations is indicative of a heightened dedication to environmental sustainability and ethical stewardship. A growing number of corporations are aligning their operational practices with globally accepted sustainability standards, all while meeting the burgeoning expectations of environmentally aware consumers (Zhu et al., 2012).

Wang et al. (2016) emphasize that the discourse surrounding green HRM practices has expanded to encompass discussions on sustainable development and corporate social responsibility. The focus here lies in the creation of value through the seamless integration of environmental considerations into the tapestry of business strategies. This integration of environmental considerations within HR practices is pivotal for achieving the broader sustainability goals of organizations, particularly in response to mounting pressures from stakeholders advocating responsible business conduct (Dubois & Dubois, 2012).

O'Donohue and Torugsa (2016) underscore the importance of cultivating an active and proactive environmental culture within organizations. The promotion of ecological values and practices among employees holds a central position in the pursuit of sustainability objectives. This is intricately tied to an organization's overall performance and its competitiveness within the market. A committed and engaged workforce, aligned with the environmental values of the organization, can significantly enhance the capacity to implement sustainable practices effectively.

Van De Voorde and Beijer (2015) conclude that this in-depth exploration into the intricate interplay and influences of green HRM practices sheds new light on organizational behaviors and strategic decision-making. It contributes substantially to our broader comprehension of sustainable organizational development, unlocking pathways for future research and theoretical development. It offers a holistic perspective on the myriad ways in which organizations can harmonize their strategies, cultures, and operations with the overarching goals of environmental sustainability.

In summary, delving deeper into this multifaceted field, conducting comprehensive theoretical investigations into the realm of green HRM practices, and discerning their correlation with organizational investment decisions is of utmost importance. As we unravel the intricacies of these networks, we enrich our understanding of the potential that

organizational eco-responsibility holds in shaping investment strategies, thereby fostering a harmonious balance in ecological sustainability within the corporate realm.

METHODOLOGY

To embark on this comprehensive exploration, an exhaustive and thorough literature review has been undertaken concerning green HRM practices and their profound influence on the intricate realm of organizational investment decisions (Smith & Lewis, 2016). This rigorous process of review has encompassed various meticulously crafted approaches, all meticulously adhering to the well-defined methodology outlined by Smith and Lewis (2016).

Smith and Lewis (2016) highlight that among these approaches are structured reviews, as exemplified by the meticulous work of Turner et al. (2017), meta-analyses, a robust methodology exemplified by Barker and Smith (2018), and theory-based reviews, as exemplified in the scholarly work of Johnson et al. (2019). This methodological framework has been meticulously chosen due to its aptness for conducting a thorough and all-encompassing analysis of the extensive body of existing research in the specified domain (Smith & Lewis, 2016).

Williams (2015) emphasizes that this chosen approach, characterized by its systematic rigor, has greatly facilitated a more enlightened and data-driven approach to the decision-making processes that unfold within the intricate fabric of organizational investment. It is well-recognized that literature reviews, as eloquently emphasized by Thompson et al. (2013), assume a pivotal role in the scholarly landscape by shedding light on critical knowledge gaps within a particular field. In doing so, they serve as torchbearers for evidence-based decision-making, a cornerstone of informed and effective organizational strategies. Within the framework of this systematic review, key terminologies central to the discourse have been thoughtfully incorporated. These encompass the realms of green HRM practices, organizational investment decisions, and the nuanced behavior of employees in the realm of environmental responsibility (Williams, 2015).

Williams (2015) also highlights that this holistic lexicon has been meticulously curated to provide an all-encompassing and in-depth understanding of the subject matter, particularly in an era where ecological considerations have risen to paramount significance.

To elevate the rigor and reliability of this comprehensive literature review, the methodology

has been imbued with the "Five Cs" principles, which advocate for literature that is concise, clear, critical, convincing, and contributive (Williams, 2015). These guiding principles ensure that the review not only comprehensively covers the breadth of existing research but also does so with a level of precision and rigor that stands as a testament to its quality and reliability.

Table 1: Components of Review Method

Who	The authors central to green HRM practices and organizational investment.
When	Literature was collated within a span of five months.
Where	Comprehensive materials were amassed from scholarly articles, research papers related to environmental management and organizational behavior.
How	Data were assembled utilizing a snowball method and exploring pertinent materials.
What	A diverse array of articles offering various insights into Green HRM practices were considered and appraised.
Why	Articles were meticulously selected for their relevance and contribution to the subject matter.

Source: Developed by researchers

According to Anderson (2018), the importance of a succinct and focused literature review cannot be overstated, particularly when it comes to addressing specific inquiries and pinpointing areas of practical knowledge gaps. In the context of this exploration, the spotlight is firmly on the practical application of Green HRM practices within the intricate framework of organizational decision-making. This precision and clarity in the review process are essential, as they pave the way for a structured assimilation of insights gleaned from a diverse range of literature sources (Parker, 2020).

In the words of Martinez and Lewis (2014), this methodical approach not only aids in data collection but also empowers a critical examination and synthesis of the author's perspective, underlying assumptions, values, and beliefs. By adopting such a meticulous and well-defined approach, the review process becomes a conduit for illuminating the multifaceted dimensions of the subject matter, allowing for a nuanced and holistic understanding to emerge.

Drawing from the research of Thompson et al. (2013) and insights of Martinez and Lewis (2014), this review aspires to make a substantial contribution to the existing corpus of

knowledge. It endeavors to do so by presenting cogent and logically consistent arguments, carefully crafted to unveil the intricate complexities inherent in the practical application of Green HRM practices. In essence, the aim is to delve beyond the surface, peeling back the layers to reveal the intricate webof interactions that define the relationship between Green HRM practices and organizational decision-making.

According to Robinson (2015), furthermore, this review harbors the ambition to introduce fresh theoretical frameworks into the scholarly discourse, focusing specifically on the profound influence of employee green behavior on the decision-making processes within organizations. This step represents a deliberate effort to push the boundaries of existing knowledge, enriching the fieldwith novel perspectives and innovative insights. By doing so, it contributes not just to academic discourse but also to the practical realm where organizations grapple with the complex interplay of environmental considerations and decision-making processes.

In summary, as articulated by Anderson (2018), the endeavor to craft a concise yet comprehensivereview is rooted in the need to address specific questions and shed light on practical knowledge gaps. Clarity in the review process serves as a guidepost for structured data assimilation and a critical examination of underlying assumptions. Beyond mere summarization, "as highlighted by Parker (2020)," this review aspires to make a substantive contribution by presenting compelling arguments and unraveling the intricate complexities of Green HRM practices' application. Moreover, it seeks to advance the field by proposing innovative theoretical frameworks, particularly focusing on the impact of employee green behavior on organizational decision-making, thus enriching both academic scholarship and practical applications in this domain.

The Necessity of Conceptualizing Green HRM Practices

In the quest to gain a profound understanding of a complex construct like practices, Smith (2005) emphasizes the imperative to embark on a journey of deconstruction, dissecting its intricate components with precision. Often, the term 'Green HRM practices' exists in a paradoxicalrealm, where clarity and ambiguity converge, owing to its multi-dimensional and multifaceted nature (Jones & Martin, 2017). To make a meaningful contribution to the theoretical foundation, such intricate concepts demand meticulous scrutiny and examination (Williams, 2012).

The meticulous process of clarification, as noted by Brown and Green (2010), serves as the beaconilluminating a nuanced comprehension of this concept. Its meaning is intricately tied to the contextwithin which it resides, and thus, the journey of deconstruction paves the way for a more profoundunderstanding that is contextually contingent.

In all their multi-faceted glory, Green HRM practices beckon us to engage in comprehensive conceptualization, an exercise that aims to untangle their myriad dimensions and fathom how thesedimensions interweave and materialize within the dynamic tapestry of contemporary organizational landscapes. The importance of discerning Green HRM practices lies in their potential to cast a profound influence on organizational strategies, shape the behavior of employees, and, ultimately, chart the course for overall organizational sustainability, as articulatedby Clark (2014).

To conceptualize Green HRM practices is not an academic pursuit in isolation; it is a pragmatic endeavor, one that offers a pragmatic lens through which to scrutinize its implications on organizational sustainability and employee engagement. This process of conceptualization is not just pivotal but indispensable for shedding light on the intricate web of associations and the far- reaching consequences of sustainable human resource initiatives, as highlighted by Davies and Thompson (2018).

The compelling necessity to embark on the journey of conceptualizing Green HRM practices arises from the ever-evolving nature of organizational frameworks and the burgeoning prominence of sustainable practices within the overarching spectrum of organizational strategy and operations (Turner & Parker, 2021). This ongoing evolution has kindled a renewed interest in refining and redefining Green HRM practices, ensuring their seamless alignment with the lofty goals of organizational objectives, and addressing the multifaceted ecological and societal challenges thatdefine the contemporary landscape, as emphasized by Johnson (2019).

In light of the intricacies and the multi-dimensional character of Green HRM practices, the formulation of a precise conceptual framework emerges as an indispensable endeavor. Such a framework is not just a tool for elucidating the intricate elements of this construct but also a vehiclefor fostering a holistic and integrated understanding. It is through this integrated understanding that the true potential of Green HRM practices can be harnessed, enhancing their application and augmenting their impact within the ever-evolving contexts of contemporary organizations, as articulated by Harrison and Palmer (2020).

In summary, the journey of exploration into Green HRM practices entails a meticulous deconstruction of its components to resolve the paradox of clarity and ambiguity. The process of conceptualization, as advocated by Smith (2005), is driven by the multi-dimensional nature of this construct, seeking to unravel its various dimensions and their interplay in the dynamic organizational landscape. This endeavor is not just academic but pragmatic, shedding light on its implications for sustainability and employee engagement. The imperative for conceptualization arises from the evolving nature of organizations and the growing significance of sustainable practices, necessitating alignment with organizational objectives and contemporary challenges. In navigating the complexities of Green HRM practices, a precise conceptual framework emerges as an indispensable tool for fostering a comprehensive and integrated understanding, ultimately enhancing their application and impact within evolving organizational contexts.

Conceptualizing Green HRM practices

Green HRM practices have emerged as pivotal elements that wield a profound influence on sustainability initiatives within organizations, and their recognition is steadily on the ascent (Taylor, 2006). Robinson and Haynes (2011) emphasize that much like the way in which we gauge job performance, the conceptualization of Green HRM practices occupies a central position in our quest to fathom how organizations can harmonize their human resource strategies with the lofty objectives of sustainability.

The territory of Green HRM practices is intricate and multi-faceted. Given this complexity, substantial efforts have been earnestly invested in delineating this construct, an endeavor that calls to mind the intricate craftsmanship of a skilled artisan (Clarkson, 2007). As observed by Wright and McMahan (2011), Green HRM practices encompass both action and outcomes, a pivotal differentiation that serves as a linchpin in comprehending its far-reaching implications and multifarious applications.

When it comes to conceptualizing Green HRM practices, an array of diverse approaches has been laid upon the intellectual table. For instance, the insightful work of Edwards and Rothbard (2000) posits that Green HRM practices constitute a harmonious amalgamation of programs, initiatives, and strategic maneuvers meticulously designed to champion environmentally sustainable practices both within an organization and by its workforce. However, the academic arena often bears witness to spirited discussions and conceptualizations

of Green HRM practices, replete with a tapestry of diverse viewpoints and a notable absence of unanimity regarding their scope, dimensions, and the extent of their impact (Jackson et al., 2011).

The tapestry of scholarly exploration reveals multiple attempts to establish a connection between Green HRM practices, the overarching sustainability of organizations, and the intricate dance of employee behavior within these contexts. Scholars have exhibited varying perspectives, with a rich array of focus areas such as employee involvement, organizational culture, training regimens, and systems of rewarding (Paauwe & Boselie, 2005). To exemplify, some luminaries in the field have embarked on illuminating journeys exploring the profound influence of Green HRM practices on the morale and retention of employees. Their arguments extend beyond the footprint of the organization's environmental impact, asserting that these practices cast their benevolent influence on employee job satisfaction and the unwavering commitment they hold to the organization's cause (Pfeffer, 2005).

It is palpable that the conceptualization of Green HRM practices is a realm that resists reductionism and defies confinement to a singular dimension or viewpoint. Instead, it beckons us towards a holistic exploration, an endeavor that demands the meticulous dissection of its multifaceted components and the unearthing of their intricate interconnectedness (Daily & Huang, 2001).

In this grand mosaic of exploration, while some scholars have ventured down the path of examining Green HRM practices from a more programmatic perspective, focusing their lens on the design and impeccable implementation of specific initiatives (Shen & Zhu, 2011), others have set sail on the seas of the behavioral dimension of Green HRM. In this voyage, they accentuate the pivotal role of employee actions and attitudes as the architects of an organizational culture deeply steeped in environmental responsibility (Guerci & Pedrini, 2014).

In essence, the endeavor to conceptualize Green HRM practices is an intricate tapestry woven with diverse threads of thought, each contributing to a richer understanding of this complex construct. Its multifaceted nature beckons us to explore various dimensions and viewpoints, ensuring that the true essence of Green HRM practices is captured in all its depth and intricacy.

Multifaceted Elements of Green HR Practices

The landscape of Green HR Practices is incredibly multifaceted, with each element

interweaving to form a comprehensive tapestry. According to Shen and Zhu (2011), the first identified element,the Programmatic Element, fundamentally revolves around the meticulous design and unerring execution of specific, sustainability-centered initiatives within organizations. Brown and Green (2010) emphasize that within this element, the crafting and implementation of well-strategized initiatives are crucial, aiming at enhancing environmental sustainability within the organization. Additionally, strategic maneuvers are imperative, formulating strategies that align the organization's aspirations with environmental sustainability objectives, affecting the broader spectrum of organizational sustainability and environmental footprint as highlighted by Turner andParker (2021).

The second element, the Behavioral Element, is pivotal as it underscores the significant role of employee attitudes and actions in cultivating an organizational culture deeply ingrained with environmental responsibility (Guerci & Pedrini, 2014). It is the fulcrum on which employee involvement and organizational culture pivot, encapsulating the collective values, attitudes, and behaviors of employees aimed at fostering environmental responsibility and sustainability, as observed by Robbins and Judge (2017). The substantial influence of this element is reflected in itspotential to impact employee morale, retention, job satisfaction, and unwavering commitment to the values of the organization, as suggested by Pfeffer (2005).

Further, the Outcome-Oriented Element is intrinsic, focusing on the tangible impacts and outcomesof deploying Green HR practices, as discussed by Wright and McMahan (2011). It scrutinizes theirrepercussions on both organizational sustainability and intricate patterns of employee behavior, as noted by Clarkson (2007). Within this element, employee job satisfaction and retention are paramount, acting as barometers for the contentment and fulfillment experienced by employees due to the incorporation of sustainable HR practices, thereby impacting overarching organizational sustainability and commitment levels, as articulated by Paillé et al. (2014).

Adding another layer to this intricate mosaic is the Educational and Training Element, which places a premium on the education and enhancement of employee knowledge and skills pertaining to environmental sustainability, as emphasized by Paauwe and Boselie (2005). This element comprises training regimens specifically tailored to augment employee cognizance and proficiencyin environmental sustainability matters, in line with Taylor's (2006) research. Employee development initiatives within this element are cardinal, spotlighting the enhancement of employee awareness, knowledge, and sustainability-oriented skills, as

elaborated by Ehnert et al. (2014).

Lastly, the Reward and Recognition Element brings into play systems meticulously designed to reward and recognize employees, thereby fostering the adoption of sustainable behaviors within the organizational fabric, according to Deci and Ryan (2000). This element elucidates the significance of structured reward systems and recognition programs aimed at acknowledging and appreciating employee efforts in the promotion of sustainability, acting as catalysts for employee motivation, engagement, and the propagation of sustainable behaviors within the organization, asoutlined by Jensen and Meckling (1976).

Organizational Investment Decisions

Porter (1985) highlights that Organizational Investment Decisions form the bedrock of business strategy, serving as critical pillars that determine how organizations judiciously allocate their resources to not only maximize value but also ensure long-term sustainability. In the context of Green HRM practices, delving into the intricacies of Organizational Investment Decisions becomes an imperative exercise, as it is intrinsically interwoven with an organization's ethos and commitment to environmental stewardship (Elkington, 1997).

Kaplan and Norton (1996) elucidate the essence of Organizational Investment Decisions, sheddinglight on decisions that encompass the strategic allocation of resources, spanning the realms of finance and human capital, directed towards initiatives and projects that hold the promise of yielding future benefits while meticulously aligning with the overarching goals and values of the organization. It is within this arena that the nexus between investment choices and environmentalconscientiousness comes to the forefront, with a discernible focus on projects that bear the imprintsof sustainability.

Barney (1991) emphasizes the strategic significance of approaching Organizational Investment Decisions through the lens of the Resource-Based View. Within this framework, these decisions are envisaged as the optimal allocation of the organization's precious resources, encompassing financial assets and human talent, to exploit emerging opportunities and craft a distinct competitiveadvantage. Two broad categories surface within this framework - transformative decisions that signify the initiation of novel projects or innovative endeavors, and formative decisions that pivot on enhancing and refining existing capabilities and operational processes (Teece, 2007).

However, the prevailing model, as posited by Jensen and Meckling (1976), has been critiqued

forits myopic nature, primarily revolving around the prism of economic viability. Often, it tends to overlook the multifaceted dimensions of Organizational Investment Decisions, especially their far-reaching environmental and social implications. This critique resonates with the insights shared by Senge (1990), who underscores the indispensable need for a system thinking approach, one that accentuates the intricate interconnectedness of various organizational facets and their intricate dance with the environment.

From a theoretical vantage point, Simon (1955) propounded the concept of bounded rationality asan integral element of Organizational Investment Decisions. Within the confines of this framework, decisions are forged within the limitations posed by the available information and thecognitive boundaries of decision-makers. This dimension ushers in the critical aspect of decision-making biases and heuristics that cast their influence on the evaluation and ultimate selection of investment opportunities (Kahneman & Tversky, 1979).

In essence, this perspective acknowledges the human element in the decision-making process, recognizing that choices are not made in a vacuum but rather in a complex web of information, limitations, and cognitive shortcuts. It underscores the importance of understanding these cognitiveprocesses as they bear direct relevance to the choices organizations make regarding investments, particularly in the realm of Green HRM practices where environmental and sustainability factors hold substantial weight.

In conclusion, Organizational Investment Decisions are the linchpin of business strategy, guidingresource allocation for long-term sustainability. Understanding these decisions in the context of Green HRM practices is pivotal. These decisions involve resource allocation for projects aligned with values and sustainability. Approaching them through Resource-Based View underscores theirstrategic nature. The prevailing model is critiqued for its economic focus, prompting a call for a system thinking approach. Lastly, the theoretical lens of bounded rationality highlights the humanelement and cognitive biases in investment choices, especially relevant in the context of Green HRM practices.

Employee Green Behavior within Organizational Investment Decisions

The realm of organizational ecological stewardship finds its roots deeply intertwined with the conscientious behaviors of employees. According to Robbins and Judge (2017), such behaviors, often transcending the confines of prescribed organizational roles, are nothing short of paramountwhen it comes to realizing and sustaining ecological sustainability within an organizational context. Ones and Dilchert (2012) aptly term these behaviors as "Employee

Green Behaviors," which serve as the bedrock upon which an organization's ecological footprint is fortified and builtupon.

In this intricate tapestry, Bandura (1986) stands as a guiding light, emphasizing that while the predictors of regular job performance are predominantly cognitive in nature, green behaviors are more intricately contingent upon individual environmental values and conscientiousness. This aligns seamlessly with the theoretical underpinnings advanced by Ajzen (1991), which illuminatethe substantial linkage between individual pro-environmental attitudes and the subsequent manifestation of environmentally responsible behaviors. According to Deci and Ryan (2000), thereis an intrinsic correlation between heightened environmental consciousness and the tangible manifestation of green behaviors. Individuals who possess an elevated environmental consciousness are presumed to inherently harbor a propensity for environmental conservation, consequently exhibiting higher levels of green behaviors.

These environmentally conscious behaviors, as artfully elucidated by Robbins and Judge (2017), assume paramount importance for organizational leaders. They act as linchpins that fortify an organization's ecological resilience and resource conservation, subsequently ushering in enhancedorganizational efficacy. This perspective dovetails with Adams's Equity Theory (1963), which postulates that employees tend to evaluate and respond to their perception of fairness in the contextof organizational environmental efforts.

Solomon (2014) provides further insight, suggesting that individuals who perceive a balance in value exchange tend to exhibit more pro-social behaviors. Transposing this concept into an organizational context implies that employees are likely to display heightened green behaviors inresponse to a perceived equilibrium in environmental efforts extended by the organization. This equilibrium is intricately tied to the satisfaction and intrinsic motivation of employees, serving asthe driving force behind their engagement in environmental conservation efforts.

Analogously, the realm of green behaviors finds kinship with Pro-Environmental Behavior, as posited by Ones and Dilchert (2012), asserting that employees are inherently motivated to reciprocate environmental efforts initiated by their employers. This sense of reciprocity is profoundly shaped by the satisfaction levels and intrinsic motivation that employees experience when engaging in activities geared towards environmental conservation. It aligns seamlessly with

Fredrickson's (2001) postulation, suggesting that positive emotions hold the potential to foster pro-social gestures, including those that pertain to environmental conservation.

In essence, the collective body of scholarly work resoundingly underscores the symbiotic relationship that thrives between green behavior and the reciprocation of positive environmental efforts undertaken by organizations. This harmony necessitates a deeper and more nuanced exploration of green behavior from a psychological standpoint. Furthermore, the altruistic and pro-social behaviors discussed by Eisenberg et al. (2006) provide additional corroboration regarding the vital role played by intrinsic motivation in fostering environmental conservation. This alignment beautifully dovetails with the pro-environmental behaviors posited by Ones and Dilchert (2012), painting a comprehensive picture of the multifaceted interplay between individual psychology, organizational efforts, and green behavior.

Theoretical Foundation

This research builds upon a robust theoretical foundation drawn from established frameworks andconcepts in the fields of human resource management, environmental psychology, and organizational theory (Meyer & Allen, 1991; Bandura, 1977; Barney, 1991; Paillé et al., 2014; Deci & Ryan, 1985). The study explores the intricate relationships between Green HR practices, comprising the Programmatic Element, Behavioral Element, Outcome-Oriented Element, Educational and Training Element, and Reward and Recognition Element, as independent variables. These Green HR practices are posited as catalysts for driving sustainable organizational behaviors, with a particular focus on the mediating role of Employee Green Behavior, ultimately influencing Organizational Investment Decisions (Eisenberg et al., 2006; Eisenbeiss et al., 2008; Locke & Latham, 1990).

Social Cognitive Theory (Bandura, 1986) is employed to understand how Green HR practices, especially those falling within the Educational and Training Element, contribute to shaping employees' beliefs, self-efficacy, and behaviors concerning environmental sustainability (Bandura, 1986). This theory posits that individuals acquire knowledge and behavioral patterns through observation and learning from their environment. Within the context of this study, it aids in elucidating the mechanisms through which specific training initiatives foster eco-consciousness among employees, equipping them with the necessary skills and knowledge to engage in sustainable practices.

Theory of Planned Behavior (Ajzen, 1991) informs the investigation into how Green HR practices,particularly those categorized under the Behavioral Element, influence employees' attitudes, subjective norms, and perceived behavioral control regarding pro-environmental

behaviors (Ajzen, 1991). This theory underscores the significance of understanding employees' intentions and motivations to engage in green actions. It provides a lens through which the study examines the alignment between organizational practices and employees' intent to contribute to sustainability.

Self-Determination Theory (Deci & Ryan, 2000) guides the exploration of how Green HR practices, including the Reward and Recognition Element, impact employees' intrinsic motivationand engagement in pro-environmental actions (Deci & Ryan, 2000). This theory posits that individuals are more likely to sustain behaviors when they feel a sense of autonomy, competence,and relatedness. In the context of this research, it sheds light on how recognition and rewards for environmentally responsible behaviors foster a sense of autonomy and competence among employees, thereby promoting their sustained engagement in green initiatives.

Institutional Theory (DiMaggio & Powell, 1983) serves as a foundational lens for analyzing howorganizations' adoption of Green HR practices, encompassing the Programmatic Element and Outcome-Oriented Element, reflects their commitment to environmental sustainability (DiMaggio& Powell, 1983). It underscores the role of institutional pressures and norms in shaping organizations' responses to environmental concerns. In this study, it aids in understanding how these practices become institutionalized within the organizational culture, driving sustainable behaviors and decisions.

Resource-Based View (Barney, 1991) informs the examination of Green HR practices as valuableand rare resources that can contribute to a sustained competitive advantage (Barney, 1991). This theory posits that firms with unique, valuable resources are better positioned for competitive success. Within the context of this research, it illuminates how Green HR practices may serve as distinctive resources that influence Employee Green Behavior, subsequently impactingOrganizational Investment Decisions in ways that enhance ecological sustainability.

Stakeholder Theory (Freeman, 1984) provides a theoretical lens for analyzing how Green HR practices respond to the demands of various stakeholders concerned with sustainability (Freeman,1984). This theory emphasizes the importance of considering the interests of multiple stakeholders,not solely financial shareholders. In this study, it informs the exploration of how Green HR practices, by fostering Employee Green Behavior, contribute to Organizational Investment Decisions that align with the broader stakeholder interests related to environmental

responsibility.

Social Information Processing Theory (Salancik & Pfeffer, 1978) guides the investigation into how Green HR practices, especially within the Behavioral Element, shape employees' perceptions and interpretations of their organizational environment (Salancik & Pfeffer, 1978). This theory posits that individuals process information from their surroundings to form judgments and behaviors. In the context of this research, it aids in understanding how Green HR practices influence employees' perceptions of the organization's commitment to sustainability, subsequently influencing their green behaviors and, in turn, Organizational Investment Decisions.

Pro-environmental Behavior Models provide a specialized framework for understanding and predicting pro-environmental behaviors (Stern, 2000). These models offer insights into how Green HR practices may shape employee green behavior, which, in turn, affects organisational investment decisions that prioritize sustainability. They help in assessing the specific mechanisms and drivers behind employees' eco-conscious actions within the organizational context.

This theoretical foundation establishes the framework for comprehensively examining the intricate relationships between Green HR practices, Employee Green Behavior, and Organizational Investment Decisions, providing a structured and holistic approach to investigating the multifaceted interplay within organizations (Ajzen, 1991; Bandura, 1986; Barney, 1991; Deci & Ryan, 2000; DiMaggio & Powell, 1983; Eisenbeiss, Knippenberg, & Boerner, 2008; Freeman, 1984; Locke & Latham, 1990; Meyer & Allen, 1991; Paillé et al., 2014; Salancik & Pfeffer, 1978; Stern, 2000). It underlines the significance of a thorough understanding of these theoretical underpinnings in advancing research on the integration of sustainability principles within HR practices and investment decision-making processes.

Proposed Conceptual Model

In the current paradigm, the intricate tapestry of Green Human Resource (Green HRM) practices is seamlessly woven into multifaceted dimensions, with its threads intricately entwined around the core concepts of employee ecological conduct and the strategic choices organizations make regarding their investments. Academia has been diligently crafting the framework around Green HRM practices for decades, with a particular focus on understanding the transformative journey of behavioral competencies. These competencies are intricately shaped by the profound ecological consciousness that emanates from the intrinsic

ethos of individuals (Bansal & Song, 2017).

Bansal and Song (2017) have contributed to this multidimensional construct that extends its rootsinto the pivotal interplay between employee environmental behavior and the momentous decisionsorganizations make concerning their investments. It is at this intersection, where ecology and organizational strategy converge, that scholarly attention has flourished. Researchers emphasize the imperative to dissect the intricate patterns of green behavior and fathom their subsequent rippleeffect on the investment ecosystem (Wang & Sarkis, 2013).

Wang and Sarkis (2013) propose a model that presents the proposition of a meticulous examinationof Green HRM practices, particularly in terms of how they sculpt and exert influence over the organizational investment landscape. It delves deeply into the profound impact these practices wield over environmental behaviors. Studies conducted by Smith and Turner (2015) serve as a testament to the fact that the organizational embodiment of environmental values can indeed wield a significant influence on the trajectories of investments, molding them into more sustainable andecologically responsible pathways.

Figure 1: Proposed Conceptual Model
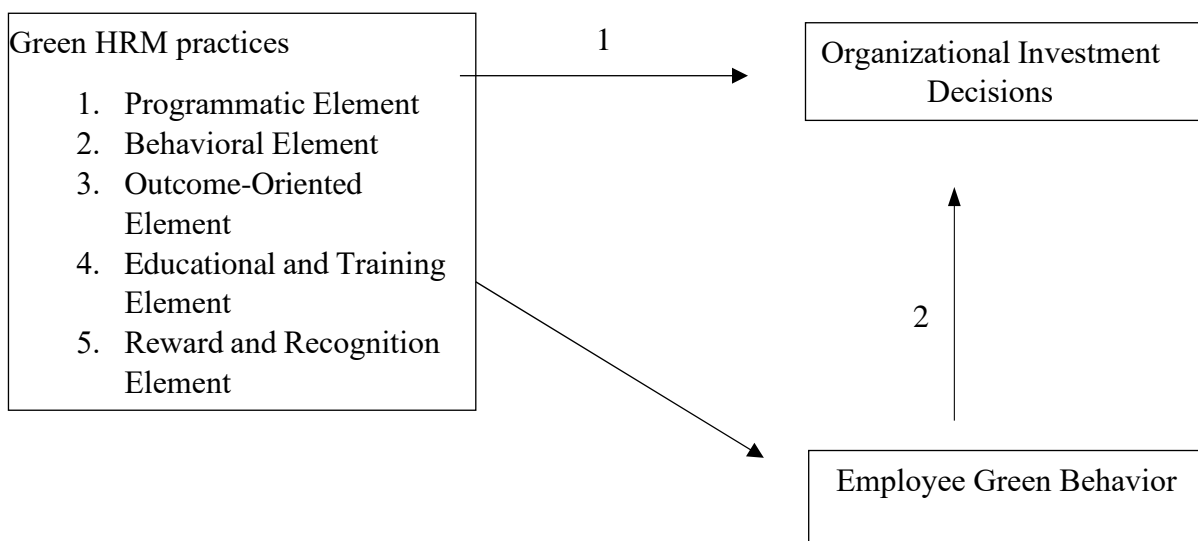
source: Developed by researchers

Proposition 1: Relationship Between Green HR Practices and Organizational Investment Decisions:

The framework of Green HRM practices, encompassing the Programmatic Element, Behavioral Element, Outcome-Oriented Element, Educational and Training Element, and Reward and Recognition Element, bears the remarkable potential to usher in a profound

transformation within the organizational landscape, particularly in the realm of investment decision-making processes. This proposition posits that organizations that have firmly entrenched Green HRM practices within their ethos are inherently predisposed to make investment decisions that ardently support ecological sustainability and environmental conservation (Renwick et al., 2013). It beckons us to embark on a journey of exploration, one that seeks to unravel the correlation between the seamless integration of Green HRM practices, including all these elements, and the elevation of sustainability within the contours of organizational investment approaches.

Proposition 2: Relationship Between Employee Green Behavior and Organizational Investment Decisions:

Within the complex tapestry of organizational investment decisions, the behaviors of employees, influenced by the Behavioral Element of Green HR practices, assume a pivotal role in shaping the strategic alignment of these decisions with the overarching goals of environmental sustainability. In this context, organizations that are home to employees exhibiting a high degree of eco-friendly behaviors are poised to showcase a preferential inclination towards making sustainable investment decisions (Paillé et al., 2014). Investigating this profound relationship becomes an intellectual odyssey, one that promises to unravel the intricate mechanisms through which individual ecological consciousness, fostered by Green HR practices encompassing the Behavioral Element, exerts its influence, sculpting the strategic financial choices of an organization.

Proposition 3: Mediating Role of Employee Green Behavior Between Green HR Practices and Organizational Investment Decisions:

Programmatic Element, Behavioral Element, Outcome-Oriented Element, Educational and Training Element, and Reward and Recognition Element, and organizational investment decisions lies the mediating force of employee green behavior. It serves as the pivotal conduit, the bridge that connects eco-friendly human resource strategies with the tapestry of sustainable investment choices (O'Donohue & Torugsa, 2016). Delving into this mediation becomes an intellectual pursuit of immense significance, one that holds the promise of elucidating the intricate mechanisms through which Green HRM practices cascade their influence onto the realm of organizational investment decisions. It underscores the profound significance of fostering pro-environmental behaviors among employees as a transformative force within organizations.

In essence, these three propositions converge to underscore the intricate dance between Green HRM practices, including all the aforementioned elements, employee green behavior, and organizational investment decisions. The first proposition illuminates the transformative potentialinherent in the seamless integration of comprehensive Green HRM practices within an organization's ethos, pointing toward a future where ecological sustainability and environmental conservation are intrinsic to investment decisions. The second proposition unravels the pivotal roleplayed by employees' eco-friendly behaviors, positioning them as instrumental influencers in shaping investment choices favoring sustainability. Finally, the third proposition introduces the vital mediating role of employee green behavior, acting as the bridge that facilitates the translationof eco-conscious HR strategies encompassing all elements into tangible, sustainable investment decisions. Together, these propositions encapsulate the multifaceted interplay within organizations, emphasizing the need for a holistic approach that fosters pro-environmental behaviors among employees as a transformative force that transcends conventional boundaries.

CONCLUSION: FUTURE PROJECTIONS AND CONCEPTUAL INSIGHTS

The exploration into the realm of Green HRM practices and their profound impact on organizational investment decisions represents an ever-evolving paradigm that intertwines intricately with environmental consciousness and the pursuit of sustainable organizational initiatives. At the heart of this dialogue lies the manifestation of green behaviors among employees, a pivotal nexus that meticulously shapes the alignment between the noble aspirations of Green HRM endeavors and the strategic investment resolutions meticulously crafted within the organizational sphere.

Comprehending the symbiotic relationship that thrives between Green HRM practices and the realm of organizational investment is a journey that necessitates continual scholarly exploration. It must adapt and evolve in harmony with the dynamic landscapes of corporate sustainability and the intricate tapestry of employee behaviors. The universal recognition of the transformative potential held by Green HRM practices in nurturing an organizational culture deeply rooted in sustainability is undeniable. Nonetheless, the myriad of intricate factors that orchestrate this delicate relationship beckons us to maintain an unwavering commitment to ongoing investigationand the continuous refinement of our comprehension.

At the epicenter of this multifaceted discussion stands employee green behavior, with its

inherentdiversity and nuanced variability. This facet of the conversation wields substantial influence, bothdirectly and indirectly, over organizational decision-making processes. Owing to the prevailing gaps in our comprehension of the intricate nuances that define eco-friendly behaviors, persistent endeavors are indispensable. They are essential to unravel the intricate web that binds such behaviors to the realm of Green HRM practices and, in turn, to the profound strategies organizations employ in their investment decisions.

This conceptual framework aspires to peel back the layers of complexity enveloping Green HRM practices and their far-reaching implications on the domain of organizational investment. It casts a spotlight on the pivotal mediating role of employee green behavior within this intricate relationship. This endeavor assumes particular pertinence in the present era, where the imperativesof environmental conservation are inexorably woven into the fabric of organizational ethos and actions.

Our expedition into this subject matter exposes the chasms that exist within the current body of knowledge, both theoretical and practical. Theoretical discrepancies emerge from the myriad interpretations and implementations of Green HRM, and the multifaceted perceptions surroundingits ramifications on organizational strategy and investments. In stark contrast, practical gaps stemfrom the perennial chasm between the anticipated and actualized behaviors of employees and theactions undertaken by organizations in pursuit of sustainability.

Stagnation in our understanding and application of Green HRM practices could potentially stifle progress in organizational sustainability and responsible investment strategies. Thus, the insights derived from this framework emerge as harbingers of innovation, heralding the advent of new empirical validations across diverse organizational contexts, spanning the local and global spectra.These insights enrich the existing tapestry of knowledge and set the stage for future scholarly endeavors.

Furthermore, the conceptual framework's insights serve as catalysts for the development of more intricate and nuanced understandings of the complex relationship that binds Green HRM practices,employee green behaviors, and organizational investment decisions. This holistic approach pavesthe way for the formulation of comprehensive and pragmatic models, adept at addressing the multifaceted nature of organizational sustainability as we navigate the unfolding chapters of the future.

In summation, this exploration extends a warm invitation to scholars and practitioners alike, urgingthem to embark on a journey of profound understanding regarding the intricacies of

Green HRM practices and their far-reaching implications on organizational investment decisions. It underscoresthe integral role played by employee green behaviors in shaping and defining the trajectory of organizational sustainability and the contours of responsible investment strategies in the future.

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How do E-HRM Practices Affect Environmental Performance? The Role of E-HRM Performance and Job Satisfaction

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ABSTRACT

This study aims to examine the relationships among e-HRM, e-HRM performance, job satisfaction, and environmental performance by employing data collected from 176 employees of five selected commercial banks operating in the Batticaloa district of Sri Lanka. In addition, the study investigates the mediating effects of e-HRM performance and job satisfaction on the relationship between e-HRM and environmental performance. The data analysis using structural equation modeling revealed positive and statistically significant relationships between the four study variables. In addition, the study found that e-HRM performance and job satisfaction partially mediate the relationship between e-HRM and environmental performance. The main contribution of this study is to reveal how e-HRM influences environmental performance in the context of the Sri Lankan banking sector.

Keywords: e-HRM; employee satisfaction, environmental performance, Sri Lanka

INTRODUCTION

Organizations are currently concentrating more on the adaptation of information technology (IT) in various organizational functions to accomplish substantial organizational advancements. Snell, Stueber and Lepak (2002) pointed out that IT could reduce administrative costs, increase productivity, reduce response times, improve decision-making and improve customer service, which are essential to achieving organizational strategic goals. Human Resource Management (HRM) is seen as a crucial strategic partner for implementing organizational strategies that give organizations a significant advantage in a highly competitive business environment (Opatha, 2019). Information and Communication Technologies (ICT) advancement, coupled with an ever-increasing demand for HRM functions to be more efficient, effective, and capable of supporting the strategic goals of every business function, has led to the adoption of electronic human resource management (e-HRM) (Wahyudi and Park, 2014). Lately, e-HRM has been defined as a "set of 'configurations of computer hardware, software and electronic networking resources that enable intended or actual HRM activities (e.g. policies, practices and services) through coordinating and controlling individual and group-level data capture and information creation and communication within and across

organizational boundaries" (Marler and Parry, 2015, p. 2). Organisations invest in e-HRM by buying into its potential of strategically transforming the HR function to support to the achievement of organizational goals and objectives (Iyer, 2019). Bondarouk and Ruel (2009) found that there are essentially three goals related to the adaptation of e-HRM in an organizational context namely (1) reducing costs, (2) improving HR services and (3) improving HR strategic orientation. Due to these benefits, contemporary organizations are intending to adopt the e-HRM to enhance the strategic contributions of HRM in organizational development.

In Sri Lankan context, the banking sector is of paramount importance to ensure the economic development of the nation (Central bank report, 2021). Especially, banks play an essential role in the financial system since they provide liquidity to the entire economy while also modifying the risk characteristics of assets (Wijesinghe and Pallearachchi, 2022). The banking industry is expected to become more digital in the future. In this respect, almost all Sri Lankan banks are moving from conventional banks to online banks due to the rapid development of information technology. In this context, the Sri Lankan banking sector has incorporated e-HRM as one of the digital initiatives to manage their human resources effectively and efficiently (Pratheepan and Arulrajah, 2012) which ultimately yields the benefit of banking productivity and performance.

Shaumya and Arulrajah (2018) conducted a study to find out the relationship between e-HRM and environmental performance in Sri Lankan banks. The findings of the study revealed that e-HRM practices which are incorporated in Sri Lankan banks can improve the environmental performance of banks. Bag et al. (2021) revealed that e-HRM systems improve the firm performance, especially from the cost efficiency and customer satisfaction perspective. A study conducted by Marler and Fisher (2010) suggested that e-HRM investments help to reduce costs by restructuring HRM operations, advancing efficiency by improving the quality of HRM services and transforming HRM functions into a strategic business partner. In their study, Ruel and Kapp (2012) pointed out that e-HRM contributes to improving organizational effectiveness and efficiency. Parry (2012) conducted a large-scale survey across 12 countries and revealed that e-HRM can transform HRM from transactional work to more strategic and value-added activities. Strohmeier (2009) suggested that the application of e-HRM can produce diverse positive consequences for organizational development such as reducing costs, speeding up processes, improving quality, and even gaining a more strategic role for HR within the

organisation. Empirical findings of Bondarouk and Ruel (2009) proved a positive relationship between e-HRM applications and the perceived effectiveness of HRM. Roehling et al. (2005) stated that e-HRM facilitates employees to access everything they need to change and manage their personal files, plan their development, process financial documents and apply for new jobs. A recent study conducted by Alshibly and Alzubi (2022) stated that e-HRM practices contributed to improving the job satisfaction of employees during the covid-19 period by allowing them to remote e-working.

According to the above recent e-HRM research findings, e-HRM has a positive relationship between e-HRM performance, job satisfaction and environmental performance. In this context, a number of studies revealed the relationship between e-HRM and e-HRM performance (eg., Bondarouk et al., 2009) Parry, 2011; Lin 2011; Bag et al., 2021). However, only a few existing studies revealed the relationship between e-HRM and job satisfaction (eg., Iqbal et al., 2017); e-HRM and environmental performance (eg., Shaumya and Arulrajah, 2018). However, most of the studies were carried out from the perspective of developed countries. Sri Lankan banks are focused on the widespread adoption of e-HRM probably based on expectations of positive consequences for e-HRM under their digitization agenda. However, only a few studies were conducted in the banking industry regarding e-HRM's positive consequences (eg., Pratheepan and Arulrajah, 2012; Shaumya and Arulrajah, 2018). From the researchers' point of view, there is an empirical gap and contextual gap exists regarding the relationships among the e-HRM, e-HRM performance, job satisfaction and environmental performance holistically. The existing literature on e-HRM mainly deals with the positive consequences of e-HRM rather than its relationship with job satisfaction and environmental performance. Bag et al (2021) suggested that future researchers need to conduct studies on how e-HRM systems can improve environmental performance. Myllymaki (2021) revealed that e-HRM contributions have not extended far beyond the frames characterising the general HRM research. Thus, this study focuses on the relationships among e-HRM, e-HRM performance, job satisfaction and environmental performance. In the existing literature, these relationships are not clearly explored and remained unclear. Therefore, this study fills these relationship gaps in the existing literature. Further, there is no empirical evidence concerning the mediating effect of e-HRM performance and job satisfaction on the relationship between e-HRM and environmental performance in the Sri Lankan context and perhaps the international contexts. So, this study may be considered a pioneering study in the realm of e-HRM in testing the mediating role of e-HRM performance and job satisfaction. The problem addressed for the study is: Are e-HRM,

e-HRM performance, job satisfaction and environmental performance positively related and the positive relationship between e-HRM and environmental performance mediated by e-HRM performance and job satisfaction?

Objectives of the Study

o To examine the relationship between e-HRM and selected variables namely e-HRM performance, job satisfaction and environmental performance.
o To test the mediating effect of e-HRM performance on the relationship between e-HRM and environmental performance
o To test the mediating effect of job satisfaction on the relationship between e-HRM and environmental performance

Conceptualization of Variables

E-HRM

The strategic contributions of HRM are being increased by contemporary organizations in an effort to boost their business performance. From this perspective, e-HRM may be seen as a substantial improvement in the field of human resource management with the potential to enhance HRM's strategic contribution. A review of the literature shows various definitions of EHRM as shown in Table 1.

Table 1: Definitions of E-HRM

Author	Definition
Ruel, Bondarouk and Looise (2004)	EHRM is defined as "a way of implementing HRM strategies, policies, and practices in organizations through the conscious and directed support of (and with the full use of) web technology-based channels".
Voermans and Veldhoven, (2007)	E-HRM is defined as "the administrative support of the human resource function in organizations by using Internet technology".

Strohmeier (2007)	E-HRM is defined as "an application of IT for both networking and support by at least two individual or collective actors in their shared performing of HRM activities".
Ruël, Bondarouk, and Van der Velde (2007)	E-HRM is defined as "a way of implementing HRM strategies, policies, and practices in organizations through a conscious and directed support of, and/or the full use of, web technology-based channels".
Bondarouk and Ruel (2009, p.507)	E-HRM is defined as "an umbrella term covering all possible integration mechanisms and contents between HRM and technologies aiming at creating value within and across organizations for targeted employees and management".

Many definitions of e-HRM exist based on the aforementioned literature. However, prior research in the area of e-HRM has largely cited the definition proposed by Bondarouk and Rul (2009, p. 507): an umbrella term covering all possible integration mechanisms and contents between HRM and technologies aiming at creating value within and across organizations for targeted employees and management. In light of this, researchers opted to use it as the working definition of e-HRM for this study.

Job Satisfaction

Numerous studies have been conducted on the concept of job satisfaction in relation to organizational behaviour and job design (Mustafa & Ali, 2019). Various researchers have provided definitions for job satisfaction. Luthans (1998) and Lim (2008) give a comprehensive definition of job satisfaction as a "pleasurable or positive emotional state resulting from the appraisal of one's job or job experience". According to Locke (1976), job satisfaction is referred to as "the employees' pleasant and positive emotional status which experiences toward the company and the job and is explained by a comparison between actual results and expected results". Job satisfaction refers to "how employees perceive their jobs" (McShane & Von Glinow, 2005). According to Hoboubi et al. (2017), job satisfaction relates to an employee having an effective direction towards their job/work. Using the aforementioned definitions as a basis, researchers defined job satisfaction as a favourable emotional state that results from an employee's perception of how their employer and job meet or exceed their expectations.

Employees will probably be satisfied when the actual results from the job or organization meet or beyond their expectations.

E-HRM Performance

E-HRM results in e-HRM performance. This study considered productivity and cost-efficiency as the e-HRM performance. Productivity is a rich blend of efficiency and effectiveness (Khan, 2003) and without it, there is no achievement of organisational goals (Ali et al., 2011). Productivity is defined as "an increase in output per unit of input employed". This means that for every input of labour, capital or management employed, an extra or additional output is achieved. It is ideal that every organization seeks to experience (Brooks and Fredrick, 2005). Cost efficiency refers to how a bank seeks to reduce input costs to the lowest level to provide customer service. In other words, banks need to adjust their service strategy by considering the price of inputs in order to cut costs. Therefore, cost efficiency is calculated based on the combination of input-oriented service efficiency and input–cost allocative efficiency (Nguyen and Pham, 2020).

Environmental Performance

Organizations are increasingly required to extend their effort to ensure environmental performance due to adverse environmental impacts including climate change, global warming, and others. Further, besides that, an increasing number of environmental laws and pressures from the external environment have raised organizations' awareness of environmental performance (DiPietro, Cao, & Partlow, 2013). As a result, Sri Lankan banks are still firmly dedicated to executing environmental management programs to maintain environmental sustainability in addition to their economic benefits (Jayaranthe et al., 2020). According to Judge and Douglas, (1998), environmental performance is defined as "organizations effectiveness in meeting and exceeding society's expectations in the concern over the natural environment". This study considered it as the working definition of the environmental performance of banks.

LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

E-HRM and Environmental Performance

Thevanes and Arulrajah (2017) identified e-HRM as one of the sustainable HRM practices that can equally contribute to an organisation's economic, social and environmental performance. E-HRM significantly contributes to reducing the organisation's carbon footprint by moving from a paper-based culture to an electronic-based culture (Thevanes and Arulrajah, 2017). According to Ahmad (2015), paperless work and energy conservation within the organization can be treated as the driving forces to improve the environmental performance of the organization. In this context, certain HRM activities such as paid-time accruals and balances, benefits participation and coverage, personal information, information about a job or the workplace, time sheets and work schedules, foreign transfers, payroll changes, and retirement plans are required a lot of paperwork (Iyer, 2019). Through the implementation of e-HRM, it is possible to reduce the paperwork associated with the aforementioned HR activities. According to Ibrahim and Yusoff (2015), e-HRM significantly contributed to improving the paper-less HRM capabilities among agencies through the electronic distribution of human resource policy manuals and circulars electronically. Further certain e-HRM practices, such as e-recruitment and e-selection, e-communication and e-training may be considered as environmentally friendly practices that can reduce organizations' carbon footprint by paving the way to reduce paper waste and energy conservation. In covid-19, e-HRM practices improve the effectiveness of remote electronic work by providing real-time information-based communication, interactive work environments, e- training, and e-performance assessments that can also benefit organizations in improving environmental performance by enabling organizations to save electricity, water, and paper use within the organizational contexts by allowing employees to work from home. The empirical findings of the study conducted by Shaumya and Arulrajah (2018) revealed that there is a positive and significant relationship exists between e-HRM practices and environmental performance in the banking context. E-HRM system relates itself to important societal, environmental and ethical considerations in organizations. Due to the implementation of e-HRM systems, the amount of paperwork required for HR activities has significantly decreased. Furthermore, e-communication and e-training, and e-knowledge management considerably reduce carbon emissions by minimizing transportation. Efforts towards implementing the e-HRM system is meaningless if there is no improvement in the environmental performance of organizations. Based on the above arguments this study proposes the first hypothesis as;

H$_1$: E-HRM is positively and significantly related to environmental performance

E-HRM Practices and E-HRM Performance

This study considered productivity and cost-efficiency as the dimensions of e-HRM performance. In this context, several studies stated that e-HRM practices enhance the productivity and cost-efficiency of organizations (eg., Chiarini, 2017; Guerci et al., 2019). According to Guerci et al. (2019) revealed that the implementation of an e-HRM system within the organization leads to the automation of HR activities which leads to cost control and enhances the sustainable efficiency of the organization. E-recruitment can reduce recruitment costs and provide more candidates with better recruitment processes (Marchington & Wilkinson, 2005). It is highly possible to reduce training costs and improve the productivity of employees through the implementation of e-HRM practices namely e-training and e-learning (Thevanes and Arulrajah, 2017). In addition, e-HRM may be utilized to offer the organization to provide accurate information which will be the base for decisions on how to effectively manage its employees (Parry, 2011). E-HRM improves the HRM strategic involvement in organizations by saving time by speeding up the operational HRM activities which deal with basic activities related to the administration of HR activities like payroll and personal data records of employees (Marler and Parry, 2016). Further researchers argue that e-HRM significantly contributes to improving labour productivity (Marler and Parry, 2016; Parry, 2011; Shrivastava and Shaw, 2003; Snell et al., 2002) which drives organizational productivity. The use of e-HRM as a more efficient way of performing administrative HRM tasks may lead to a need for lower numbers of HR staff as the technology can perform simple tasks quickly and accurately (Parry, 2011). In overall, e-HRM practices significantly contribute to decreased organizational costs, enhanced communication between managers and employees, improve HR strategic involvement, improve quality and shortened processing time for HR activities in organizations (Fındıkli and Bayarçelik, 2015; Strohmeier, 2009; Marler and Parry, 2016). Ultimately, e-HRM practices ensure the effective and efficient utilization of human resources which turn in enhances productivity and significantly reduces organizational costs. A study conducted by Bag et al. (2021) proves that ability-enhancing HRM practices, opportunity-enhancing e-HRM practices and motivation-enhancing e-HRM practices can improve the firm performance by controlling the cost and improving the net productivity of organizations. Ruel et al. (2006) found evidence that one of the main goals of e-HRM was to produce efficiency gains or cost reductions by reducing headcount and removing administration. Hence, the implementation of e-HRM practices results in better e-HRM performance. Accordingly, the second hypothesis of this study is formulated as:

H₂: E-HRM is positively and significantly related to e-HRM performance

E-HRM and Employee Satisfaction

Essentially, HRM practices must be improved in order to increase the job satisfaction of employees (Ashton, 2017). Furthermore, Chow et al. (2007) noted that the performance of HRM practices has a crucial impact on boosting the job satisfaction of employees. In this context, Wickramasinghe (2010) conducted a study on e-HRM in the Sri Lankan context and found that e-HRM implementation in an organization can be viewed as a form of innovation in HRM, which yields several benefits to the organizations and increases employees' job satisfaction. HR service quality is an important value-creating factor for employees which leads to improved job satisfaction of employees (Iqbal et al., 2017). In this sense, Bondarouk et al. (2017) stated that contemporary organizations use e-HRM to improve the quality of their HR services to employees. Providing employees with the ability to autonomously do HR-related tasks including checking their leave eligibility, submitting a leave request, and monitoring their payroll is a major component of e-HRM systems that have been shown to dramatically increase employees' job satisfaction in contemporary organizations. E-HRM systems create unique opportunities for employees to improve their competencies and attitudes to successfully perform their job roles through e-learning and e-training, as well as provide transparent performance management through e-performance management, thereby contributing to an increase in employee satisfaction. Further, Thevanes and Arulrajah (2017) stated that e-HRM contributes to improving the work-life balance of employees by allowing the employees get to attend training and meetings in their workplaces without travelling to the head offices through e-training and e-communication methods and thus contribute to job satisfaction of employees. Based on the above empirical findings, theoretical and logical arguments, researchers hypothesize that:

H₃: E-HRM is positively and significantly related to the job satisfaction of employees

E-HRM Performance and Environmental Performance

E-HRM performance is the result of e-HRM implementation within the organization. Adaptation of the e-HRM system contributes to fulfilling the economic, social, and technological environmental requirements of the organization (Margherita, 2021). Researchers argue that e-HRM improves labour productivity by improving the quality of HR services

(Parry, 2011; Snell et al., 2002). Further, Wickramasinghe (2010) pointed out that, the e-HRM system allows HR employees to reduce their time spent on manual clerical tasks. E-HRM leads to cost savings through certain ways such as reduction of HR headcount and reduce paper which is possible through the automated form of HR services (Garmendia et al., 2020). In general, traditional HRM activities such as recruitment, selection, training, compensation, performance management and health and safety are done by using the paper-based approach. E-HRM has transformed activities traditional methods of activities into automated services which leads to improving profitability by reducing costs and improving the productivity of organizations (Lin, 2011; Kim et al., 2020) as well as these e-HRM practices may be considered eco-innovation in HRM as it significantly eliminates paper usage and energy conservation (Stone and Dulebohn, 2013). As HR services are fully done electronically it significantly contributes to creating a paperless culture within the organization. In addition, organizations can reduce the HR head counts which paves the way to improve environmental performance by reducing water, electricity, and paper usage. E-HRM practices such as e-communication, e-training, e-learning and etc significantly contribute to reducing costs by reducing stationery costs and transportation costs and other administrative costs. On the other hand, reducing transportation and paper usage are the indicators to reduce the carbon footprint of organizations. Thus, researchers postulate the following hypothesis in light of the aforementioned empirical results and theoretical and logical arguments.

H₄: E-HRM performance is positively and significantly related to the environmental performance

Job Satisfaction and Environmental Performance

According to Wehrmeyer (1996), 'if a company is to adopt an environmentally-aware approach to its activities, the employees are the key to its success or failure'. In other words, employees' active participation and commitment are essential components to reaching the environmental goals of an organization. In this context, Opatha (2009) pointed out that the generic purpose of HRM is to generate and retain an appropriate and well-satisfied workforce, which gives the maximum individual contribution to organizational success. According to the above statement, it is possible to reveal that the job satisfaction of employees is a driving force to accelerate the environmental performance of organizations. A study conducted by Daddi et al. (2019) proves that job satisfaction of managerial employees positively impacts environmental performance including eco-innovation implementation. In general, satisfied employees are always willing

to extend more organizational citizenship behaviour for the environment which significantly contributes to enhancing the environmental performance of the organization. Thus, we hypothesize that,

H₅: Job satisfaction is positively and significantly related to the environmental performance of the organization.

The linkage between e-HRM practices and Environmental Performance through e-HRM performance

E-HRM performance is the end outcome of e-HRM. In this context, several researchers pointed out that e-HRM practices contribute to enhancing the productivity and cost-efficiency of organizations (eg., Lin, 2011; Kim et al., 2020). By reducing employee travel and transportation, many e-HRM activities, including e-recruitment and selection, e-communication, e-training, and development, contribute to a lower carbon footprint. For instance, e-recruitment enables the data storage of several curriculum viate (s) and allows the process to be location-independent (Tong, 2009). Based on the aforementioned literature, e-HRM systems can be viewed as innovative HRM approaches that help modern organizations become more productive and cost-effective by providing the option to perform HRM tasks and responsibilities electronically, as opposed to manually, which requires a great deal of paper and energy. Thus, it is possible to conclude that, e-HRM practices contribute to e-HRM performance (cost-efficiency and productivity) which paves the way to better environmental performance by creating a paperless and energy-efficient culture within the organization. Thus, we hypothesize that;

H₆: E-HRM significantly mediates the relationship between e-HRM practices and environmental performance.

The Linkage between E-HRM and Environmental Performance through Job Satisfaction

Based on the research references above, it is possible to conclude that e-HRM practices enable improving the environmental performance of organizations by applying paperless and energy-conserving HRM. According to Harvey (2010), employees' involvement and active participation in environmental performance programmes are crucial. In this context, Kirk (1998) pointed out that organizations require satisfied employees to actively participate and be involved in the environmental initiatives of the organization. Further, researchers contend that e-HRM practices can be treated as the

driving force to accelerate the job satisfaction of employees (Wickramasinghe, 2010). Thus, organizations may uplift the job satisfaction of employees via the adaptation of e-HRM practices which pave the way to improve the environmental performance of the organization. This logical belief was directed to formulate the sixth hypothesis of this study.

H7: Job satisfaction significantly mediates the relationship between e-HRM practices and environmental performance
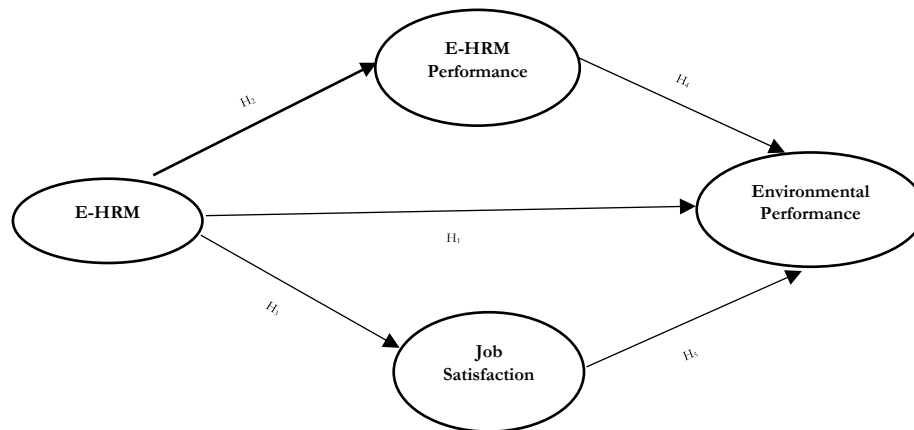
Figure 1: Theoretical Framework

Underpinning Theories
Institutional Theory

According to institutional theory, organizational actions are influenced by external forces. According to institutional theorists, organizations must adapt to and be compatible with the local institutional context to obtain legitimacy and ensure their survival (DiMaggio and Powell 1983). In this context, institutional actors (eg., government, environmentally conscious customers, community and environmental target groups and industry associations) pressured organisations to be concerned about the environment (Delmas & Toffel 2004). Thus, organizations are under pressure to adopt the e-HRM system, which is considered the significant driving force to accelerate the environmental sustainability of organizations.

Stakeholder Theory

Stakeholder theory is originally developed by Edward Freeman (1984). According to the stakeholder theory, the survival and success of an organisation depend on its ability to generate

satisfaction for all its stakeholders, not just shareholders (Clarkson, 1988). Kolk and Pinske (2006, p.60), proposed that stakeholders are 'any group or individual who can affect or is affected by the achievement of a corporation's purpose'. The main stakeholder groups include shareholders, employees, customers, the local community and the environment (Lepoutre and Heene 2006). At this juncture, through the implementation of e-HRM, an organization can satisfy the employees (via improving the quality of HR services), customers (e-HRM leads to job satisfaction which in turn leads to customer satisfaction), shareholders (e-HRM leads to profitability through enhancement of productivity and cost-efficiency), and local community (through reducing the carbon footprint of organization).

System Theory

The general system theory developed originally by Bertalanffy that explains how something can be materialized through taking inputs, processing and giving outputs. The system theory is useful in providing a framework in which one study complex variables that influence one another. Therefore, researchers developed the conceptual framework by adapting the open system model of system theory. This theory provides strong support for the framework given in Figure 1: Based on the systematic perspective, improving e-HRM performance and job satisfaction of employees through e-HRM practices is considered as the input of the system, enhancement of e-HRM performance and job satisfaction treated as the processing part of the system and finally environmental performance considered as the output of the system.

METHODOLOGY

Participants and Procedure

Due to increasing competition in the banking sector and the speedy development of information and communication technologies, digital banking is expanding at a quicker rate (Jeyasekara, 2021). Undoubtedly, digital banking is the way of the future in Sri Lanka. Yet, the pandemic has helped to accelerate this transformation even further. In this context, Sri Lankan banks focus more on the adaptation of digital HRM known as e-HRM to perform HR activities efficiently and effectively under the umbrella of digital banking. Thus, the sample for the study was selected from the banks that use e-HRM systems. The researchers chose five commercial banks based on their e-HRM system implementation, as announced on their websites and annual reports. The purpose of this study is to examine the proposed conceptual model on

employees who have the knowledge, experience and familiarity with e-HRM systems. Thus, a quantitative research method with stratified random sampling was used to deliberately reach participants working at five commercial banks operating in the Batticaloa district of Sri Lanka. The total population for the study was about 442 employees from banks operating in the Batticaloa district of Sri Lanka. There were 210 questionnaires delivered to the banks' employees based on a stratified random sampling method. However, only 176 employees responded to the questionnaire, yielding a response rate of 83.81%. Participants' demographic attributes are shown in Table 2.

Table 2: Participants' Demographic Attributes

		Frequency (N=176)	%
Age	18-28 years	88	50
	29-38	73	41.5
	39-48	13	7.4
	Above 49 years	2	1.1
Gender	Male	102	58
	Female	74	42
Educational level	Advance Level	118	67
	Graduate	48	27.3
	Postgraduate	10	5.7
Working Experience	02 year and below	32	18.2
	3-5 years	50	28.4
	6-8 years	46	26.1
	Above 8 years	48	27.3

Instruments

Unless otherwise stipulated, a five-point Likert scale (1= 'strongly disagree', 5 = 'strongly agree') was utilized to solicit participants' responses. E-HRM was measured through an eighteen-item scale from Pratheepan and Arulrajah (2012) and Hooi (2006). A six-item scale adapted from Adli, Gharib, Hakami and Pourmahdi (2014) was utilized to assess job satisfaction. E-HRM performance was measured through a ten-item scale, which was the

adaptation of Adli, Gharib, Hakami and Pourmahdi (2014). Environmental performance was estimated via Bangwal, Tiwari and Chamola (2017) five-item scale.

Analytical procedures

Structural Equation Modeling (SEM) was used to analyze the quantitative data because it allows for the estimate of complicated relationships, especially when there is a mediating impact (Hair et al., 2006). This technique is appropriate here because multiple relationships between latent constructs measured on multiple survey items are tested simultaneously, which enhances the strength of the test over a conventional regression method (Miller and Tsang 2011).

Anderson and Gerbing's (1988) comprehensive two-stage SEM analytical procedure was followed in the data analysis, using the AMOS 23 software to test the structural equation model. The first stage was a confirmatory factor analysis of the measurement model. This process assesses the discriminant validity of the measurement model as well as potential common method bias (CMB). The second stage estimated structural models for hypotheses testing. Hypotheses were tested in sequential steps. The main effect hypotheses (H_1 to H_5) were tested in a baseline structural equation model. The mediation effects of e-HRM performance (H6) and job satisfaction (H7) were tested by adding latent variable interactions to the baseline model.

RESULTS

Measurement and Model Tests

Table 3: Measurement items and loadings

Constructs and Measurement Items	Cronbach's alpha value	*Standardized Loadings*
E-HRM practices (recruitment and selection+ employee data and pay management+ performance management+ Training and Development + Communication + knowledge management + operational and other HRM activities) (CR: 0.78, AVE:0.58)	*0.886*	
Recruitment & Selection		
My bank posts a "hiring needs" list on its website.		*0.73*

My bank always uses a recruiting website/job board to identify potential job candidates.		*0.76*
In my bank, the candidates can apply for job vacancies by using online recruitment (e-mail) based system.		*0.66*
Employee Data and Pay Management		
My bank uses web based employee record keeping system (having all personal file in digital form) to facilitate employee		*0.80*
My bank uses electronic/computer-based payroll system (salary, overtime, claims and other benefits).		*0.83*
In my bank, the employee can apply for loan through online.		*0.61*
Performance Management		
My bank uses on-line/web based performance evaluation system.		*0.73*
In my bank, most of the data about employees' performance is stored in a computer that can be retried later on when evaluating employees		*0.72*
Training and Development		
In my bank, the employees can access e-learning facilities		*0.84*
In my bank, the employee can participate in e-conference training (especially employees in outstation branches).		*0.68*
Communication		
In my bank, the employees can suggest their progressive ideas through online.		*0.80*
In my bank, the employees can use intranet facilities/system to information exchange and day to day speedy communication with management.		*0.81*
My bank uses various electronic communication channels (e-newsletter, e-magazine and etc.).		*0.81*
Knowledge Management		
My bank uses the internet/web based system that facilities knowledge sharing and knowledge management		*0.74*
My bank uses online solution program to discuss day to day challenges (help desk		*0.79*

Operational and Other HRM Activities		
In my bank, the employees can apply for leave through online.		*0.65*
In my bank, the employee can request for transfer through online		*0.78*
In my bank, the employees can use on-line/web based promotion		*0.77*
Job satisfaction(CR: 0.89, AVE: 0.45)	*0.829*	
E-HRM tools provide current information that is beneficial to employee related decision making.		*0.65*
E-HRM tools are essential to the role of HR practitioners becoming more strategic.		*0.71*
Fewer errors occur when employee use e-HRM tools.		*0.56*
HR professionals, with the help of e-HRM tools, can play more of an advisory role to line management.		*0.72*
E-HRM information and decision-making tools promote my ability to make decisions.		*0.70*
The use of e-HRM tools has led to the automation of routine HR works.		*0.70*
E-HRM Performance (Productivity + Cost Efficiency) (CR: 0.86, AVE: 0.40)	*0.845*	
Productivity		
E-HRM tools can be used to improve underlying business processes.		*0.72*
E-HRM tools have allowed for higher quality HR services.		*0.66*
E-HRM tools allow me to work more productively.		*0.65*
E-HRM tools improve quality of services.		*0.65*
HR services have been streamlined and standardized using information technology.		*0.59*
Cost Efficiency		
E-HRM activities reduce cost spent on transactional tasks.		*0.62*
E-HRM tools allow me to work more cost efficiently.		*0.59*
The use of e-HRM tools is more cost effective than traditional, manual HR practices.		*0.65*

Less staff members are required when using e-HRM tools.		*0.75*
The advantages of e-HRM are more than its cost.		*0.72*
Environmental Performance (CR: 0.87, AVE: 0.43)	*0.753*	
E-HRM significantly reduce the usage of paper and other materials (or those that cause degradation) on the environment.		*0.62*
E-HRM discourages the internal and external resource wastages.		*0.59*
E-HRM significantly reduces the environmental problems through best HR practices.		*0.65*
E-HRM directly or indirectly reduces input resource consumptions.		*0.75*
E-HRM makes my work environment more comfortable.		*0.72*
Full model fit index *CMIN/df = 1.450; CFI = 0.90; TLI = 0.884; IFI =0.90;* *RMSEA:0.051*		
Note: *An item of operational and other HRM activities was deleted as it standardized factor loading below than threshold level (<0.5)*		

To assess the measurement model, all constructs were subjected to confirmatory factor analysis (CFA) (maximum likelihood estimation) using AMOS 23.0. Accordingly, five clusters of fit indices were examined to decide on the goodness-of-fit for the current dataset. A value less than 5 for the relative chi-square (CMIN/df) indicates a good model fit (Schumacker and Lomax 2004). For the "incremental fit index" (IFI) and "comparative fit index" (CFI), values greater than 0.90 reflect a good fit (Bentler 1990). The "root mean square error of approximation" (RMSEA) with a value less than 0.08 represents a considerable model fit (Marsh, Hau, and Wen 2004). Finally, the "Tucker–Lewis index" (TLI) with a value close to 1 reflects a good fit (Bentler 1990). The resulting fit statistics were all above the minimum acceptable level. Chi-square/degree of freedom (CMIN/df) =1.450; comparative fit index (CFI) = 0.90; incremental fit index (IFI) = 0.90; root mean square of error of index (RMSEA) = 0.051; and Tucker–Lewis index (TLI) = 0.884. All the factor loadings are above 0.5 (as shown in Table 1). Initially, Cronbach's alpha, composite reliability (CR), and average variance extracted (AVE) were evaluated to test the reliability and validity of the study measures. As

displayed in Table 3, the alpha values ranged from 0.753 to 0.886, whilst their values of composite reliability ranged from 0.78 to 0.89. These values indicate the satisfactory reliability of the measures used. As shown in Table 3, AVE of e-HRM value is over the agreed-upon lower limit. However, job satisfaction, e-HRM performance and environmental performance have a lower convergent validity (AVE), but still have an acceptable level of composite reliability. Convergent validity is adequate when constructs have an average variance extracted (AVE) of at least 0.5 (Chin 1998). It is noted that high value of AVE for all the constructs are good, but this is unlikely to occur in real data. More common magnitudes in the social sciences are low to moderate communalities (or AVEs) of 0.40 to 0.70. Suppose an item has an AVE (communality) of less than 0.40. In that case, it may either (a) not be related to the other items, or (b) suggest an additional factor that should be explored (Velicer and Fava 1998; Costello and Osborne 2005). A study conducted by Wijekoon and Galahitiyawe (2016) also applied the same method in ensuring convergent validity. To test whether the study variables were distinct, Fornell and Larcker's (1981) suggestion was followed. As illustrated in Table 4, the squared root of AVE for each variable was higher than the values of all its correlations with other constructs. Thus, discriminant validity is ensured. Additionally, all correlations between constructs were less than 0.9, indicating that possible problems of multicollinearity were non-existent (Grewal et al., 2004). Hence, the reliability and validity of the measurements are assured.

Table 4: Descriptive statistics, correlations matrix, and squared root of AVE

	Variables	Mean	SD	1	2	3	4
1	E-HRM practices	3.99	0.73	**0.76**			
2	E-HRM performance	4.13	0.53	0.54	**0.66**		
3	Job satisfaction	4.01	0.58	0.34	0.65	**0.67**	
4	Environmental Performance	4.36	0.52	0.54	0.61	0.50	**0.66**
Significant at 10% level							

Source: Survey data

Hypothesis Testing

The hypotheses were tested in two steps of SEM analyses as discussed above. First a baseline model was tested the hypothesis H_1 to H_5. Mediational hypotheses (H_6 and H_7) were tested in two separate structural equation models to keep the mathematical integration process

computationally feasible. The statistical analysis supported all the hypotheses. Table 4 and 5 gives the findings of the hypotheses testing along with the goodness of fit measures of each structural model. The goodness of fit measures reported good model fit all three structural equation models. As displayed in Table 4, E-HRM demonstrated a significant, positive association with environmental performance ($\beta=0.54$, $p < .01$), e-HRM performance ($\beta=0.54$, $p < .01$) and job satisfaction ($\beta=0.34$, $p < .01$) lending support for hypotheses H_1, H_2, H_3 respectively. In addition, findings of the study revealed that e-HRM performance significantly and positively associated with environmental performance ($\beta=0.61$, $p < .01$). Furthermore, job satisfaction significantly and positively correlated with environmental performance ($\beta=0.50$, $p < .01$) which were supported the hypotheses H_4 and H_5 respectivel
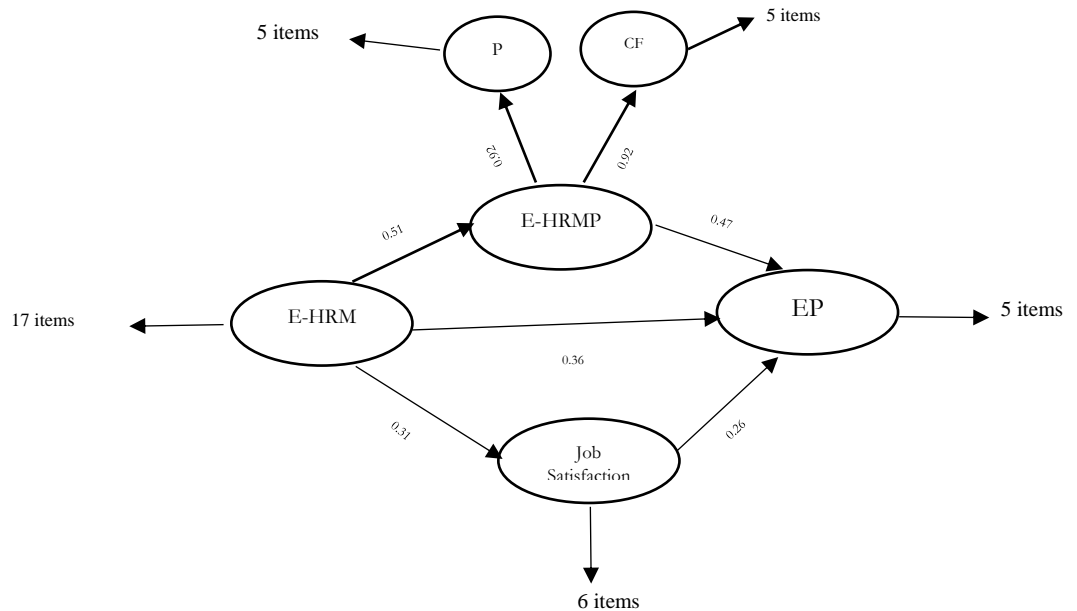
Figure 2: Main effect Structural Equation Model

Mediation analysis

H_6 and H_7 indicate the mediating effects of e-HRM performance and job satisfaction on the relationship between e-HRM and environmental performance. Bootstrap analysis was used to examine the mediating effects. The findings of the mediation analysis are illustrated in Table 6. In testing this mediation model, Baron and Kenny's (1986) method for testing mediation was followed.

Table 5: Hypothesis Testing using Path Analysis

Hypotheses			GOF Measures of the Structural Model				
Paths	Path coefficient	P value	CMIN/df	IFI	CFI	RMSEA	TLI
(H₁)e-HRM environmental performance	0.365	0.000					
(H₂) e-HRM e-HRM performance	0.506	0.000					
(H₃) e-HRM Job satisfaction	0.308	0.001	1.669	0.842	0.839	0.062	0.827
(H₄) e-HRM performance Environmental performance	0.467	0.000					
(H₅) Job satisfaction Environmental Performance	0.258	0.001					
(H₆) e-HRM performance environmental performance	0.330	0.000					
e-HRM e-HRM performance	0.484	0.000	1.595	0.880	0.878	0.058	0.867
e-HRM performance Environmental performance	0.633	0.000					
(H₇) e-HRM practices environmental performance	0.500	0.000					
e-HRM Job satisfaction	0.272	0.003	1.570	0.903	0.901	0.057	0.890
Job satisfaction Environmental Performance	0.494	0.000					
Significant at 10% level							

Source: Survey Data

First Mediation Model

The first mediation model (H_6) examines the mediating effects of e-HRM performance on the relationship between e-HRM and environmental performance. In the first mediational model in the current study, the direct effects of e-HRM on environmental performance (β=0.330, p < .01), e-HRM on e-HRM performance (β=0.48, p < .01), and e-HRM performance on environmental performance (β=0.633, p < .01) were significant (see Table 5). After including the mediator (e-HRM performance) in the intended mediation model, the direct path linking e-HRM with environmental performance (β=0.33, p < .01) remains significant. Further, when "bootstrapping" with 2,000 sampling (resampling with replacement and empirically generating sample distribution, Hayes 2013) was carried out, the indirect path remains significant (p < 0.01). Drawing on the decrease of the path coefficients between e-HRM and environmental performance from 0.33 to 0.31 and both direct and indirect paths were significant (See Tables 5 and 6), the mediation of e-HRM performance between e-HRM and environmental performance is considered partial, lending support to H_6.
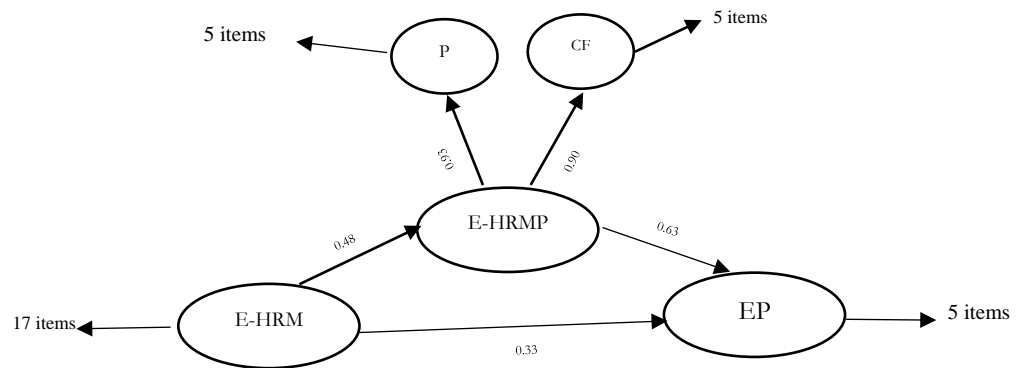
Figure 3: First Mediational Model (e-HRM performance as mediator)
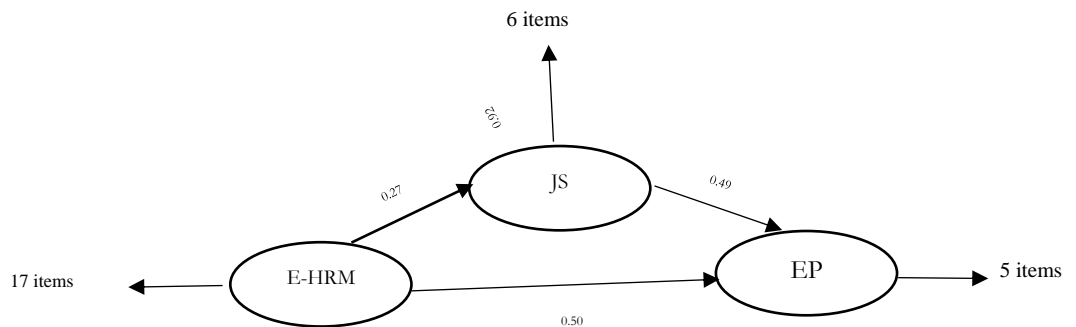
Figure 4: Second Mediational Model (Job satisfaction as mediator)

Second Mediational Model

Furthermore, second mediation model (H7) examines the mediating effects of job satisfaction on the relationship between e-HRM and environmental performance. In the second mediational model in the current study, the direct effects of e-HRM on environmental performance (β=0.50, $p < .01$), e-HRM on job satisfaction (β=0.27, $p < .01$), and job satisfaction on environmental performance (β=0.49, $p < .01$) were significant (see Table 5). After including the mediator (job satisfaction) in the intended mediation model, the direct path linking e-HRM with environmental performance (β=0.50, $p < .01$) remains significant. Further, when "bootstrapping" with 2,000 sampling (resampling with replacement and empirically generating sample distribution, Hayes 2013) was carried out, the indirect path remains significant ($p < 0.01$). Drawing on the decrease of the path coefficients between e-HRM and environmental performance from 0.50 to 0.14 and both direct and indirect paths were significant (See Tables 5 and 6). These results provided supporting evidence for hypothesis (H7) that e-HRM has an indirect impact on environmental performance via the mediating role of job satisfaction.

Table 06: Mediation Analysis

	Direct Effect		Indirect effect				Mediation
	B	P	β	P	Lower bound	Upper bound	
Hypothesis 6	0.33	0.004	0.31	0.000	0.210	0.465	Partial mediation
Hypothesis 7	0.50	0.001	0.14	0.004	0.042	0.265	Partial mediation
Significant at 10% level							

Source: Survey data

DISCUSSION

This study deals with four variables such as e-HRM, e-HRM performance, job satisfaction and environmental performance. The findings of the study revealed that e-HRM has a significant relationship with environmental performance of the banks. Recently, Sri Lankan banks have focused more on implementing the green banking concept in order to enhance their operations and become recognized as green bankers in order to adhere to ethical and legal requirements. E-HRM can be viewed in this light as one of the most important green banking initiatives since this significantly improves the environmental performance of banks by fostering energy and paper-saving culture. The findings of the study is consistent with the previous study conducted

by Shaumya and Arulrajah (2018) in selected commercial banks in Sri Lanka which revealed that e-HRM practices have a significant impact on banks' environmental performance.

Our findings suggest that e-HRM practices could help banks become more productive and cost-effective (e-HRM performance). A study conducted by Bissola and Imperatori (2014) found that effective implementation of e-HRM leads to improving the overall productivity of an organization. Further, a study conducted by Obeidat (2015) revealed that e-HRM practices reduce HR transaction costs. Since the majority of functional HRM activities are automated, the adoption of e-HRM has reduced the cost of HR functions (Amoako et al., 2022). A study conducted by Iqbal (2017) stated that e-HRM practices lead to improve the labour productivity through enhance the quality of HR services within the organization. Several e-HRM scholars suggested that organizations are intended to implement e-HRM systems to achieve three main goals such as (1) reducing cost, (2) improving HR services and (3) improving the strategic orientation (Stanton and Coovert 2004; Bondarouk, Ruel and Van der Heijden 2009). However, finding of the study conducted by Parry and Tyson (2011) found that e-HRM is mostly directed at cost reductions and efficiency increases in HR services, rather than at improving the strategic orientation of HRM. A similar finding was reported by several e-HRM scholars (eg., Obediat, 2015; Parry and Tyson, 2011; Marler and Fisher, 2013; Iqbal, 2017) who reported e-HRM practices lead to e-HRM performance by contributing to increase productivity as well as mitigate the costs.

Empirical findings of the study supported the third hypothesis of this study which stated that e-HRM practices have a significant impact on the job satisfaction of employees. The findings of the study suggested that organizations can boost the job satisfaction of employees via the adoption e-HRM systems. The organization provide better HR services to their employees through the e-HRM system. Further, employees have the opportunity to access their HR-related information (eg., leave, salary, work performance and etc) at any time through the self-service and automation of HR services. In Sri Lanka, e-HRM has a considerable positive impact on bank employees' job satisfaction. The majority of bank offices are located in the country's capital city, and bank branches are dispersed across the districts. Employees may travel to the headquarters for meetings and training, which adds to the cost and strains the employees' ability to balance their personal and professional lives. In this way, banks in Sri Lanka are implementing e-training and e-communication for employees. In the end, these trends ensure employees feel more satisfied with their jobs. The insights this study provides support

assertions made by Nurlina et al. (2020) and Alshibly et al. (2022) that emphasise the role of e-HRM practices in improving the job satisfaction of employees.

According to the researchers' knowledge, this study first examines the impact of e-HRM performance on the environmental performance of the organization. Our results show that e-HRM performance has a significant impact on the environmental performance of banks. This study considered productivity and cost-efficiency as the dimensions of e-HRM performance. The automation of routine HRM operations and the transformation of HRM from a paper-based system into a strategic partner make it possible for e-HRM to reduce costs and increase productivity. Further, e-HRM functions including e-communication and e-training significantly mitigate employees' transportation which in turn leads to a reduction in organizational cost as well as the carbon footprint of an organization. Additionally, several e-HRM practices, such as e-recruitment e-selection, and e-performance management help to attract and retain productive employees while considerably reducing the amount of paper used for these HRM activities. Ultimately, this trend improves the environmental performance of an organization.

Our findings show that organizations can improve their environmental performance by increasing the job satisfaction of employees. More particularly, Ostroff (1992) discovered that organizations tend to be more successful when their employees are more satisfied than when they are unsatisfied. According to Renwick et al. (2013), job satisfaction can be a significant result of an organization's environmental performance since it drives employers to attract, select, and keep environmentally conscious employees who can support their environmental initiatives. Ssatisfied employees will feel more emotionally connected to the organization and more obligated to contribute to the environmental initiatives of the organization. Employees will only promote environmental behaviours within the organization and apply environmental knowledge and attitudes if they are satisfied with their job. In this context, the job satisfaction of employees has also been acknowledged for the greater environmental performance in the previous studies conducted by Stephen et al. (2015) and Daddi et al. (2019).

To our knowledge, this study is the first to examine the mediating effects of both e-HRM performance and job satisfaction on the relationship between e-HRM and environmental performance. The results of the study provided support for the mediation role of job satisfaction on the relationship between e-HRM and environmental performance. Thus, the study extends the HR literature in two ways: firstly, confirming the positive impact of e-HRM practices on

environmental performance in the banking context; secondly, this study reveals an important mechanism (i.e. job satisfaction) through which the e-HRM influences the environmental performance of an organization. The empirical findings of the study revealed that job satisfaction partially mediates the relationship between e-HRM practices and environmental performance. In other words, an organization can improve environmental performance directly through the implementation of e-HRM practices. Further, organizations can improve the job satisfaction of employees via e-HRM practices, which in turn leads motivates the employees to actively contribute to the achievement of the environmental goals of the organization. Further, the results of the study confirm that e-HRM performance partially mediates the relationship between e-HRM practices and environmental performance. This supports the theoretical argument of the study that the implementation of e-HRM practices results in better e-HRM performance, which leads to improving the environmental performance of the organization. Taken together, the results of this study lend support to the developed hypotheses and, in turn, contribute to the theory and practice of e-HRM literature. Overall findings of the study support the institutional theory, stakeholder theory and system theory.

Theoretical Implications

As mentioned earlier, the existing literature on e-HRM revolves around investigating the role of e-HRM on HRM effectiveness (e.g. Bandarouk et al., 2009; Strohmeier, 2009; Findikli and Bayarcelik, 2015; Parry, 2011; Bandarouk et al., 2017). Only a few studies discussed the relationship between e-HRM and environmental performance (e.g. Shaumya and Arulrajah, 2018). Thus, therefore, extends the emerging research on e-HRM by considering e-HRM performance and job satisfaction as the mediators to explain the association between e-HRM and environmental performance. This study provided empirical evidence about the mediating effects of e-HRM performance and job satisfaction on the associations between e-HRM and environmental performance. The study's findings contribute to e-HRM and organizational sustainability literature. Overall, this model provides a novel view of the relationship between e-HRM and environmental performance, providing an interesting line for future research.

Managerial Implications

Contemporary organizations are increasingly stressed by numerous stakeholders such as competitors, customers, regulators and community groups to engage in environmental management to respond to grave global ecological problems (e.g., global warming, climate

change, destruction of biodiversity, severe weather and sea-level rise etc.). As a solution, banks are paying more attention to the adaptation of the green banking concept to ensure environmental performance beyond economic and social performance to ensure organizational sustainability and contribute to sustainable development. In response to that, the findings of the current study provide several practical implications that can be suggested for HRM managers. Initially, this study provides HRM managers with empirical evidence on the relative significance of e-HRM practices in enhancing the bank's environmental performance. The study's findings also suggest how e-HRM practices can enhance job satisfaction and e-HRM performance, both of which are crucial to improving banks' environmental performance. The study's results also demonstrated how crucial it is for banks that focus more on green banking to incorporate e-HRM practices.

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Re-employing Military Veterans with Service-Connected Disabilities: A Case Study

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ABSTRACT

This qualitative study focuses on addressing the phenomenon of re-employing military veterans with service-connected disabilities using the Case Study Strategy. To do so, this study explored a particular organizational context, called "Hero Apparel"[3], which started as a rehabilitation center to employ disabled military veterans who were disabled due to the Sri Lankan civil war. Hero Apparel as a commercial enterprise is mainly focused on providing vocational training to veterans in the garment industry. Service-connected disabilities are impairments associated among military veterans that occur due to active engagement in military services. Veterans lose their sense of independence and self-reliance because of these impairments. To mitigate these social issues associated with disabled veterans, providing opportunities to be engaged in productive work in a defined organizational environment is a very effective way since the veterans get a chance to integrate successfully into their lives again despite being disabled. Therefore, Hero Apparel can be considered as an entrepreneurial innovation that emerged to assist disabled veterans to regain their productive rank within society back again by allowing disabled military veterans to be re-employed as workers in the garment industry and build appropriate vocational skills. This context intrigued this study to explore the relevancy of this re-employability phenomenon with the organizational mechanism of social enterprises. By doing so, this study was able to find that Hero Apparel is operated under the concept of social enterprise mechanism and has an inspiring context compared to mainstream workplaces as Hero Apparel does its business operations while being both commercially and socially oriented. This study also revealed that the provision of meaningful employment opportunities for disabled people can empower them since such work is capable of ensuring their independence and self-reliance. In the Sri Lankan context, social enterprises are relatively a new term. Therefore, as a study oriented toward the mechanism of social enterprises, this paper contributes to increasing the awareness of social enterprises within Sri Lanka by presenting the contextual factors of an organization, which operates under the concept of social enterprise.

Keywords: Disability, Service-Connected Disability, Social Enterprise

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[3] "Hero Apparel" is a pseudonym created to address the main organizational focus of the study.

INTRODUCTION

The UN Convention on the "Rights of Persons with Disabilities" (2006), identifies, that people with disabilities are those who have long-term physical, mental, intellectual, or sensory impairments that create obstacles, which would prevent their full and effective participation within society in an equal manner. Even though employment is an effective way of integrating people with disabilities into the economy, unfortunately, they are often marginalized and discriminated against in the labour market. Social enterprises have emerged as a useful system through which such individuals would be integrated into economic activities, ensuring equal participation in society. Social enterprises are businesses, which were founded to pursue social goals while gaining commercial benefits. More specifically, social enterprises are operated in the commercial realm following the conventional business model. However, unlike private for-profit enterprises, their main goal is to meet social needs rather than make profits (Kelly, 2014). Therefore, a social enterprise mechanism can create social inclusion by meeting the needs of specific groups like people with disabilities. Thus, it can be utilized as an avenue to employ people with disabilities.

Service-connected disability is a part of the multifaceted situation of disability and it is a disease or injury incurred or aggravated during military service (Congress of the U.S., Congressional Budget Office [CBO], 2014 as cited in Stern, 2018). In terms of military services, 'war' is the most serious cause of creating permanent disabilities in servicemen (Gerber, 2000, as cited in Gunawardena, 2010). Considering the Sri Lankan context, the most prominent military service of military veterans was their contribution to the civil war to eradicate terrorism. The incorporation of combats such as guerrilla and terrorist tactics, as well as facing frequent suicide bombings and the use of heavy weapons (Gunawardena, 2010) resulted in a considerable no of battle causalities. Due to that, there was a serious imperative need to rehabilitate disabled veterans successfully in a meaningful manner to help them be re-absorbed into society more productively while helping them to adjust to a near-normal life along with their permanent disability state. To do that, the provision of vocational rehabilitation facilities to disabled military veterans was the most efficient manner to make them productively involved in society. As per Larsson (2004), rehabilitation is the process of preparing disabled soldiers for civilian lives and assisting them to find and hold places in businesses or industries by teaching them to adjust to their impairments while providing them with appropriate and marketable skills.

The main organizational focus of this study is a garment factory called "Hero Apparel. This organization is a military-managed garment factory, which was started during the latter part of the 90s as a rehabilitation project to provide vocational training to disabled veterans. The founding reason behind the implementation of this project was the greater amount of permanent disabilities that occurred among Sri Lankan military veterans due to battle causalities that resulted from the Sri Lankan civil war. This situation created an imperative need to initiate efforts in rehabilitation to make disabled veterans meaningfully re-absorbed into society to provide them with a near-normal life. This organization employed disabled veterans who held the potential in terms of physical capacities despite being disabled to be employed in productive employment.

British Council (2018) stated that although the social enterprise concept is deeply rooted in the business practices of Sri Lanka, the terminology and the organizational model are quite new to the country. To conduct the study called 'The State of Social Enterprise in Sri Lanka', the British Council (2018) defined social enterprises using two key criteria and asked their participants to respond accordingly. Those considered criteria were the organizations whose missions are to generate social and community well-being while being engaged in trading activities to fulfill those missions. Since the 'social enterprise' term is new to Sri Lanka, the British Council (2018) recognized that, although most of the surveyed organizations met the study's defined criteria, those organizations did not consider them as social enterprises necessarily.

Accordingly, Hero Apparel also has not recognized itself as a Social Enterprise. However, this study argues that Hero Apparel falls in line with the social enterprise definition as it was started as a self-sustaining organization to address the social issue of productively reintegrating military veterans with service-connected disabilities into the socio-economic milieu. Through this organizational mechanism, disabled veterans were provided with the opportunity to engage in active employment instead of living passively as disabled military veterans. As far as the 're-employability' phenomenon is concerned, this study would like to state that, according to the organizational context of Hero Apparel, the employed disabled veterans within Hero Apparel had experienced a career transition from the military to the garment industry. Since, Hero Apparel is a military-managed garment factory, the employed disabled veterans were able to hold on to their career identity of being military veterans while being recognized as employees who work for the garment industry.

Given this context, this study aims to explore the re-employability phenomena of military veterans with service-connected disabilities, which occurred through an organization called Hero Apparel, whose organizational contextual factors demonstrate a linkage with the social enterprise mechanism. Therefore, out of this curiosity, this study aims to find answers to the research question of "Does Hero Apparel has practices of a Social Enterprise."

Even though only a few studies have explored the experience of disabled veterans, almost no attention has been paid to the potential of re-employing disabled military veterans within an organizational context in Sri Lanka.

LITERATURE REVIEW

Overview of Social Enterprises

Doherty et al. (2014) stated that Social Enterprise is a phenomenon. The phenomenon of social enterprise is currently experiencing fast-growing prospects in the contemporary world. Most scholars have agreed with the fact that though social enterprise is recognized as an emerging business form, there is no unified definition for this business concept yet. The reason could be that since there is a tremendous growth of interest in this social enterprise area, there is a growing amount of literature producing a variety of definitions and approaches.

Generally, social enterprises can be defined as businesses that are socially minded and revenue-generating (Katz & Kauder, 2011). This means, that the persuasion of a defined social mission is the primary purpose of social enterprises and at the same time, these businesses fulfill their financial viability by engaging in commercial activities, which is through the sales of the enterprises' products (Battilana et al., 2014).

Moreover, some scholars have incorporated the term *social economy* or the *third sector* to present the idea of social enterprises. For instance, Kelly (2014) defined social enterprises as business entities, which have been established within the social economy in order to stimulate the advancement of social inclusion. Clarke and Eustace (2009) also further stated that social enterprises belong to this third sector or the social economy and gave a glimpse of what types of organizations are established within this third sector or in the social economy. According to Clarke and Eustace (2009), these organizations could be independently operated by the state, may or may not be funded by the state, and these organizations might have instances where they are engaged in offering public services as well. Apart from these, the fundamental

objective of the organizations that are being operated in the third sector or in the social economy is to put their economic surplus/profits back into the organizations, so that they can continuously pursue their social objectives. Kerlin (2009) mentioned that this third sector or the social sector could be called the non-profit sector as well. Kerlin (2009) further highlighted that this sector has been able to experience entrepreneurial dynamics, which were capable of bringing solutions to social problems by introducing innovative goods and/or services to certain individuals, and/or communities whose needs were not satisfied by private or public companies.

The third sector or/and Social Economy

Anyone can assume that the terms 'third sector' and 'social economy' can be used interchangeably. However, this interchangeability was somewhat vaguely discussed in the literature.

For instance, Clarke and Eustace (2009) and Kerlin (2009) used these two terms interchangeably to describe social enterprises. However, Hulgard (2011) argued that although there were similarities between the notions of social economy and the third sector, there were noticeable differences between the two, and the social economy as a concept was wider than the third sector. According to Hulgard (2011), the social economy has organizations, which have both profit and not-for-profit orientations whereas profit-oriented organizations are excluded from the third sector. Although profit-generating organizations are included in the social economy, the social economy is highly concerned with how these generated profits/funds should be utilized as well. Since the social economy encompasses both for-profit and not-for-profit organizations while having high concerns towards the profit utilization of the organizations who earn profits, according to Buhariwala et al. (2015), it can be stated that economically wise, the social economy exists between the free market and the public sector economy.

As far as the types of organizations included in the social economy are concerned, Hulgard (2011) included co-operatives, mutual societies, associations, foundations, and social enterprises as the different types of organizations that exist within the social economy. Even Fonteneau et al. (2011, as cited in Ballesteros & Llanto, 2017) stated that social enterprises belong to the social economy.

Since the social economy comprises both profit-oriented and not-profit-oriented organizations, Kerlin (2010, as cited in Ballesteros & Llanto, 2017) stated that since social enterprises belong to the social economy, there are possibilities for having both for-profit and not-for-profit-oriented enterprises in the social enterprise phenomenon. However, the broader literature addressing the social enterprise phenomenon states that it would be irrational to use a categorization of organization to define an enterprise as a social enterprise, rather, a social enterprise should be recognized in terms of the core principle called "social innovation".

Social Innovation in Social Enterprises

Social innovations are defined in terms of activities and services, which are driven by the objective of serving a social need that is widely distributed through an organization with a social mission (Mulgan, 2006). For instance, Mulgan et al. (2007) highlighted an example called 'Big Issue', an international magazine established as a social enterprise to help vulnerable homeless people to make them able to earn adequate income and help them to be established well in their mainstream societies.

As broadly identified by Ballesteros and Llanto (2017), the literature has identified the main traits of social innovations. To begin with, it was stated that social innovation is established through an enterprise, in particular through a social enterprise that is capable of satisfying human needs, or they go after a mission to find solutions for a social demand. Secondly, it was stated that the social entrepreneurial process associated with social innovation is capable of re-arranging or newly composing social processes or social relationships among/ between various social groups. Lastly, social innovations empower the people who are engaged in social innovations provided in terms of services or products.

Social Mission as the end goal of Social Enterprises

The primary objective of a social enterprise is to pursue a social mission using a business strategy, which would be implemented via an organization to earn a profit simultaneously. More specifically, most of the time, the social missions of social enterprises are defined in terms of alleviation of social problems like inequality and exclusion within the society and it is done via labour market activation for people who are distanced from labor market participation (Kelly, 2014). The activation of the labour market is facilitated mainly via the provision of productive employment opportunities by creating revenue-generating businesses within the commercial sphere. As far as the groups of people who are distanced from labor market participation are concerned, Katz (2013) named such groups as low-income women,

disconnected youth, former offenders, and individuals with disabilities as examples. Social enterprises choose their target employees from such under-represented groups in the labour market participation as their target employees and sell a product or service to the open market (Kelly, 2014) to earn revenue. As Meltzer et al. (2018) stated the focus of social enterprises might be on establishing business enterprises that represent such underrepresented groups, or on upskilling such groups as well. However, when choosing its target employees, social enterprises have a lot of potential for hiring persons with disabilities (Katz, 2013).

Social enterprises are not confined only to the area of providing employment opportunities for those who are marginalized from the labor market. There are several other social missions activated through these social enterprises. For instance, according to Kelly (2014), such missions could be expressed in terms of provisions for education, training, and transportation, developing houses, services for the environment, social care, and childcare.

Accordingly, as per Ballesteros and Llanto (2017), social enterprises are capable of creating business solutions for social problems and act as agents who hold great potential for promoting inclusivity and sustainable development. Literature has stated that the main ambition of social enterprises is to utilize business as a game plan to attain healthy communities by creating prosperity within communities and thus achieving advancements in *human development* as its end mission (Ballesteros and Llanto, 2011; Weaver, 2017).

Employing People with Disabilities through Social Enterprises

As stated by Nurhayati (2020), apart from improving one's financial condition, employment is capable of increasing the chances of individuals for more social interactions, building and strengthening their friendships, and enhancing their self-esteem. On the other hand, joblessness is capable of losing the sense of self-worth of individuals, destitution, and social prohibition.

Unfortunately, the processes of hiring, training, job tasks, and prerequisites for job retention in the traditional employment setting (Kelly, 2014), are not capable of providing support for those who face barriers to gaining productive employment, due to a lack of resources or experiences about accommodating the specialized needs of employees such as people with disabilities.

Social enterprises are capable of providing jobs for people with disabilities, thus engaging them within the economy, which would ultimately create social inclusion. As stated by Katz (2013), the viable strategy for employing people with disabilities lies within the social enterprise concept, which can create meaningful work that can be done by people with disabilities.

The study, which was conducted, by Medalla and Medalla (2018) using a social enterprise called "Handcrafted by Harl's" in the Philippines found that social enterprise was a viable mechanism for establishing sustainable skill development among people with disabilities, which would ensure their independence and self-reliance as its ultimate objectives. Accordingly, Meltzer et al. (2018) have also identified that social enterprises are capable of extending the employability skills of disabled people along with some other general benefits mentioned by several scholars, which can be fulfilled via social enterprises. They are namely, enhanced personal well-being, self-esteem, and independence along with an improved sense of integration in society.

METHODOLOGY

The ontological stance of this study is that productive ranks can be established within society via the provision of meaningful employment opportunities for those who are disabled. The research strategy used to conduct this qualitative research study was the 'Case Study' strategy. As Meyer (2001) stated, a case study is a detailed investigation conducted either within one or more organizations or within the groups of an organization, to present an analysis drawn from the phenomenon under consideration in terms of its context, processes, and relationships. More simply, according to Eisenhardt (1989), the case study strategy aims to focus on understanding the dynamics present within single settings.

The specific type of case study conducted concerning to this study is the 'single case study'. Although Eisenhardt (1989, as cited in Meyer 2001) highlighted the shortcomings of single cases in terms of the limitations that occur in generalizing and encountering several biases for information processing, this study argues that the context in which the case is being presented must be considered. Even Baxter and Jack (2008) said the most important consideration is the context and if the context or the environment is unique or extreme, the researcher can do a holistic single case study (Yin, 2003 as cited in Baxter & Jack, 2008). The organization under consideration in this study is unique from the conventional as it is especially caring towards the employability of military veterans with service-connected disabilities.

The scholars stated that the case study strategy is well suited to the research questions that find answers to "how" and "why" questions (Meyer, 2001; Baxter & Jack, 2008). However, this study's research question begins with neither "how" nor "why". Even though the question is not presented like that, this study can be related to the rest of the criteria presented by Baxter and Jack (2008). They are, when the researcher is unable to manipulate the behavior of people involved in the study, when the researcher is under the belief that covering the contextual

conditions presented under the considered phenomena is very important, and when the boundary line between the phenomenon and context is not clear, the researcher can use the single case study approach. For instance, since this study sought to determine the re-employability of military veterans with service-connected disabilities through a social enterprise mechanism, a case study was chosen, because the case was the re-employability phenomena of disabled military veterans, which cannot be explored without the organizational context of Hero Apparel (Baxter & Jack, 2008).

The total workforce in Hero Apparel amounted to 850, whereas there are around 20 percent of employees who suffer from disabilities in terms of both physical and mental. These disabilities were caused due to battle and various other non-battle circumstances. However, the prime focus of this study is to explore the re-employability phenomena of veterans who were disabled due to incurred battle causalities because of their active engagement in the civil war.

When conducting qualitative research, interviews are said to be the most used data collection method and are considered a useful means of uncovering the story behind a participant's experiences (Doody & Noonam, 2013). Interviews usually take place as a natural talking between the researcher and the participants, which would allow the participants to express their life events and in return would give a deep understanding to the researcher about the participants' social phenomena. Therefore, the prime data collection method used in this study was semi-structured interviews where ten interviews were conducted in total. Out of that, eight participants were military veterans with service-connected disabilities. To be more elaborative, four of the participants were in a crippled state with a loss of a leg, and the rest of the four participants had physical permanent disabilities due to exposure to various attacks on the battlefield. Apart from that, two interviews were conducted with the Chief Executive Officer (CEO) and the Human Resource (HR) Manager of Hero Apparel to gain a thorough understanding of the organizational setting of Hero Apparel.

Transcripts were produced using the interview recordings and analyzed using the "Thematic Analysis" method. Braun and Clarke (2006, p.79) described the thematic analysis as a "method for identifying, analyzing and reporting patterns (themes) within data. The entire process was followed according to the six phases of the thematic analysis presented by Braun and Clarke (2006). To begin with, familiarized myself with the collected data, then generated initial codes,

and searched for themes accordingly. Afterward, the themes were reviewed, defined, and named and subsequently produced the research paper as the final phase.

ANALYSIS AND DISCUSSION

Clarke and Eustace (2009) identified the characteristics which distinguish social enterprises from traditional business models. Enterprises where ownership is within a community or among people with a shared interest and are established to tackle social or environmental needs as its central purpose, while being engaged in a traded activity to reinvest the profits to sustain and further, the social or environmental mission was the identified characteristics by Clarke and Eustace (2009). As far as the organizational context of Hero Apparel is concerned, this organization is a state-owned organization, which operates within the military community according to military regulations. However, this organization solely operates as a garment factory facilitating the re-employability of disabled veterans of its military community in the garment industry. The *vision* of Hero Apparel is to "make the lives of the veterans more meaningful and valuable and help them develop into contributing members of the society". Its *mission* is to "use cutting-edge methods, create strategies of action, and set cost-effective parameters to produce garments that are of the highest quality while growing to meet more of the customers' requirements (The website of the organization[4]). Thus, Hero Apparel can be considered as an entrepreneurial social innovation, which was established to address the social issue that prevailed among the disabled ideal manpower of armed services, who held the potentiality of being re-employed back in productive employment.

In exploring the relevancy of the contextual factors presented within Hero Apparel with the social enterprise mechanism, this study uses the model presented by Ballesteros and Llanto (2017), which outlined the performance indicators of a social enterprise. The performance indicators are as follows.

1. Business and Management Performance
   - Production Efficiency
   - Efficient Enterprise Management
   - Financial Viability

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[4] Due to ethical concerns, the source of the website would not be revealed because it could reveal the real identity of Hero Apparel.

2. Social Responsibility and Performance

- Benefits provided for the poor and underprivileged people

- Enhances the employee's quality of life

- Encourages the development of the community

3. Environmental and Cultural Practices

- Environmental and ecological friendliness

Business and Management Performance

Production Efficiency

Under this sub-performance indicator, its first criterion states that the organization's production process should be conducted according to the standardized industry specifications.

> Our factory's functions complying with the stated international standards for operating a garment factory. We have been operating according to that composition (CEO of Hero Apparel).

Just as the CEO stated, the HR manager also said that to establish the standardized production process, Hero Apparel received the experts' help in the garment industry and succeeded in bringing a standardized factory system into the organization. There are departments for planning the production, sample making, and procurement along with a well-established standardized factory floor to conduct sewing, quality controlling, pressing, and packaging along with a management staff to oversee the operations within the organization. This organization also conducts research and developments to make improvements in the organization, especially regarding the products being produced. The research and development is mainly conducted through their work-study department.

Moreover, it is also demanded under this indicator, that the organization's production area should adhere to a fundamental layout, cleanliness, and safety regulations along with having worker-friendly tools and equipment within the work area. According to the observations, the organization's production flow has a proper layout with adequate spaces in between. There is proper lighting and ventilation installed and initiatives were taken to reduce the heat coming

from the machines being operated. Moreover, this organization has implemented the "5S"[5] concept to make the workspace of the organization more safe, productive, and organized.

Efficient Enterprise Management

As per the performance factors presented by Ballesteros & Llanto (2017), the organization should have all necessary legal permits and licenses and be established with financial control systems and other financial procedures. Moreover, the leading management personnel should possess with required knowledge and adequate experience to run the procedures well within the organization along with proper implementation of business plans to denote that the enterprise is a strategic entity. Apart from these, the employees should carry basic technical knowledge to conduct production of the organization and the enterprise should have partners who support the organization financially, technically, and voluntarily, along with community support.

The Hero Apparel belongs to the government sector and is a military-managed organization. According to the CEO and the HR manager of the organization, Hero Apparel has a qualified accountant and an internal auditor in the organization. The external audits are done according to standard time frameworks. Apart from these, a proper tender procedure is in place within the organization as well.

Moreover, Hero Apparel is regulated via a Board of Management and the CEO of Hero Apparel acts as the commanding and controlling personnel of the organization. According to the CEO, there are certain restrictions regarding to the financial circulation for the operations as well.

> Certain restrictions have been imposed on financial circulation. As the Commandant, I can make purchases of goods and services up to one million at a time. One member of the board can make such purchases from one to three million. Apart from that, if there is a big expenditure of more than 3 million, for instance, if a tender comes or if we need to buy raw materials for production, then we have to submit it to the Board of Management to get the approval (CEO of Hero Apparel).

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[5] A Japanese methodology for lean manufacturing that consists of five steps. Namely, they are Sort, Set in Order, Shine, Standardize, and Sustain (Tahasin et al., 2021).

Here, for instance, as the commander and controller of Hero Apparel, the CEO is capable of making payments of up to one million rupees, and then each member of the Board of Management is capable of approving the payments of between one to three million rupees. For all payments exceeding three million, the Board of Management should approve as a panel.

> When preparing some decisions and strategic plans, when making a profitable and strategic way forward, I submit some of my plans to the board of management and get approval. Otherwise, most of the time, if the board of management comes up with an idea, feasibility, and market studies are done before launching the venture (CEO of Hero Apparel).

As far as strategic planning is concerned, the CEO mentioned that when producing a strategic way forward, the Board of Management approves the plans and when the Board of Management wants to initiate particular strategy implementations, the management takes the initiative to produce a project report and conduct a feasibility study. Apart from that, to assess the management functions, there are operational, administrative, and logistic conferences, which take place accordingly within the organization as well.

Although military officers conduct the management of this organization, they all possess the required knowledge and skills to carry out their jobs well. As far as the organization's technical assistance is concerned, the CEO stated that the entire staff from the factory floor to management positions is well trained with knowledge and experiences, and the organizational members share their knowledge as well.

Financial Viability

Hero Apparel is a self-sustaining organization. Since Hero Apparel belongs to the military framework, it is considered a government institution. Although the legitimacy of Hero Apparel is as such, this garment is independently operated by the state. As a self-sustaining enterprise, the revenue generated through its production is sufficient to fulfill its financing requirements. For instance, the CEO mentioned to me that their factory operated in the Northern Western Province was acquired from the profits generated through the factory's operations. As far as its other financial indicators are concerned, Hero Apparel has a good amount of a liquid cash reserve and has valuable assets. According to the CEO, all these finance resources and assets are managed with transparency and accountability.

During the initial phase of establishment, the organization only produced military apparel, which helped to detain the funds within the government/military itself which were paid for third-party suppliers before the establishment of Hero Apparel. At present days, the factory serves several local customers in the Sri Lankan market and the CEO shared his expectations of expanding the organization's wings into the international market.

However, due to the economic crisis that occurred within Sri Lanka, mainly in my opinion due to the foreign currency shortage, Hero Apparel had to cease its operations during the early phase of 2023, due to fabric shortages. Although the prevailing economic crisis had affected its production, both the CEO and the HR manager mentioned that during the early phase of the COVID-19 pandemic outbreak in 2020, as an Apparel manufacturer, this organization made an immense contribution to the local society and economy by producing medical Apparel.

> We have taken up the challenge that Sri Lanka had for COVID-19. The entire Garment sector was closed. There were travel restrictions. People could not come from home. There was a lockdown. We were the only garment factory that worked at that time. We have contributed directly to the production of medical suits. Due to COVID-19, the entire production line was taken over by Hero Apparel. Otherwise, Sri Lanka would have to bear a separate cost to bring it from abroad. However, at that time, import and export had stopped, because there was a risk of Covid spreading through it (CEO of Hero Apparel)

When other garment factories were in an abundant state, Hero Apparel continued its production where the organization produced masks and safety medical suits needed for the medical staff around Sri Lanka while adhering to the COVID-19 protocols.

Social Responsibility and Performance

Benefits provided for the poor and underprivileged people

To begin with, under this sub-performance indicator, it was stated that the enterprise should be established to serve marginalized communities. Although Hero Apparel was not established to provide benefits for those who are marginalized in the community at large, Hero Apparel succeeded in catering to the social issue of productively re-integrating disabled military

veterans into society. This organization is an entrepreneurial venture invention created within the military community itself. This study reflects that this venture was a great inspiration to the community at large, known as the civil society, which exists outside of the boundaries of the military community.

The social issue created among disabled veterans was unique from the social problems that exist within civil communities. However, Hero Apparel as a part of the military community in Sri Lanka succeeded in serving its vulnerable disabled soldiers to provide them with vocational rehabilitation and reinstate their spirits backs. Social enterprise literature has proven that social enterprises bring innovative solutions for social inclusion and is a mechanism established to define and promote the potential of disabled people by adapting to disability inclusion in an organizational environment (Mauksch & Dey, 2023). Therefore, this organization succeeded in bringing inclusivity within the military itself as this enterprise facilitated productive employment opportunities for disabled veterans who held the potential to be employed again without idling unproductively until their official military tenures were over.

Moreover, the benefits should be widely spread without enriching a few and the benefits should contribute to its larger community as welfare as well. The CEO stated that all the profits earned through the production of apparel within the garment factory were being utilized back within the military community itself. All of the profits were being utilized for the sake of advancing the welfare of the members within the military community itself. The welfare facilities were mentioned in terms of building houses, buying medical aids and equipment to perform surgeries for those who were injured, facilitating military members and their immediate family members with financial support during financial difficulties, and performing necessary maintenance for the institutions running under the control of the military and its community. As far as the benefits provided for disabled veterans within the Hero Apparel premise are concerned, the participants mentioned that they were provided with proper sanitary facilities, medical facilities such as adjusting their clutches and artificial legs, and food and accommodation facilities as well.

Enhances the employees' quality of life

Under this sub-performance indicator, to fulfill the enhancement of the quality of life of the employed workers, the enterprise has to engage in fair trade and provide employees with secured income where the pay might be higher than the industry wage rates. Apart from these,

the employer/s of the social enterprise should secure the jobs of the employees along with the benefits for health and social security.

Considering the context in which Hero Apparel is operated, this organization experienced a change in the synthesis of its workforce. This scenario flows as follows. As I mentioned earlier, Hero Apparel was established to provide vocational rehabilitation in the garment industry for those who were disabled due to their engagement in civil war to eradicate terrorism. Since all these veterans were supposed to leave the army framework after their official service tenures were completed, Hero Apparel had to encounter a situation where they lacked the required workforce to run the operations within the garment factory, especially regarding its factory floor production operations. Therefore, the relevant authorities permitted to employ civil people outside of the military. Upon these recruitments, the authorities decided to employ those who had experience in working at the garment factories before. After these recruitments, these enlisted civil employees were considered military servicemen/servicewomen. According to the HR manager of Hero Apparel, wages paid in Hero Apparel were higher than the set industry wage rates in the garment industry.

The participants said that, though this garment used to be fully functioned by disabled veterans before, right now, the amount of disabled people employed in this organization is quite low. Yet, this organization still employs veterans who were injured due to other service-connected disabilities. According to the HR manager of Hero Apparel, apart from those who were disabled due to the civil war, there are soldiers, who suffer from non-battle injuries in terms of physical and mental disabilities.

Anyone who reads this might get confused about what happens to those who leave this organization due to their retirement. As government servants, the veterans are entitled to have a pension after their retirement. However, as mentioned above, this organization operates independently from other military operations and is fully dedicated to being operated as a garment factory with the dual aims of earning profits while pursuing its initially stated social mission.

In line with these end missions, the CEO of Hero Apparel has taken actions to upgrade the training syllabus established within Hero Apparel up to the level of NVQ-4[6] certification. This way, the CEO is trying to open up new career paths for the veterans once they settle as civilians after their military retirement.

Encourages the development of the community

The CEO of Hero Apparel explained that Hero Apparel as an entrepreneurship venture has opened up livelihood opportunities for other people indirectly as well. He mentioned that Hero Apparel has a range of suppliers and due to that, Hero Apparel had opened up new jobs indirectly for the employees who work for Hero Apparel's suppliers.

Environmental and Cultural Practices

Environmental and ecological friendliness

This dimension was addressed in terms of promoting and protecting local resources, actions taken to rejuvenate raw materials, having implemented a proper system to dispose of wastes, and the actions taken toward the advancement of indigenous knowledge.

As far as the Hero Apparel organizational context is concerned, they have taken some initiatives towards environment protection by implementing the green concept within the premise. However, not much rich data was received sufficiently to open up a discussion. Though the information was not sufficient, this paper would like to mention that Hero Apparel has won the 'National Green Award' due to its environmental and ecological friendliness.

Apart from looking through the stated performance indicators presented in a social enterprise context, attention can be diverted to look into the capability of social enterprises, which are specifically established to employ people with disabilities in creating meaningful employment opportunities. Usually, disabled employees face discrimination in the workplace due to a lack of workplace accommodations (Buhariwala et al, 2015). However, social enterprises that utilize their organizational role in society to employ disabled people are capable of creating

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[6] National Vocational Qualification (NVQ) – Level 4 qualification for the full national craftsmanship.

employment opportunities that can complement the unique capabilities of people with disabilities (Mauksch & Dey, 2023). For instance,

> The biggest challenge we faced before starting this project was to decide on a suitable industry to socialize an empowered soldier. One of the biggest factors considered in choosing such a suitable industry was that disabled soldiers must be employed safely. If we go for heavy productions or machinery productions, the vulnerability of the soldiers would be greater. However, the garment industry is where which possesses the appropriate industrial process for someone with a physical disability (CEO of Hero Apparel)

When the founders of the project Hero Apparel explored the feasible industries to employ disabled veterans, they found the potential held in the garment industry to implement the idea of providing vocational rehabilitation for veterans who were disabled. Because the work associated with Apparel manufacturing has a sedentary nature, which means, manufacturing of garments can be done being in one place. More specifically, sedentary work involves sitting most of the time but may involve walking or standing for a short period (The Law Insider Dictionary, n.d). McBrinn (2018) discussed the effective utilization of sedentary work in doing craft work and conveyed that sedentary work was useful for acquiring new skills while exerting physical strength moderately along with work pleasure. Further, sedentary work can be almost applied to people who suffer from injuries as well (McBrinn, 2018). Two of the study participants mentioned that due to the nature of the available work in the garment factory, they were able to perform their respective duties easily despite the fact of having physical disabilities since most of the available tasks could be performed being seated.

All the disabled participants of this study were employed in Hero Apparel to make them undergo a rehabilitation process to acquire vocational skills in the garment industry. Larsson (2004) stated vocational rehabilitation was of utmost importance to gear up the disabled soldiers' spirits back again to ensure that they can win their productive ranks in society through the cultivation of suitable and marketable skills. Accordingly, these skills must be strong enough to ensure the independence of veterans as well as to increase their industrial efficiency.

> Other organizations have the motive of making a profit and not the motive of socialization. However, here at Hero Apparel, apart from making a profit, we

also have a social responsibility to fulfill. The hidden purpose of this is that we can make an empowered soldier, a good soldier who can engage in self-employment, someone who can keep his self-respect, and someone capable of standing on his own feet as a trained soldier in the garment industry. We are already achieving that (CEO of Hero Apparel).

The HR manager also mentioned to me that this organization is trying to empower soldiers by increasing their capabilities through training and the development of vocational skills in the garment industry. By doing so the empowered soldiers can utilize the acquired skills to find other employment opportunities in the garment industry or start their own business where they can live as productive members of the society even after they retire from the military.

Accordingly, the disabled military veteran participants of this study were able to cultivate positive mindsets by being grateful for the support they received in restoring their productive spirit.

The available duty for a soldier who held a weapon is to work in a security job after his retirement (Male, 40 years old)

This participant disclosed the reality a soldier has to face after they retire from the military. Since soldiers are public servants in the government sector, they are entitled to a pension after their retirement. However, after retirement, if military service men choose to engage in employment, there are a limited number of civilian employment opportunities available for them to choose from. Being a security guard or a three-wheel driver are such options out of the limited opportunities available.

Although the reality is as such, the lives of this study's participants would be different from the rest of their veteran colleagues, who were being employed in the Hero Apparel. Because, due to their disabled nature, they were able to successfully integrate themselves into the garment industry to acquire a great set of skills and knowledge, which in return would help them to see more future career prospects after they retire from the military.

This study is not trying to justify the fact that being disabled is good and it created an advantage on the lives of the employed veterans in the Hero Apparel over others. Rather this study is trying to open up a rationalized discussion from the data it was able to generate. Moreover, a part of the vision statement of Hero Apparel emphasizes the organization's goal is to develop

appropriate marketable skills within the employed disabled soldiers in Hero Apparel, to open up new career prospects where veterans can utilize the acquired skills and knowledge in the garment industry after they retire from the military**.**

> After I am done with my military service, I want to build something on my own. Otherwise, I feel like my life would be useless. I will build something on my own. A house, a vehicle, and a business for my family. I hope to use the knowledge and the experiences I could gather from this organization as well (Male, 35 years old).

Like this, the participants expressed the dreams they wanted to pursue after their journey in Hero Apparel. These dreams were either to build businesses of their own or to share their knowledge with other people. A participant said, that he had already begun disseminating his knowledge to his nieces and mentioned that in the further he might even start to run a tailor shop on his own. Similarly, one other participant stated his desire to share his knowledge in the field of the garment with others in society.

Medalla & Medalla (2018) identified that the creation of job opportunities empowers people with disabilities because such employment is capable of ensuring their independence and self-reliance. Social enterprises as an alternative economic space are capable of providing such employment opportunities for people with disabilities because the primary interest of these organizations is to build the social capacity of disadvantaged groups like people with disabilities through employment and training rather than being interested in profit maximization (Hall & Wilton, 2011).

CONCLUSION

Sri Lanka as a country has been dealing with many challenging situations ever since, in terms of political, cultural, social, and economic aspects. The civil war that prevailed in Sri Lanka for almost three decades was one such challenging phase that Sri Lanka successfully managed to overcome. However, this war created a greater amount of permanent disabilities among Sri Lankan military veterans. The occurrence of varying degrees of disabilities and the increasing number of disabled personnel during early the 90s created an imperative need to initiate efforts in rehabilitation to make disabled veterans meaningfully re-absorbed into society to provide them a near-normal life. Therefore, to address this social issue, a project called "Hero Apparel" was initiated as a vocational rehabilitation organization whose purpose was to develop Apparel manufacturing vocational skills within disabled military veterans by re-employing in the

garment industry until their official service tenures were completed. Therefore, this study rotated around the phenomenon of re-employing military veterans with service-connected disabilities facilitated through the organization of Hero Apparel and it explored the alignment of Hero Apparel to the Social Enterprise mechanism.

Although Hero Apparel does not recognize itself as a social enterprise, the contextual factors presented within the organizational environment of Hero Apparel perfectly align with the criteria used within the literature in defining the social enterprise mechanism. Since the social enterprise's mechanism is capable of providing employment opportunities for those who are disabled compared to the traditional mainstream work environment, the social enterprise is considered as an avenue that can enhance the development of such vulnerable groups like people with disabilities by installing social capabilities through employment and training of marketable industrial skills. Thus is capable of empowering them as its ultimate objective. Therefore, this study was able to find that social enterprise is a viable mechanism to promote disability inclusion in a work environment by implementing suitable performance indicators. Apart from that, this study also found that the facilitation of such suitable employment opportunities matched with the unique abilities of disabled people, was capable of establishing their productive ranks in the society. As far as the prime focus of this study is concerned, who are military veterans with service-connected disabilities were able to restore their productive ranks in society again due to their re-employment occurring in the context of Hero Apparel.

This study would like to encourage current and future entrepreneurs and managers to create inclusive work environments for people with disabilities and make them involved in the economy to ensure their independence and self-reliance. Moreover, since the term social enterprise is a newer term in Sri Lanka, future research efforts can dig more deeply into the organizational environments that operate under the concept of social enterprises and bring forth an enhanced awareness since the social enterprise mechanism is highly capable of advancing human development.

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The Mediated Effect of Bounded Rationality on the Relationship between National Cultural Psychology and Irrationality in Financial Decision Making of Entrepreneurs: An empirical study on the evidence from Ethnic Minority Business (EMBs) Entrepreneurs in West Midlands, UK.

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ABSTRACT

Entrepreneurs' irrational financial decision making behaviour is presumably triggered by the combined effect of their cultural and cognitive factors. However, these factors and their influences on entrepreneurial behaviour are remained under-researched to date. Therefore, this paper for first time aims to explain how entrepreneurs deviate from rationality when making crucial financial decisions based on empirical evidence gathered from ethnic minority business (EMBs) entrepreneurs (Sri Lankan) in the UK. A questionnaire consisting five point Likert scaled questions was used to collect data. Based on Kline's (2005) 10:1 rule of thumb sampling method, two hundred (200) Sri Lankan entrepreneurs in the UK were selected. Structural Equation Modelling (SEM), Exploratory and Confirmatory Factor Analyses (EFA and CFA) were used to examine the tripartite relationship among the underlying constructs. EFA results show the associations among National Cultural Psychology (NCP), Bounded Rationality (BR) and Irrationality in Financial Decision Making (IFDM). CFA further proved a statistically significant direct effect in between NCP and IFDM (standardised estimation =0.403, p=0.002<0.05), and Indirect effect via BR (standardised estimation = 0.301, p=0.001<0.05) simultaneously. Accordingly, it can be interestingly discovered a 'Partial Mediation' among these three constructs.

This study offers a new knowledge for entrepreneurship literature examining the entrepreneurial behaviour through the lens of national culture and cognitive biases of entrepreneurs for first time. The paper introduces a novel theoretical model named as 'The mediation effect theory of cultural and behavioural finance in Financial Decision Making' which explains how national cultural and cognitive factors divert entrepreneurs from the rationality when making crucial financial decisions. For the first time, this paper provides strong empirical evidence how entrepreneurial behaviour is influenced by national cultural attributes and cognitive biases simultaneously. This research further bridges entrepreneurship with the cultural finance discipline which is an emerging field under the umbrella of behavioural finance. Entrepreneurs and authorities are recommended to consider cultural attributes that trigger cognitive biases and eventually, divert from rational decision-making.

Keywords: Entrepreneurial Behaviour, National Cultural Psychology, Cognitive Biases, Bounded Rationality, Irrationality in Financial Decision Making.

INTRODUCTION

In 2021, there were 5.5 million private businesses in the UK and 99.3% of them were SMEs with less than 50 employees (Department for Business, Energy and Industrial Strategy, 2021). As a highly culturally diverse country, UK's SMEs are owned by different entrepreneurs who came from different ethnic and cultural backgrounds. These minority-led small business firms are commonly known as Ethnic Minority Businesses (EMBs). According to Ram et al. (2002), EMBs are defined as a subset of SMEs which is 51% owned and operated by ethnic minority people in a particular country. EMBs have become a trendy research area during the last couple of decades. Researchers have highly focused on topics such as challenges faced by EMBs, accessing finance for EMBs and the ways of empowering EMBs (Ullah et al., 2017; Ram et al., 2008). The UK authorities such as the Federation of Small Businesses (FSB), and Enterprises Research Centre (ERC) are also interested in researching EMBs considering them as a part of UK economy. However, FSB (2020) found that EMBs are detached from mainstream business support while ERC (2015) revealing that EMBs are encountering higher survival threats compared to their white SMEs counterparts. British Business Bank (2020) stated that EMBs are experiencing comparatively low success rate & worse business outcomes than their white counterparts. After Covid-19, Black and Asian Minority Ethnic (BAME) are believed comparatively highly struggling (British Business Bank, 2020). In other words, the magnitude of Covid-19 economic impact is also higher on EMBs. Even though United Kingdom can be considered as a country where all businesses have equal rights and no discriminations against any ethnicity or nationality, this underperformance of ethnic minority entrepreneurs is questionable.

Department for Communities and Local Government (2013) stated that mainstream financial support services in the UK are struggling when catering their services to ethnic minority businesses due to their lack of cultural sensitivity and knowledge towards ethnic minorities. This finding implies that Ethnic minority entrepreneurs represent unique cultural backgrounds differed from other non-EMB counterparts in the UK. Even though the issues encountered by EMBs have extensively been researched by both academics and government authorities, the entrepreneurial behavior of ethnic minority entrepreneurs and how it is shaped by their cultural and cognitive factors have been less researched. In other words, there is a shortcoming in the related literature those studied the Cultural Finance and Financial psychology in the context of ethnic minority entrepreneurs in the UK. There is a deficiency in entrepreneurship literature that focuses on cultural, cognitive and behavioural factors of ethnic minority entrepreneurs.

Research Problem Statement

As emphasized in the previous section, ethnic minority business entrepreneurs (EMBs) are likely more struggling when running their businesses compared to white counterparts. Even though scholars had conducted many studies to identify the causes (ex: lack of access to finance, poor financial literacy, lack of support from authorities etc) behind this potential issue, they have not sufficiently focused on cultural and behavioural aspects of ethnic minority business entrepreneurs and their influence on entrepreneurial decisions. Accordingly, this paper attempts to answer the question of '*whether EMB entrepreneurs irrational financial decisions are triggered by their cultural and behavioural attributes*?'

Research purpose

Aligning with the research question, the main aim of this research is to scrutinize the financial decision making irrationalities of ethnic minority entrepreneurs triggered by their cultural and behavioural attributes.

Research Objectives

- o To identity cultural and behavioural attributes embodied within the ethnic minority entrepreneurs
- o To understand irrational financial decision making behaviour of ethnic minority entrepreneurs
- o To examine the nature of relationship existing among cultural, behavioural and irrational financial decision making of ethnic minority entrepreneurs

LITERATURE REVIEW

National Culture

National Culture is defined by House et al., (2004) as shared motives, values, beliefs, identities, and interpretations or meanings of significant events that result from common experience of members of collectives that are transmitted across generations. Hofstede (1991) explains that culture is "the collective programming of mind that distinguishes the people of one country, region or group from people of other countries, regions or groups". Even though these theories have been widely used to compare national cultural values rooted within different people in different societies, they have less used to explain how they impact on financial psychology of entrepreneurs. House et al., (2004) GLOBE cultural theory develops comprehensive, more theoretical, updated and verifiable cross-cultural dimensions.

Especially this model extends and links national culture with leadership and their Culturally-endorsed implicit Leadership Theories (CLT) explain the individual leadership and entrepreneurship in terms of their national cultural backgrounds. Therefore, GLOBE model provides an effective framework to examine the entrepreneurship through the lens of national culture (Stephan and Pathak, 2016; House et al., 2004). Appendix 01 provides definitions for four types of National Cultural Dimensions those are commonly found in both House's (2004) GLOBE model and Hofstede's (2001) cultural dimensions. Those variables will be recognized as the indicators of the latent variable of 'National Cultural Psychology'

Behavioural Finance, Bounded Rationality and Cognitive Biases

Thaler (1999) stated that behavioural finance is an integration of classical economics and financial theories within studies investigating psychology and decision making. Behavioural finance is the study which explain reasoning patterns of investors, including the emotional processes involved and the degree to which they influence the decision-making process. According to Ricciardi and Simon (2000), Behavioural Finance is a composition of Psychology, Sociology and Finance. Kahneman and Tversky (2000) as pioneers of behavioural finance stated that financial decision making is highly impacted by decision makers' psychological factors, and it finally deviates them from the rationality. In line with this, Bosa and Sunita (2018) highlighted that behavioural finance explained the causes for the irrational decision of investors while focusing on the investors' behavioural bias which influences their decision-making process. However, the core idea of behavioural finance contradicts with conventional financial theories suggesting that decisions are rationally taken by investors after evaluating the available information and theoretical considerations. In other words, this emerging finance management discipline questions traditional financial management theories (ex: Pecking order theory, EMH, CAPM) since it argues that decision-makers are not often rational and not making decisions based on information and logical reasoning.

Bounded Rationality and Cognitive Biases are key terms found under the behavioural finance literature. The term of Bounded Rationality was introduced to the economics by Simon (1997) as a result of his research on organizational decision making. As suggested by Marciano and Ramello (2014), Bounded Rationality (BR) means that when individuals make decisions, they are "bounded" or limited because of inadequate information, time constraints and cognitive

limitations inherent in the human mind. The last reason among these three is directly linked with cognitive biases. In other terms, cognitive biases may cause on the bounded rationality of decision makers. However, bounded rationality and other concepts in behavioural finance have been widely used to study the stock market investors' decision-making behaviours and less focus on small business entrepreneurs.

Kahneman (2011) emphasised that behavioural biases have a profound impact on decision-making and can drive suboptimal decision making and errors that directly contradict with traditional finance. In the meantime, Simon (1997) suggests that cognitive biases influence on the bounded rationality of entrepreneurs. Combining these two arguments, it can be conceptualised that bounded rationality triggered by cognitive biases finally determine the rationality in decision making. Therefore, cognitive biases can be considered as indicators of bounded rationality. Appendix 02 provides definitions for five types of Cognitive Biases (Kahneman, 2002, 2011) which are the indicators of the latent variable known as 'Bounded Rationality' (Marciano and Ramello, 2014).

Irrationality in Financial Decision Making

Compared to other large companies, financial decision making is highly crucial for small business entrepreneurs since they have less resources and one irrational decision can collapse the entire business. Even though conventional financial theories such as pecking order theory, EMH, trade off theory assume that entrepreneurs take rational decisions, it is questionable that entrepreneurs do often take rational decisions as emphasised by above traditional theories (Ackert, 2014). Barberis and Thaler (2003) argued that behavioural finance is a relatively modern financial subject, seeks to summarize the combination of behaviour and cognitive factors that influences irrational financial decisions. It is also based on the exceptional idea that the majority or at least a significant minority of investors are influenced by their behavioural biases, which leads to less rational or fully irrational decision-making (Rasool and Ullah, 2019). Modern finance perspective indicated that investors do not always act irrationally, and they contribute their funds by examining the risk and reward and face a lot of psychological and sentiment biases (Kahneman and Tversky, 2013). However, the irrationality in financial decision making has been mostly researched focusing on the stock market investors and it creates a gap in literature those focused on EMB entrepreneurs. Appendix 03 provides definitions for three types of Financial Management Decisions (Ogilvie, 2006) which are the

indicators of the latent variable known as 'Irrationality in Financial Decision Making'. This study applies these three types in EMB entrepreneur and develops six questions in the Section 03 of the questionnaire. Because each type of financial decision is constructed by two themes. For example: Investment Decision is subdivided into Long Term (Capital Budgeting) and Short Term (Working Capital Management) decisions.

Potential Research Gaps

Prior studies have significantly suggested the impact of national culture on firm-level financial policies (Chang et al., 2012). However, the impact of these cultural and cognitive factors on the irrationality in financial decisions making has been less researched. Inadequate causal explanations for financial decision-making behaviours and cognitive biases of entrepreneurs are major shortcomings in these studies. It is seemed that former researchers have less focussed on interrelationship between national culture and cognitive factors behind the financial decision making. In other words, direct and indirect effects existing among these three paradigms have not been studied. In order to address this potential literature gap, this paper's main question designs to examine *'The tripartite relationship existing amongst National Culture, Behavioural Finance and Financial Decision Making of Sri Lankan South Asian Entrepreneurs in the UK'.*
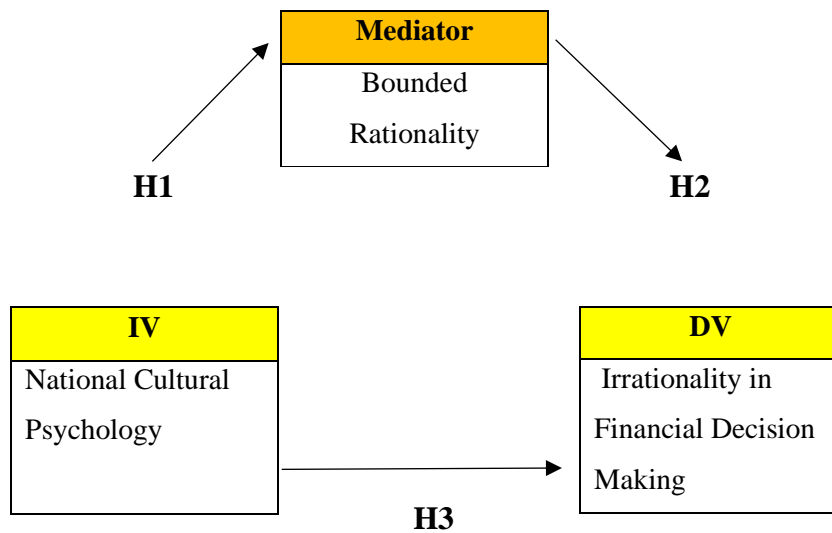
Figure 6: The coeptual framework

Figure 01 conceptualises the tripartite relationship to be tested in this paper. Accordingly, it can be summarised the hypotheses as follows,

H1: There is a relationship between National Culture Psychology (NCP and Bounded Rationality (BR)

H2: There is a relationship between Bonded Rationality (BR) and Irrationality in Financial Decision Making (IFDM)

H3: There is a relationship between National Cultural Psychology and Irrationality in Financial Decision Making

H4 – There is a mediating effect of Bounded Rationality on the relationship between National Cultural Psychology and Irrationality in Financial Decision Making.

These questions were designed based on national cultural dimensions identified by GLOBE researchers (House et. al., 2004). Second section of questionnaire consists of 5 questions and this section captures five different cognitive biases explained by Kahneman and Tversky (2013). Final section measures the irrationality in financial decision making by asking 6 questions those indirectly discover the irrationalities involved when taking three types of financial decisions explained by Ogilvie (2009).

METHODOLOGY

Research Design

This research's reality can be explained by using Gidden's (2013) structuration theory. EMB entrepreneurs can be considered as 'agents' and their agency of decision making is determined by 'culturally driven social structures'. In other words, entrepreneurs do not take rational decisions all the time due to the invisible influence of cultural and psychological drivers lead them to divert from the rationality. This research is entirely based on primary data that was collected by survey method. This research examines the entrepreneurial behaviour using a questionnaire (Likert Scaled). A structured questionnaire (Appendix 4) is developed and used to collect required primary data. The structured questionnaire consist of three parts. First section includes four questions measuring the national cultural psychology construct. Second (5 questions) and third (six questions) sections respectively measures the Bounded Rationality and Irrationality in Financial decision Making variables. Each of these questions were operationalised based on the previous literature (Appendix 05).

Data Collection

These psychological constructs are invisible, intangible and unconscious since they are embedded within the mindset of decision makers. Therefore, measuring these psychological latent factors and unearthing these underlying cognitive drivers are challenging in nature. This study selects measuring variables or indicators from well-established theories that have capabilities to represent the latent or underling factors to be researched. Unfortunately, there is no consensus in the literature regarding what would be the appropriate sample size for SEM. However, minimum sample sizes for factor analysis models range from 30 to 460 cases, depending on the number of factors (1-3), the number of indicators per factor (3-8), the average correlation between indicators and factors (.50 -.80), the magnitude of factor correlations (.30-.50) and the extent of missing data (2-20% per indicator) (Kline 2015, p.16). A widely accepted rule of thumb is 10 cases/observations per indicator variable (10:1) in setting a lower bound of an adequate sample size. And also, Hair et. Al. (2010) also emphasized that a sample size of at least 100 to achieve reliable findings while Shah and Goldstein (2006) state that the general rule considers a sample size of 100 to 200 as a 'good sample size'. Considering all above facts, this research adopted rule of thumb sampling frame to determine the sample size. According to above SEM path diagram, this research involves three (3) main constructs and expected to maintain a communality above 0.5. Accordingly, this research's sample size is calculated as follows,

Number of indicators in the SEM model proposed	- 20	
Expected number of cases/ observation per parameter	- 10	
Therefore, the Sample Size	- 20 x 10	- **200**

The researcher has ensured the accessibility for 200 ethnic minority businesses through the client's database of an accounting firm which mainly caters services for Sri Lankan ethnic minority businesses in the UK.

Factor analysis

As discussed earlier, this paper mainly involves underlying psychological constructs those are required to be studied by using psychometric scales and procedures. Therefore, it is essential to have a powerful analytical technique which can analyse complex psychological responses in decision-making. Here, Factor analysis is identified as the most suitable analytical technique

for this paper since it allows researchers to explains the variability of observed variables (Indicators) and unobserved variables (Latent factors) and relationships existing among unobserved variables each other. This analytical method has been used by researchers when developing theories adopted in this research. This method has been frequently used by researchers in similar research contexts (Rasool and Ullah, 2019; Lin, 2011). The two main branches of factor analysis known as exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) (Swanson and Holton, 2005) are to be used for this study. The purpose of using EFA is that its capability to explore the underlying (latent) factors by grouping indicators (measuring variables) with similar patterns or attributes. By using the CFA, researchers expect to test hypothesised relationships among latent constructs each other and carry out a causal study. The outputs of this CFA finally use to perform a mediation analysis considering the nature of direct and indirect effects of latent factors each other. After carrying out CFA, it will be carried out a model fit analysis using recommended measurements for SEM (Absolute Fit, Incremental and Parsimonious Fit). However, Reliability of the EFA and CFA are respectively measured using Cronbach's alpha and Composite Reliability tests (Brown, 2015). By conducting these reliability tests, the Internal consistency[7] of the model can be assured. Under EFA, Cronbach's alpha determines how consistent the responses are across items within the scale (Stewart et al, 2017). Composite reliability measures the internal reliability of all the variables in their measurement of a construct. Based on the standardised regression weights generated from SPSS Amos, the composite reliability (CR) of each three measurement models can be calculated using standardised loadings and measurement errors.

$$\text{Composite Reliability (CR)} = \frac{(\sum \text{Standardized Loading})^2}{(\sum \text{Standardized Loading})^2 + (\sum \text{Measurement Error})^2}$$

$$\text{Measurement Error (ME)} = 1 - (\sum \text{Standardized Loading})^2$$

The validity of the model to be tested by calculating the average variance extracted (AVE). AVE determines the amount of variance of the measured indicators captured by the latent construct. Bagozzi and Yi (1988) suggested 0.60 and 0.50 as the minimum value of composite reliability and average variance extracted, respectively. In addition, the Validity of the model

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[7] Internal Consistency – Internal Consistency Reliability is a way to gauge how well a test or survey is actually measuring what researcher wants it to measure.

will be tested using two main validity tests known as Convergent validity and Discriminant validity (Brown, 2015). Convergent validity refers to the extent to which the measured variables of a specific factor have a high proportion of variance in common and assess the same factor. This value can be generated by calculating the average variance extracted (AVE). Discriminant validity provides evidence that a construct is truly distinct from other constructs (Hair et. al, 2010) and captures the phenomena and concepts that other constructs do not.

$$\text{Convergent Validity} \quad = \quad \frac{\sum (\text{Standardized Loading}^2)}{\text{Number of Indicators}} \quad = \text{AVE}$$

$$\text{Discriminant Validity} \quad = \quad \text{Square Root of AVE}$$

DATA ANALYSIS

Factor analysis is used in analysing the data involving psychological underlying factors those are hard to measure in nature. Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA) are employed to deeply inspect the relationship existing among indicators and latent factors. All the statistical outputs were generated using SPSS 26 and SPSS AMOS software.

Exploratory Factor Analysis (EFA)

EFA is used to identify underlying factors and patterns of similar responses.

Table 25: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling		0.907
Bartlett's Test of Sphericity	Approx. Chi-Square	1382.894
	Df	91
	Sig.	0.000

KMO statistic measures whether responses given for this sample is adequate to perform a factor analysis at a satisfactory level. Above table I shows that KMO statistic for this data set is 0.907 and it is closer to the value of 1. Therefore, this paper's sampling adequacy or sample size is acceptable. Bartlett's Test of Sphericity is used to evaluate whether a correlation matrix is suitable for factor analysis by testing the hypothesis that the matrix is an identity matrix (a matrix in which all coefficients not in the diagonal are zeroes).

Table 1 found that Bartlett's test of sphericity statistics is 0.000 (p<0.05) and therefore, it reveals that the correlation matrix is not an identical matrix. Accordingly, it can be assumed that successive data reduction technique (factor analysis) compresses the data in a meaningful way. In other words, this data set is appropriate to perform a factor analysis.

Table 26: Communalities

Indicator	Initial	Extraction
UA (Uncertainty Avoidance)	1.000	0.722
PD (Power Distance)	1.000	0.665
CI (Collectivism)	1.000	0.711
FO (Future Orientation)	1.000	0.650
O (Overconfidence)	1.000	0.743
HM (Herd Mentality)	1.000	0.590
LS (Loss Aversion)	1.000	0.617
Anchoring (A)	1.000	0.638
CS (Capital Structure)	1.000	0.668
CC (Cost of Capital)	1.000	0.656
IA (Investment Appraisal)	1.000	0.697
WC (Working Capital)	1.000	0.581
PR (Profit Retention)	1.000	0.542
DP (Dividend Policy)	1.000	0.573

Extraction Method: Principal Component Analysis

Table 2 demonstrates the communalities of each variable and it explains how much of the variance of different variables has been accounted for or contributed by the extracted factors. In other words, an item communality (IC) is the % of item variance explained by the extracted factors. The variables with below 0.5 communalities are not to be considered for further analysis due to their incapability to explain the variance of factors at satisfactory level. Accordingly, due to the lower communality value (0.391) of Heuristics in Judgement (HJ) variable was excluded from the factor analysis. A factor loading greater than 0.4 is said to be sufficiently loaded on its factor and deemed adequate for inclusion in the model (Hair et al., 2014; Shaufique et al., 2009).
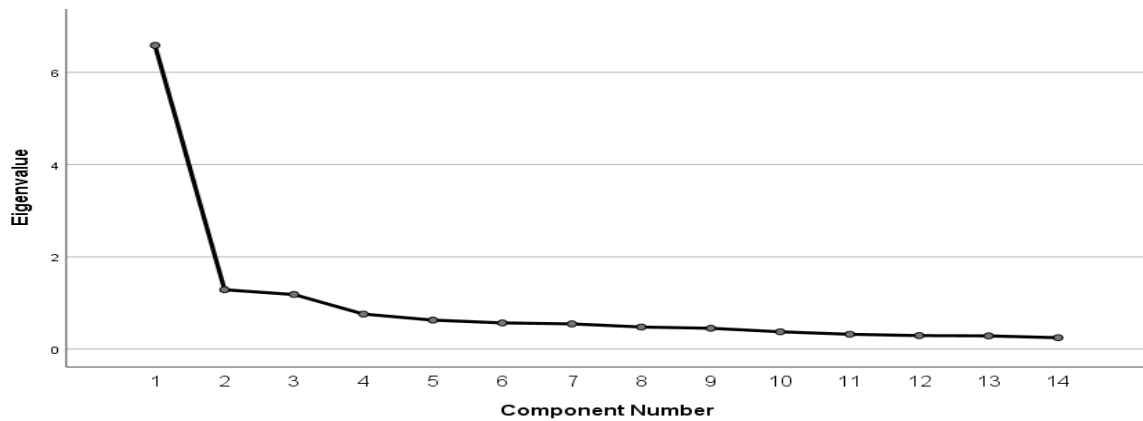
Figure 7: Scree Plot

Figure 2 illustrates how many factors are to be retained. Even though there are several ways to identify number of factors (Courtney, 2013), this paper adopts the Kaiser's eigenvalue rule and scree plot method which suggests factors with value over 1 should be retained. The point of interest is where the curve starts to flatten. It can be seen that the curve begins to flatten after the 4th factor. In other words, factor number 4 and onwards have an eigenvalue of less than 1. Therefore, this factor analysis retains only three factors.

Table 27: Rotated Component Matrix

Indicator	Component / Factor		
	1	2	3
UA (Uncertainty Avoidance)	0.181	0.803	0.211
PD (Power Distance)	0.232	0.752	0.213
CI (Collectivism)	0.256	0.787	0.161
FO (Future Orientation)	0.366	0.692	0.192
O (Overconfidence)	0.252	0.274	0.777
HM (Herd Mentality)	0.362	0.203	0.647
LS (Loss Aversion)	0.088	0.329	0.708
Anchoring (A)	0.270	0.039	0.751

CS (Capital Structure)	0.744	0.219	0.258
CC (Cost of Capital)	0.776	0.227	0.047
IA (Investment Appraisal)	0.762	0.210	0.267
WC (Working Capital)	0.698	0.183	0.246
PR (Profit Retention)	0.610	0.226	0.345
DP (Dividend Policy)	0.680	0.261	0.206

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization. a. Rotation converged in 6 iterations.

The patterns of responses are mainly clustered under three main components or factors are depicted in table 3. Even though few variables illustrate cross loadings, those values are lower than 0.40. The first component includes six (6) variables those measured the factor irrationality of financial decision making (IFDM) behaviour of entrepreneurs. The second component consists of four (4) variables those used to capture factor of the national cultural psychology (NCP). Finally, four (4) variables used to measure the factor of bounded rationality (BR) are clustered together. The total variance explained) by the three factors was 64.3 percent (Appendix 06), indicating that all the items were moderately sufficient to further measurement model analysis.

Reliability test for EFA: However, prior to moving forward with CFA, it is essential to test the internal consistency reliability of the factors extracted in the EFA. For that, Cronbach's alpha is used for each component.

Table 28: Cronbach's Alpha Summary for three factors

Factor Name	Cronbach's Alpha	N of Items	Result
National Cultural Psychology	0.847	4	Very Good
Bounded Rationality	0.758	4	Respectable
Irrationality in Financial Decision Making	0.865	6	Very Good

Table 4 presents Cronbach's alpha values calculated for each factor. These values were above the threshold of 0.7 (Hair et al., 2014), indicating that all the indicators are internally consistent

and reliable to be used as measurement and adequately measured the construct variables. Therefore, all the items should be retained for further analysis.

Confirmatory Factor Analysis (CFA)

Confirmatory Factor Analysis is used to test theoretical links existing among earlier identified three factors named as National Cultural Psychology, Bounded Rationality and Irrationality in Financial decision making. These relationships are used to explain the causal nature of one factor to another while testing relevant hypotheses.

National Cultural Psychology (NCP) and Bounded Rationality (BR): In the conceptual framework (Figure 2.1), the first hypothesis of this paper is to test relationship between National Cultural Psychology and Bounded Rationality.

Table 29: NCP and BR

	Estimate	S.E	C.R	P
BR ← NCP	0.748	0.098	7.608	****

Table 05 shows that there is a statistically significant relationship (p<0.05) between the Bounded rationality and National Cultural Psychology. Therefore, the first null hypothesis can be rejected.

Bounded Rationality (BR) and Irrationality in Financial Decision Making (IFDM): the relationship existing in between the BR and IFDM can be summarised as follows,

Table 30: IFDM and BR

	Estimate	S.E	C.R	P
IFDM ← BR	0.763	0.107	7.103	****

As demonstrated table 6, there is a statistically significant relationship (p<0.05) between the Irrationality in Financial Decision Making and Bounded rationality. Therefore, the second null hypothesis can be rejected.

National Cultural Psychology (NCP) and Irrationality in Financial Decision Making (IFDM): Testing the relationship between NCP and IFDM is much crucial since it is essential to perform the mediation analysis under next section (4.3). Therefore, the nature of the relationship between NCP (Independent Variable) and IFDM (Dependent Variable) without BR (Mediating Variable) is tested as follows,

Table 31: Regression Weights for NCP and IFDM

	Estimate	S.E	C.R	P
IFDM ← NCP	0.588	0.77	7.679	****

As illustrated on Table 07, the regression weight for NCP in the prediction of IFDM is significantly different from zero at the 0.001 level (two-tailed). Therefore, it can be concluded that total effect between NCP and IFDM is statistically significant. However, it is unknown that this relationship is exclusively existing in between NCP and IFDM or via another third mediating variable. In other words, to carry out more sophisticated cause and effect analysis, it is required to test to what extent this statically significant relationship is mediated by the bounded rationality variable (BR). In order to do that, it can be used a path diagram which includes the mediator variable of BR.

Mediation Analysis

The nature of the relationship existing in between three latent variables is analysed under this section.

National Cultural Psychology and Irrationality in Financial Decision Making without Mediator: In order to test the mediation, it is firstly required to examine the direct effect existing between the NCP (IV) and IFDM (DV) without the mediator.
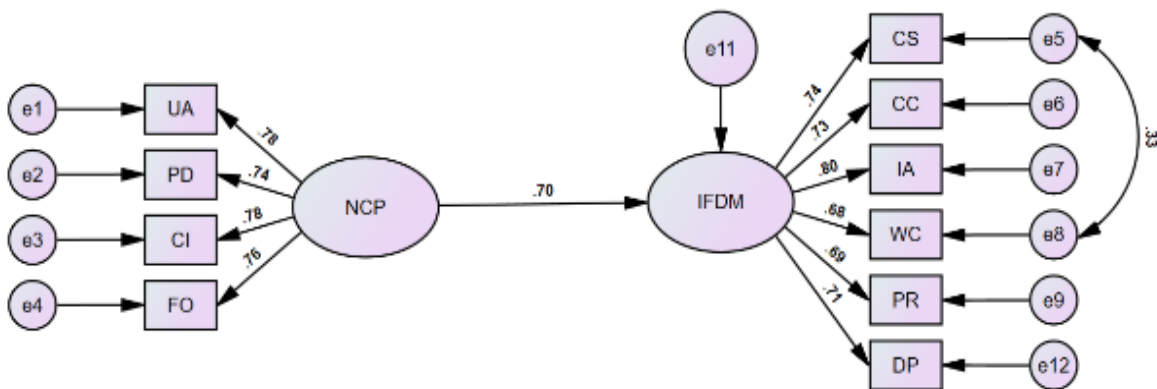
Figure 8: Path Diagram without Mediator

Figure 3 illustrates the path diagram which links two measurement models and one structural model. The first measurement model demonstrates the latent variable of national cultural psychology of entrepreneurs and its four indicators extracted from House et al (2004) and Hofstede's (2001) national cultural dimensions. An examination of modification indices (MIs) suggests evidence of misfit as standardized residuals of CS and WC loaded on IFDM construct indicated to share relatively high covariances with each other. Therefore, the model was re-specified by correlating the pairs of residuals belong to same latent construct, as suggested by Hooper et al. (2008). According to the diagram, UA, PD, CI and FO are showing over 0.70 correlations with NCP and therefore, this finding supports these national cultural theories. The second measurement model depicts the latent variable of Irrationality in Financial Decision Making and its six indicators originated from three types of decisions explained by Ogilvie (2009). The loadings of these measurement model reveal that entrepreneurs are likely to make financial decisions diverting from the rationality. These findings contradict with most of conventional theories in finance management (ex: pecking order) those suggests that key financial decisions are often made with a full rationality.

National Cultural Psychology (NCP) and Irrationality in Financial Decision Making (IFDM) with Mediator of BR : The purpose of this mediation analysis is to examine the nature of direct and indirect effects existing in between NCP and IFDM with the mediating effect of BR.
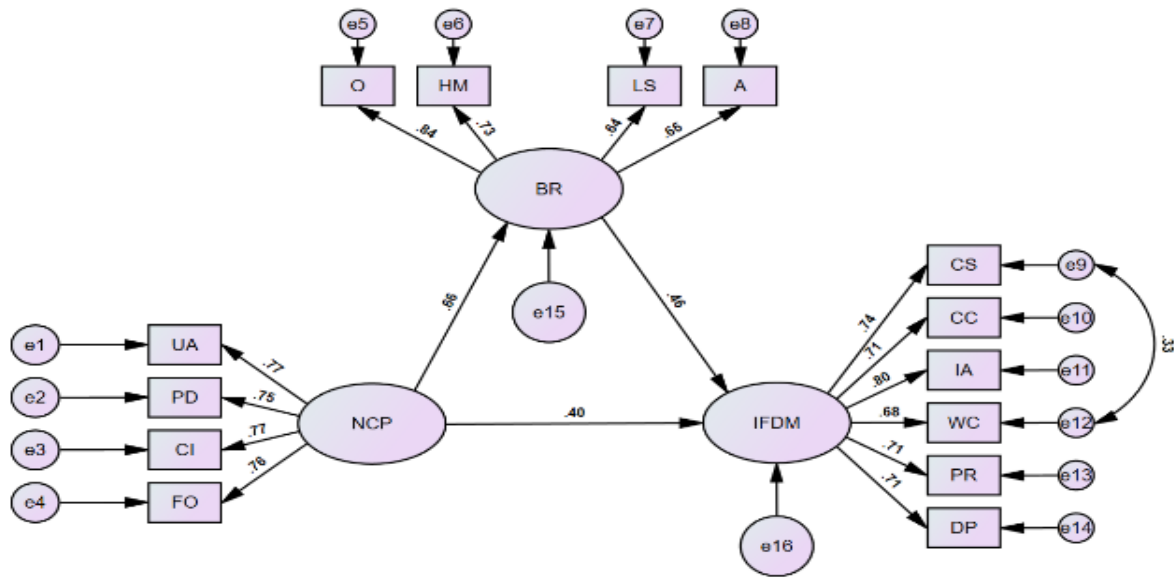
Figure 9: Path Diagram with Mediator

Figure 04, path demonstrates all the individual factor loadings of indicators and their respective latent variables. In addition, it shows indirect and direct effects existed among three latent constructs. However, the total effect (0.70) earlier existed in between NCB and IFDM in Figure 3 has been reduced up to 0.40 when it comes to Figure 4. In other words, total effect has been decreased by 0.30 with the presence of Mediator. Even though this can be considered as an initial indication for a mediating effect, the statistical significance of this mediating effect and its nature (partial or full mediation) are analysed as follows,

Table 32: Regression Weights among NCP, BR and IFDM

	Estimate	S.E	C.R	P
BR ← NCP	0.722	0.094	7.696	***
IFDM ← BR	0.349	0.075	4.652	***
IFDM ← NCP	0.337	0.081	4.160	***

In considering the regression weights of above table VIII, all the relationships existing among latent variables each other are statistically significant. In order to test the mediation effect further, it will be used the Bootstrap Analysis with a 95% Confidence Interval.

Table 33: Summary of Standardised Total, Direct and Indirect Effects

Standardized Effect	Standardized Estimation	P-Value (Two Tailed Significance)	Result
Total Effect of NCP on IFDM (Without BR)	0.704	0.002	Significant
Direct Effect of NCP on IFDM (With BR)	0.403	0.002	Significant
Indirect Effect	0.301	0.001	Significant

The standardized indirect (mediated) effect of NCP on IFDM is statistically different from zero at the 0.001 level (p=.001 two-tailed). Preacher and Hayes (2008) called this standardised indirect effect as the index of mediation since it determines whether there is a mediation or not. This is a bootstrap approximation obtained by constructing two-sided bias- corrected confidence intervals. On the other hand, the direct effect between NCP and IFDM is still statistically significant (p=0.002 <0.05). These both outputs confirm a '*Partial Mediation*' between NCP and IFDM. In other words, National Cultural Psychology of entrepreneurs has a direct relationship with the Irrationality of Financial Decision Making while also having an indirect effect via their Bounded Rationality.

Model Fit

In SEM, the Goodness of fit of the model can be measured using following three model fit measures.

Table 34: Model Fit Summary

Model Fit Type	Measurement	Indices	Threshold	Result	Interpretation
Absolute Model Fit	These measures provide the most fundamental indication of how well the proposed theory fits the data and	Chi-Square Value and Probability Value (X^2) (Meyers et al., 2005)	P<0.05	0.000	Poor Fit
		Root Mean Square Error of	Lower than 0.06	0.057	Good Fit

	proportion of variance (McDonald and Ho, 2002)	Approximation **(RMSEA)** (Meyers et al., 2005)			
		Goodness of Fit **(GFI)** (Chau,1997)	Higher than 0.90	0.925	Good Fit
Incremental Model Fit	These measures assess the incremental fit of the model compared to a null model (baseline model) which hypothesizes as a single factor model with no measurement error (Lee, 2012).	Comparative Fit Index (**CFI**) (Bryne, 2016)	Higher than 0.90	0.964	Good Fit
		Normed Fit Index (**NFI**) (Bryne, 2016)	Higher than 0.90	0.915	Good Fit
		Tucker Lewis Index **(TLI)** (Bryne, 2016)	Higher than 0.90	0.955	Good Fit
Parsimonious Model Fit	This assess the parsimony of the proposed model by evaluating the fit of the model versus the number of estimated coefficients needed to achieve that	CMIN / DF (Hair et al, 2010)	Lower Than <3.0	1.65	Good Fit

	level of fit. (Lee, 2012)				

Model fit is assessed through an inferential Chi-square ($\chi 2$) and several descriptive goodness-of-fit indices. Since the Chi-square ($\chi 2$) is known to be inflated in samples with $N > 200$ (Kelloway, 1998) the Chi-square ($\chi 2$) and degree of freedom (df) are reported as descriptive information rather than a strong inferential test of whether a model can be accepted or rejected (Stewart et al, 2017). Table 10 illustrates all the measurements excepting Chi-square ($\chi 2$) validate the overall goodness of fit of the proposed model.

Composite Reliability

To measure the internal consistency of confirmatory factor analysis, a composite reliability test is conducted. By conducting this reliability test, the shared variance among the observed variables of their relevant latent construct can be examined. In other words, Composite Reliability was applied to test the degree to which the indicator variables converge and share proportion of variance. The CR value varies between 0 and 1; a higher value implies a higher level of reliability of the items (Hair et al., 2014). In order to accept the internal consistency of the CFA model, composite reliability of measurement model should be greater than 0.6.

Accordingly, the results derived from Composite Reliability (Appendix 07) can be summarized as follows,

Table 35: Summary of Composite Reliability

Latent Variable	Composite Reliability	Interpretation
National Cultural Psychology	0.7629	Good
Bounded Rationality	0.6889	Good
Irrationality in Financial Decision Making	0.7891	Good

Table 11 illustrates that indicator items are reliable, and they shared a high variance with their latent constructs. It implies that the questions used in this paper measure their respective constructs what they were meant to measure reliably and accurately.

Construct Validity

Construct validity refers to the degree to which inferences can legitimately be made from the operationalizations in this study to the theoretical constructs on which those operationalizations were based. Convergent and Discriminant validities are two fundamental aspects of construct validity. Prior to determine convergent and discriminant validities, it is required to calculate the Average Variance Extracted (AVEs)[8] of each factor.

Table 36: Summary of Standardised Loadings and Average Variances Extracted

Indicator Variables	<---	Latent Variables	Standardized Loadings	Square of Standardized Loadings	Sum of the Squared Standardized Loadings	Number of Indicators	Average Variance Extracted (AVE)	Square Root of AVE
UA	<---	NCB	0.775	0.600625				
PD	<---	NCB	0.747	0.558009	2.32307	4	0.5807675	0.7621
CI	<---	NCB	0.77	0.5929				
FO	<---	NCB	0.756	0.571536				
O	<---	CB	0.839	0.703921				
HM	<---	CB	0.727	0.528529	2.068375	4	0.5170938	0.7191
LS	<---	CB	0.646	0.417316				
A	<---	CB	0.647	0.418609				
CS	<---	IFDM	0.78	0.6084				
CC	<---	IFDM	0.702	0.492804				
IA	<---	IFDM	0.801	0.641601	3.22309	6	0.5371817	0.7329
WC	<---	IFDM	0.72	0.5184				
PR	<---	IFDM	0.693	0.480249				
DP	<---	IFDM	0.694	0.481636				

The convergent validity of above three constructs imply to what extent indicators are converged or close together to represent their respective construct. The normal decision rule is that the

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[8] Average Variance Extracted (AVE) = $\sum$ (Standardized Loadings^2) / Number of Indicators

AVE must be 0.5 or greater than 0.5. In considering the AVEs of above table 12, they all have values over 0.5. In other words, all the indicators are converged to their respective latent construct while having higher correlations with indicators those converged within the same construct. These higher AVE values further validate the operationalization and mediation model created earlier. It finally implies that all measures have psychometric quality and reliably measure their respective constructs. The decision rule for discriminant validity is that the positive square root of the AVE for each of the latent variables should be higher than the highest correlation with any other latent variable. In other words, the square root of AVE should be greater than the latent variables correlation.

Table 37: Correlations among Latent Variables

Latent Variable	Correlation
NCP <----> BR	0.660
BR <----> IFDM	0.716
NCP <----> IFDM	0.698

Table 13 illustrates the correlations exist latent variables each other. All these correlation values are lesser than square roots of AVE calculated under Table XII. This implies that three latent factors have sound discriminant validity. In other words, three constructs explored in this study are theoretically different and therefore, the scales used in this study measure three unrelated theoretical constructs. This suggests that all the three construct variables in the measurement model are distinctively different and reflects that each latent variable shared a high variance with corresponding observed items more than the shared variance of items by other latent variables in the model. Similar to higher convergent validity of the study, these discriminant results also prove that this study's variable selection and operationalisation are acceptable.

DISCUSSION

Above mediation analysis indicated that entrepreneurs' national cultural background influences the different cognitive biases reflecting from the entrepreneurs. This cause-and-effect relationship can be scrutinized by considering each components of national cultural background construct and how they do likely trigger the cognitive biases.

Uncertainty Avoidance as the first and most loaded indicator for NCP may have a greater influence on cognitive biasness. This national cultural attribute has a potential to avoid people to take decision which involves higher risks. As a result of that, higher level of uncertainty avoidance triggers loss aversion which is an indicator of bounded rationality. This higher uncertainty avoidance psychologically avert people from loses with lower probability. Therefore, it can be argued that higher level of uncertainty avoidance triggers the loss aversion. Loss Aversion, as an indicator of bounded rationality eventually leads to the irrationality in financial decision making in many ways. Eventually it leads to the irrationality in financial decision making.

Highly uncertainty avoiding entrepreneurs are likely to avoid information that they perceive as potentially unpleasant. In other words, they tend to avoid knowing negative consequences related to a future uncertainty since it may create psychological discomfort within themselves. In behavioural economics, this potential cognitive bias is known as '***The Ostrich Effect'***. As a result of this *ostrich effect* , entrepreneurs or investors attempt to avoid negative financial information. This tendency do not allow entrepreneurs to make a quality rational decision. Therefore, it is clear that this higher uncertainty avoidance triggers entrepreneurs to be loss aversive but also for other related psychological biases. attribute further However, loss aversion avoids entrepreneurs thinking about the rationality behind the time value of the money since they comparatively keep higher weights psychologically on the loss they are experiencing at present. This finally deviates them from the rationality.

Higher power distance is another main national cultural attribute reflected from the selected group of entrepreneurs. It is commonly believed that cultures where a higher power distance is rooted has a less room for participatory (democratic) leadership whereby leaders are not likely ask for the opinions of subordinates and subordinates rarely challenge leadership decisions. Assuming that entrepreneurs as business leaders, one can rationally argued that entrepreneurs with a higher power distance background show a centralised decision making within their business. In other terms, these entrepreneurs are not keen to delegate the authority or involve subordinates in the decision making. This finally leads them to being overconfident in decision making. On the other hand, this higher power distance mentality psychologically stimulate entrepreneurs to believe that the decisions made by themselves are rather successful than the decisions made by others. On the other hand, Entrepreneurs believe that they should directly involve in the operational process while having a less confidence in the work carried out by

their workers. In other words, they are likely to reflect **'The Endowment effect'** in which they disproportionately overvalue the products, decisions and operations partially or fully involved by themselves (Kahneman et al, 1991; Ericson and Fuster, 2014) rather than others. As a result of this, entrepreneurs tend to involve in the most of operational activities believing that those activities will be effective only if they would be performed or involved by themselves. However, dedicating unnecessary extra time for operational activities reduces the time that can be allocated to manage the business and make plans for future developments. This can be considered as an overconfidence on themselves and simultaneously, an underestimation on tasks carried out by others. As discussed earlier, overconfidence causes to bounded rationality and finally irrationality in decision making.

Higher level of collectivism was detected from respondents and it means that a greater level of collectivism triggers cognitive biases such as herd mentality and it finally causes them lagging behind them in making rational financial decisions. For example, due to the higher collective nature of entrepreneurs, they are often keen to follow the decisions taken by their business colleagues in a similar situation. In other terms, this collectivist attribute makes entrepreneurs to over rely and imitate others. This can be considered as *'Bandwagon Effect' in which* the entrepreneurs are likely to adopt a certain behaviour, style, or attitude simply because everyone else is doing it. As a result of this bandwagon effect, entrepreneurs may incline to make a decision based on solely on the decisions of other entrepreneurs, while disregarding their own personal knowledge and information to the contrary. This can be considered as an *Information cascade*[9] and it avoids them being rational and find their own best decision. Hence, this high collectivist nature is presumably caused to herd mentality bias which is known as one of reason of the factor of bounded rationality. Not only that, high collectivism nature possibly leads to Anchoring bias. Higher Future (long term) orientation is another major indicator of the National Cultural Psychology. This attribute may cause to bound the rationality in different ways. Higher long term orientation psychologically stimulates entrepreneurs to focus and attain long term future rewards with a greater tendency of loss aversion on short term gains. This long term orientation presumably links with the *'Disposition Effect'* in which entrepreneurs have a tendency to sell profitable investments too early before

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[9] ***Information Cascade*** *– An information cascade occurs when an individual's response to a situation depends more on his/her perception of other people's response to the situation than to the evidence or private information that the situation itself presents to him/her (Roe et al, 2018)*

realizing all potential gains while holding on to losing investments for longer than they should, believing that the investments will turn around and generate a profit in future. This reluctance to sell losing investments may possibly make further loses. And also, this bias is again correlated with the loss aversion since they are greatly distressed by the loss selling those losing investments rather than retaining them. Therefore, Disposition effect and Loss aversion can be considered as two sides of a same coin. In addition, long term oriented mindset possibly creates psychological reference points or anchors for future financial returns. These reference points do not allow them to surpass potential financial returns because they satisfy with the achievement of expected return which was anchored earlier.

MODEL DEVELOPMENT

Based on the findings derived from the above discussion, it can be developed a new concept which demonstrates how national cultural factors drive entrepreneurs to the irrationality in financial decision making.
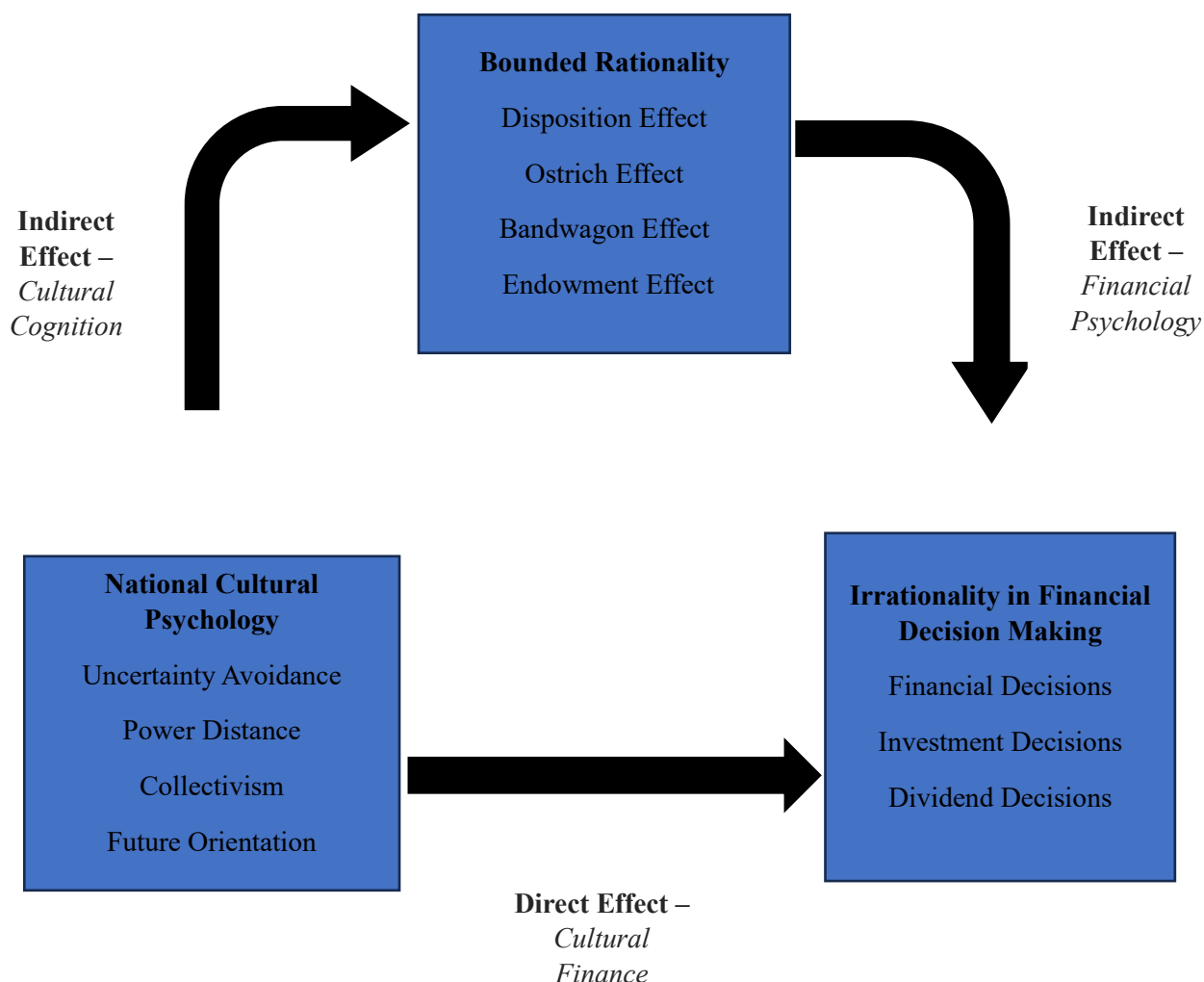
Figure 10: Mediation effect theory of national culture and behaviour finance in financial decision making

This study develops a mediation effect theory of national culture and behaviour finance on financial decision making in ethnic minority business (Figure 5). Entrepreneurs' national cultural attributes determine different cognitive biases and then directly and indirectly lead to the irrationality in financial decision making. According to pecking order theory, firms follow the hierarchy of funding options, i.e., capital reserve, debt financing, and equity financing relatively. However, this paper found that EMB entrepreneurs are less likely retain profits for future investments. This indicates that EMBs divert from the rationality when they utilise their profits.

Further, this finding is aligned with that of Kanagaretnam et al. (2016), Li et al. (2013) and Chui et al. (2002) who found that national cultural attributes have statistically significant relationships with financial management decisions in internal control, corporate risk taking, capital structure decisions. However, these scholars have not studied the composite effect made by national cultural attributes together on the irrationality in financial decision making. This potential gap has been addressed in this paper. On the other hand, the common gap in behavioural finance literature was their lack of focus on cultural drivers. Even though previous literature suggest that bounded rationality is triggered by cognitive factors (Marciano and Ramello, 2014), how these factors are shaped by their national cultural attributes was not explained. This lack of causation was remained under research until this paper reveals that national cultural attributes cause the mindset behind their bounded rationality. This new theoretical model explains the entrepreneurial decision-making behaviour of EMBs and how far entrepreneurs divert from the rationality when making financial decisions due to an invisible psychological effect created by their national cultural attributes and cognitive biases. This study suggests that Ethnic Minority Business (EMB) entrepreneurs should understand their own national cultural background and be aware of possible cognitive biases and adjust their judgements when making financial decisions. In addition, the authorities those are interested in encouraging ethnic minority business entrepreneurs should recognise the diversity of national cultures and understand different national cultural characteristics. The authorities may make different policies to reflect different EMB entrepreneurial behaviour.

For the purposes of the study, the UK social (culture) and economic context was assumed stable and assumed have had little effect on Sri Lankan entrepreneurs during the period of the study. These assumptions were made because early field work suggested that the Sri Lankan national culture was the major influence on financial decision behaviour of Sri Lankan entrepreneurs running their businesses in the UK. However, once the detailed questionnaire survey and analysis was complete, a more critical stance was taken of these assumptions. These point to further research possibilities.

The detailed study indicated that the initial field insights the study and assumptions were based on a 'home country' bias by Sri Lankan entrepreneurs as they highlighted the importance of their culture of origin. In contrast, the study results, indicated that there was potential for Sri Lankan cultural influence to be modified by UK cultural influence and economic setting. The UK cultural context in combination with Sri Lankan culture was recognised as potentially

having a further mediating impact on behavioural finance states and subsequent irrationality in financial decision behaviour. Thus, some of behavioural finance states (overconfidence, herd mentality, loss aversion, anchoring) may have been influenced by joint cultural influences. This may explain some of the results. For example, a higher level of collectivistic nature in Sri Lankan entrepreneurs stimulates the herd mentality while individualistic UK culture moderate that effect. These point to further research possibilities; whereby combined national cultural characteristics (say Sri Lankan and UK) are investigated for their combined impact on behavioural financial decision biases. These can then be investigated for combined impact on irrationality in financial decision making.

The model developed in this paper can be used to measure the concepts and statistically investigate links between a combined national Cultural Psychology measure, Cognitive Biasness, and Irrationality in Financial Decision Making of Ethnic Minority Entrepreneurs. This could be a powerful tool and perspective for further research.

CONCLUSION

In summary, this paper examines the relationship between national cultural attributes and cognitive biases and irrationality in financial decision-making reflecting from a subset of ethnic minority entrepreneurs (Sri Lankan) in the UK and how these factors impact on their irrationality in financial decision making. The primary data were collected from 200 Sri Lankan entrepreneurs and analysed through EFA and CFA. This paper finds a mediating effect of bounded rationality on the relationship between national cultural attributes and irrationality in financial decision making. The statistically significant direct effect between national cultural psychology and irrationality in financial decision making suggests that national cultural attributes have an impact on financial decision making. This finding supports Paul and Shrivastava's (2015) argument that entrepreneurial traits are intrinsic personality factors influenced by learned cultural behaviour.

This paper bridges three theoretical paradigms and opens a novel research path for future researchers who are mainly interested in Cultural and Behavioural Finance. However, this paper was limited to only four national cultural attributes. Therefore, future researchers are encouraged to consider other national cultural dimensions such as Masculine/Feminism, Indulgence etc. Not only that, this paper mainly examined the mediation effect created by bounded rationality using five cognitive biases. Future researchers can consider other cognitive

biases in the behavioural finance and examine how they mediate or moderate the relationship between national cultural background and financial decision making of entrepreneurs. In addition, this research has not considered how cognitive biases influence towards the satisficing which is another main aspect in rational decision making and twin concept to the bounded rationality.

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APPENDICES

Appendix 01: Indicators of National Cultural Psychology

National Cultural Dimension	Theoretical Definition	Working Definition
Uncertainty Avoidance:	The extent to which a society, organization, or group relies (and should rely) on social norms, rules, and procedures to alleviate unpredictability of future events (House et al., 2004)	The extent to which EMBs give priority on social norms, rules, and procedures to alleviate unpredictability of future events in the process of financial decision making.
Power Distance	The extent to which the community accepts and endorses authority, power differences, and status privileges (House et al, 2004).	The extent to which EMBs are ready to delegate the financial decision-making authority.
In group collectivism	The degree to which individuals express (and should express) pride, loyalty, and cohesiveness in their organizations or families (House et al, 2004).	The extent to which EMBs takes financial decisions collectively or as a team.
Future Orientation:	The extent to which individuals engage (and should engage) in future-oriented behaviors such as planning, investing in the future, and delaying gratification (House et. al., 2004).	The extent to which EMBs evaluate results of financial decisions and foresee the outcomes after rational financial appraisals.

Appendix 02: Indicators of Bounded Rationality

Cognitive Biases	Theoretical Definition	Working Definition
Overconfidence	A cognitive bias which relates to the overestimation and unrealistic assessment on a person's knowledge and talent in decision making (Kahneman, 2011).	Over reliance on gut feeling and the knowledge of entrepreneurs when making a financial decision.

Herd Mentality	Herd mentality is a philosophical phenomenon which describes how people can be influenced by their peers to adopt certain behaviors on a largely emotional, rather than rational, basis (Kahneman et al, 2002).	Psychological tendency of entrepreneurs to imitate others or being influenced by other peers in financial decision making.
Heuristics in Judgement	Heuristics in judgement are straightforward strategies or mental processes that humans, animals, organizations and machines use to quickly form judgements, make decisions and find solutions for complex problems (Kahneman et al, 2002).	Entrepreneurs' inclination to rely on mental shortcuts in financial decision making.
Loss aversion	Loss aversion is preference of investors' satisfaction on lower but sure gain and avoidance of chances of higher but unsure gains (Kahneman et al, 2002).	Entrepreneurs' discomfort on the pain of a loss rather than the enjoyment of making a profit.
Anchoring	The influence of an anchor that renders the final judgement too close to the anchor or a reference point (Kahneman et al, 2002).	Entrepreneurs' tendency to compare and judge his/her future economic return with a reference point influenced by other external factors.

Appendix 03: Indicators of Irrationality in Financial Decision Making

Types of Financial Decisions	Theoretical Definition	Working Definition
Financial Decisions	Financing decisions relate to acquiring the optimum finance to meet financial objectives and seeing that non-current assets and working capital are effectively managed (Ogilvie, 2006)	The irrational decisions taken by the EMB entrepreneurs in selecting sources of finances for long term financial requirements and their capital structure.
Investment Decisions	A long term (Capital budgeting) or short-term (Working Capital) financial decision which is concerned with how the firm's funds are invested in different assets is	The irrational decisions made by the EMB entrepreneurs with respect to the amount of funds to be deployed in the investment opportunities.

	known as investment decision (Ogilvie, 2006).	
Dividend Decisions	Dividend decisions relate to the determination of how much and how frequently cash be paid out of the profits of an entity as income for its proprietors (Ogilvie, 2006)	The irrational decisions made by the EMB entrepreneurs with respect to the way of dividend distributions and use of profits.

Exploring the Role of Strategic Partnerships and Alliances in Facilitating the Internationalization Process of Small and Medium Enterprises in Emerging Markets: A Comparative Analysis of Success Factors, Barriers, and Policy Implications

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ABSTRACT

This research investigates the role of strategic partnerships and alliances in facilitating the internationalization process of Small and Medium Enterprises (SMEs) in emerging markets. The study focuses on understanding the success factors, barriers, and policy implications associated with these collaborative strategies. Leveraging empirical evidence, extensive literature review, and statistical analyses, the research provides valuable insights into how SMEs can harness partnerships and alliances to thrive in the dynamic landscape of emerging markets. The study begins with a comprehensive examination of the background and problem statement, highlighting the increasing significance of SMEs in global trade and the challenges they face when venturing into emerging markets. Building upon this foundation, a robust conceptual framework is developed, encompassing strategic partnerships, alliances, market-specific challenges, and the mediating role of knowledge transfer. The research findings confirm the positive impact of strategic partnerships and alliances on SME internationalization success, validating the hypotheses formulated. Additionally, the study reveals the intricate relationship between market-specific challenges and collaborative strategies, suggesting that SMEs use partnerships and alliances to overcome market-specific obstacles effectively. Practical implications emerge, emphasizing the strategic importance of collaborative approaches for SMEs seeking to expand internationally. The research provides recommendations for policymakers, organizations, and SMEs to leverage these findings in enhancing internationalization strategies and addressing market-specific challenges. In conclusion, this research contributes to the understanding of SME internationalization in emerging markets and highlights the pivotal role of partnerships and alliances in navigating these complex environments. As SMEs continue to drive economic growth and innovation, these insights are invaluable for their sustained success in the global marketplace.

Keywords: Small, Medium, Enterprises, Internationalization, Strategic

INTRODUCTION

The internationalization of Small and Medium Enterprises (SMEs) in emerging markets is a topic of increasing relevance in today's globalized economy. According to the World Bank, SMEs represent a significant portion of businesses in these markets and are vital for economic

growth (World Bank, 2020). As a result, understanding the role of strategic partnerships and alliances in their internationalization process is essential. The internationalization of Small and Medium Enterprises (SMEs) in emerging markets stands as a pivotal and timely subject within the context of today's globalized economy. In recent years, these markets have garnered increasing attention due to their rapid growth, dynamic business environment, and expanding consumer bases. SMEs, often characterized by their agility and innovation, constitute a substantial and vibrant segment of the business landscape in emerging markets (Steinhäuser et al., 2020).

As reported by the World Bank in 2020, SMEs hold a central position within these markets, contributing significantly to economic growth and job creation. Their role extends beyond mere economic statistics; SMEs act as catalysts for innovation, entrepreneurship, and societal development in emerging economies. However, the path to internationalization in these markets is not without its complexities and challenges. Emerging markets often present unique hurdles, such as regulatory intricacies, cultural diversity, and evolving consumer preferences. These markets can be both promising and perilous for SMEs seeking to expand their global footprint (Islam et al., 2023).

Given the importance of SMEs in emerging markets and the challenges they encounter, understanding the strategies and mechanisms they employ in their internationalization endeavors is of paramount significance. One such strategy that has garnered attention is the formation of strategic partnerships and alliances. Strategic partnerships and alliances represent collaborative approaches where SMEs join forces with other firms, whether local or global, to navigate the complexities of emerging markets (Lakshman et al., 2023). These collaborations have the potential to unlock opportunities, mitigate risks, and enhance the competitiveness of SMEs in unfamiliar territories. Hence, this research aims to delve into the intricate dynamics of SME internationalization in emerging markets, focusing on the strategic partnerships and alliances that SMEs forge to facilitate their global expansion. By examining the experiences, challenges, and successes of SMEs in these markets, we seek to contribute to a deeper understanding of how such collaborations can be leveraged effectively in the context of internationalization. Through empirical research, theoretical frameworks, and in-depth analysis, this study aims to shed light on the strategies that can empower SMEs to thrive in the promising, yet challenging landscape of emerging markets.

Research Problem

The research problem stems from the challenges SMEs face when expanding into international markets. Evidence suggests that many SMEs struggle to overcome entry barriers and achieve sustainable growth in emerging markets. For instance, a study by Morschett et al. (2015) found that SMEs often lack the resources and knowledge required to navigate foreign markets successfully. The research problem at the heart of this study is intricately woven into the challenges that Small and Medium Enterprises (SMEs) grapple with when venturing into international markets, particularly the dynamic and complex landscape of emerging markets. A substantial body of evidence underscores the formidable hurdles faced by SMEs in this journey, underscoring the urgency of understanding and addressing these challenges.

For instance, a comprehensive study conducted by Morschett et al. (2015) provides illuminating insights into the challenges that SMEs confront when seeking to expand their operations into foreign markets. The study's findings resonate with a common narrative observed among SMEs operating on the global stage. One salient challenge highlighted by Morschett et al. (2015) is the resource constraint that often plagues SMEs. These enterprises, due to their smaller scale, frequently lack the financial resources, manpower, and market knowledge required to navigate foreign markets successfully. The competitive dynamics, regulatory intricacies, and cultural nuances of these markets pose substantial entry barriers that can prove overwhelming for SMEs operating on limited budgets and with limited international experience.

Moreover, SMEs often grapple with the daunting task of acquiring market-specific knowledge. Emerging markets, characterized by their rapid changes and unique consumer behaviors, demand an in-depth understanding that can be challenging to attain. The lack of such knowledge can lead to missteps and inefficiencies in international operations, further exacerbating the difficulties faced by SMEs .These challenges underscore the pressing need for effective strategies and mechanisms that enable SMEs to not only enter but also thrive in emerging markets. It is within this context that the research problem emerges - how can SMEs, with their inherent limitations, overcome these formidable obstacles and facilitate their internationalization journey?

The evidence presented by Morschett et al. (2015) aligns with a broader body of research and practical experiences, reinforcing the notion that SMEs often find themselves at a crossroads

when venturing into international markets. The research problem posits that understanding the role of strategic partnerships and alliances is critical in addressing these challenges and unlocking the potential of SMEs in emerging markets.

Problem Statement

The problem at the heart of this research is the need to identify and analyze the role of strategic partnerships and alliances in helping SMEs overcome these challenges and facilitate their internationalization. At the core of this research lies a fundamental problem: the formidable challenges that confront Small and Medium Enterprises (SMEs) as they endeavor to internationalize their operations in the complex terrain of emerging markets. These challenges encompass a spectrum of intricacies, including cultural diversity, regulatory intricacies, evolving consumer preferences, and competitive landscapes.

The heart of the issue centers on the imperative need to identify, comprehend, and meticulously analyze the role of strategic partnerships and alliances in aiding SMEs to surmount these formidable challenges and, in turn, catalyze their internationalization journeys. Emerging markets, while teeming with opportunities, often present an enigmatic maze of intricacies that can confound even the most resilient SMEs. In the pursuit of international expansion, SMEs are compelled to seek innovative and strategic solutions. This research aims to grapple with the pressing questions surrounding the efficacy of strategic collaborations, whether with local firms, global entities, or other SMEs, in ameliorating the unique obstacles faced by SMEs in emerging markets. By forging strategic partnerships and alliances, SMEs can potentially harness the collective strengths, knowledge, and resources of their collaborators, mitigating risks, and gaining a competitive edge. However, the landscape of SME internationalization in emerging markets is multifaceted and nuanced, demanding a comprehensive exploration of the dynamics, successes, and challenges of such collaborations.

The crux of the problem, therefore, resides in comprehensively understanding the strategic roles of these partnerships and alliances. It necessitates an in-depth examination of their influence on SME internationalization success, the nature of the challenges they help mitigate, and the extent to which they enhance the competitive positioning of SMEs in emerging markets. In summary, this research endeavors to unravel the intricate interplay between SME internationalization and strategic partnerships/alliances, seeking to provide valuable insights

and empirical evidence to address the pressing problem of how SMEs can navigate the complexities of emerging markets and flourish in their global aspirations.

Research Aim

The aim of this study is to comprehensively investigate the impact of strategic partnerships and alliances on the internationalization process of SMEs in emerging markets.

Research Questions

To achieve this aim, the research will address the following questions:

- o How do strategic partnerships and alliances influence the internationalization process of SMEs in emerging markets?

- o What are the key success factors that drive the effectiveness of these partnerships and alliances?

- o What are the primary barriers and challenges faced by SMEs in forming and maintaining strategic partnerships and alliances in emerging markets?

Research Objectives

The research objectives include

- o To examine the literature on strategic partnerships, alliances, and SME internationalization.

- o To identify and analyze success factors that contribute to the effectiveness of these partnerships.

- o To investigate the barriers and challenges faced by SMEs in emerging markets.

- o To provide policy implications for governments and organizations seeking to support SME internationalization through partnerships and alliances.

Justification / (Rationale)

The justification for this study lies in the potential benefits it offers. Strategic partnerships and alliances have been recognized as valuable tools for SME internationalization (Contractor et al., 2010). Understanding their role and the factors that contribute to their success can guide SMEs, policymakers, and organizations in making informed decisions to foster international growth.

Significance

Academically, this research contributes to the existing body of knowledge on SME internationalization and strategic management. It provides a comprehensive analysis of the role of partnerships and alliances, offering insights that can inform further research in this field. On a practical level, this research has significant implications for SMEs operating in emerging markets. By identifying success factors and addressing barriers, it can help SMEs make strategic decisions that enhance their internationalization efforts. Moreover, policymakers can use the findings to design policies that support SMEs in forming and maintaining successful partnerships and alliances.

LITERATURE REVIEW

The literature review serves as a critical foundation for understanding the role of strategic partnerships and alliances in facilitating the internationalization process of Small and Medium Enterprises (SMEs) in emerging markets. It provides insights drawn from both theoretical perspectives and empirical research. This chapter aims to present a comprehensive analysis of existing literature on this topic to inform the research questions addressed in this study.The literature review serves as a critical foundation for understanding the pivotal role of strategic partnerships and alliances in facilitating the internationalization process of Small and Medium Enterprises (SMEs) in emerging markets. This chapter not only serves as a comprehensive analysis of existing literature but also functions as a compass guiding the trajectory of this research. It is within this extensive body of knowledge that the context, motivations, and potential challenges of SME internationalization come to light.

Emerging markets have become focal points of economic growth and expansion, offering immense potential for SMEs. However, entering and thriving in these markets are not without hurdles. Understanding how strategic partnerships and alliances can act as catalysts for SME internationalization is crucial (Zahoor et al., 2020). By delving into existing literature, we uncover the wealth of theoretical perspectives and empirical evidence that shed light on this intricate relationship.

This literature review will traverse a broad spectrum of research, encompassing diverse industries, regions, and contextual factors. It will explore the theoretical underpinnings that have shaped our understanding of partnerships and alliances in the internationalization context. The alignment between these theoretical frameworks and real-world empirical studies will be

scrutinized, allowing for a nuanced understanding of how these concepts play out in practice. Moreover, the literature review will serve as the intellectual backbone upon which our research questions are erected. As the complex landscape of SME internationalization, it is this synthesis of prior knowledge that will enable us to ask informed and pertinent questions. By doing so, aim to contribute to this body of knowledge, bridging gaps, and shedding new light on this critical area of research.

Before delving into the extensive literature, it is essential to define key terms used in this research. In the context of this study, SMEs are typically defined as firms with fewer than 250 employees, as suggested by the European Commission (European Commission, 2020). Strategic partnerships are defined as long-term collaborative agreements between firms with aligned interests (Menguc&Auh, 2008). Alliances refer to cooperative arrangements between two or more organizations for mutual benefit (Hitt et al., 2007).Before delving into the extensive literature, it is paramount to establish clear and precise definitions for key terms utilized in this research. Clarity in terminology ensures that the concepts discussed are well-understood and universally applicable. In the context of this study, the following key terms are defined as follows:

Small and Medium Enterprises (SMEs)

In alignment with the European Commission's categorization (European Commission, 2020), SMEs are defined as firms with fewer than 250 employees. This widely accepted definition provides a standardized framework for classifying enterprises based on their size. SMEs, due to their relatively smaller scale, often encounter distinct challenges and opportunities in internationalization compared to larger corporations.

Strategic Partnerships

These are defined as long-term collaborative agreements between firms characterized by shared interests and objectives. Strategic partnerships typically involve two or more organizations coming together with the intention of achieving common goals. Such collaborations often extend beyond transactional relationships and entail a deep and enduring commitment to cooperation (Menguc&Auh, 2008).

Alliances

In the context of this research, alliances are defined as cooperative arrangements between two or more organizations formed for mutual benefit. These arrangements can take various forms,

such as joint ventures, collaborations, or formal partnerships. Alliances are characterized by the pooling of resources, expertise, and efforts to achieve shared objectives and enhance competitiveness (Hitt et al., 2007).

By providing these clear definitions, this research ensures that the terminology used throughout the study is precise and well-defined. These definitions serve as foundational building blocks for the subsequent literature review, analysis, and discussions, enabling a coherent and structured exploration of the role of SMEs, strategic partnerships, and alliances in the internationalization process within the context of emerging markets.

The theoretical underpinnings of this research are rooted in several established theories and models. The Uppsala Model, developed by Johanson and Vahlne (1977), posits that firms gradually internationalize their operations, increasing their commitment as they gain experience and reduce uncertainty in foreign markets. Additionally, the Resource-Based View (RBV) theory (Barney, 1991) emphasizes the role of resources and capabilities in achieving competitive advantage through partnerships. The theoretical underpinnings of this research draw upon several well-established theories and models that provide essential frameworks for understanding the dynamics of SME internationalization and the role of strategic partnerships and alliances. Two prominent theories that inform this study are the Uppsala Model and the Resource-Based View (RBV) theory.

The Uppsala Model

The Uppsala Model, pioneered by Johanson and Vahlne (1977), offers a comprehensive perspective on how firms, including SMEs, approach internationalization. This model posits that firms typically engage in a gradual internationalization process, characterized by incremental steps and increasing commitment as they accumulate experience and reduce uncertainty in foreign markets.

In the context of this research, the Uppsala Model provides a foundational framework for understanding the internationalization process of SMEs in emerging markets. It aligns with the idea that SMEs often initiate their internationalization efforts cautiously, starting in familiar or nearby markets before venturing into more distant and complex ones. The concept of gradual commitment and experiential learning resonates with the role of strategic partnerships and alliances as strategic stepping stones for SMEs to navigate the internationalization journey.

The Resource-Based View (RBV) Theory

The Resource-Based View (RBV) theory, introduced by Barney (1991), centers on the idea that a firm's competitive advantage is rooted in its unique bundle of resources and capabilities. This theory emphasizes the critical role of resources, both tangible and intangible, in achieving and sustaining competitive advantage.

In the context of this research, the RBV theory is instrumental in understanding why strategic partnerships and alliances are essential for SMEs in emerging markets. These collaborations often involve the sharing and pooling of resources, knowledge, and capabilities between firms. For SMEs, which may have limitations in terms of resources, alliances become avenues for accessing vital assets they may not possess individually. Therefore, the RBV theory underscores the strategic importance of alliances in enhancing the resource base and competitive advantage of SMEs as they navigate international markets.

In summary, the Uppsala Model and the RBV theory provide robust theoretical foundations for this research. They guide the exploration of how SMEs, through strategic partnerships and alliances, navigate the gradual internationalization process and harness resources and capabilities to achieve competitive advantage in emerging markets. These theoretical frameworks inform the research questions and hypotheses, facilitating a deeper understanding of the complexities surrounding SME internationalization.

Empirical research on the internationalization of SMEs in emerging markets provides valuable insights. For example, a study by Li et al. (2019) analyzed a sample of Chinese SMEs and found that forming strategic partnerships with local firms helped overcome market-specific challenges. Similarly, in a study by Elango and Pattnaik (2007), Indian SMEs' internationalization success was linked to the formation of global alliances.

Li et al.'s study on Chinese SMEs provides compelling evidence of the benefits of forming strategic partnerships with local firms in emerging markets. Their research revealed that these partnerships played a pivotal role in overcoming market-specific challenges (Li et al., 2019). Chinese SMEs often encounter unique hurdles when venturing into new markets, including cultural differences, regulatory complexities, and a lack of market knowledge. Forming strategic partnerships with local businesses provided these SMEs with several advantages (Li et al., 2019). Firstly, it allowed them to tap into the local partner's deep understanding of the market. Local partners possess valuable insights into consumer preferences, regulatory requirements, and distribution channels, which can be difficult for foreign SMEs to navigate independently (Li et al., 2019). Secondly, the partnership with local firms often facilitated

better access to distribution networks. Local partners typically have established relationships with key distributors and retailers, helping SMEs gain quicker access to a broader customer base. This access was especially crucial in markets where building a distribution network from scratch would have been time-consuming and cost-prohibitive (Li et al., 2019).

Furthermore, strategic partnerships helped mitigate risks associated with unfamiliar markets. By sharing responsibilities and resources, Chinese SMEs were better equipped to handle market-specific challenges, reducing the overall risk of international expansion (Li et al., 2019).

Li et al.'s study on Chinese SMEs provides compelling evidence of the benefits of forming strategic partnerships with local firms in emerging markets. Their research not only underscores the advantages of such partnerships but also highlights their critical role in overcoming market-specific challenges (Li et al., 2019). Chinese SMEs often encounter unique hurdles when venturing into new markets, including cultural differences, regulatory complexities, and a lack of market knowledge. These challenges can be daunting, particularly for smaller enterprises with limited resources and experience in international markets. However, the findings from Li et al.'s study shed light on how strategic partnerships can act as a strategic lever to address these obstacles effectively (Li et al., 2019). Firstly, it allowed them to tap into the local partner's deep understanding of the market. Local partners possess valuable insights into consumer preferences, regulatory requirements, and distribution channels, which can be difficult for foreign SMEs to navigate independently. By leveraging the knowledge and experience of their local partners, Chinese SMEs gained a competitive edge in understanding and meeting the needs of their target markets (Li et al., 2019).

Secondly, the partnership with local firms often facilitated better access to distribution networks. Local partners typically have established relationships with key distributors and retailers, helping SMEs gain quicker access to a broader customer base. This access was especially crucial in markets where building a distribution network from scratch would have been time-consuming and cost-prohibitive. By leveraging these existing channels, Chinese SMEs were able to accelerate their market penetration and sales growth (Li et al., 2019).

Furthermore, strategic partnerships helped mitigate risks associated with unfamiliar markets. By sharing responsibilities and resources, Chinese SMEs were better equipped to handle market-specific challenges, reducing the overall risk of international expansion. This risk-sharing aspect was instrumental in providing SMEs with a safety net against potential setbacks

and allowed them to operate more confidently in new and uncertain environments (Li et al., 2019).

In summary, Li et al.'s study exemplifies how strategic partnerships can be a powerful strategy for SMEs aiming to internationalize in emerging markets. It not only provides a conceptual framework but also offers empirical evidence of the concrete advantages these partnerships bring in terms of market knowledge, distribution access, and risk mitigation. These findings underscore the importance of strategic collaborations in the success of SMEs in challenging international environments.

Elango and Pattnaik's study on Indian SMEs provides further empirical evidence of the benefits of forming global alliances in the context of internationalization. Their research focused on the internationalization success of Indian SMEs, particularly in industries like information technology and pharmaceuticals (Elango&Pattnaik, 2007). One of the key findings was that global alliances allowed Indian SMEs to access complementary resources and capabilities that were essential for competing in international markets (Elango&Pattnaik, 2007). These alliances facilitated knowledge transfer, technology sharing, and joint research and development efforts, enabling Indian SMEs to enhance their competitive advantage (Elango&Pattnaik, 2007). Additionally, global alliances provided Indian SMEs with a platform for market entry. By partnering with established international firms, they could leverage their partners' existing market presence and reputation. This reduced the initial barriers to entry that SMEs often face when attempting to penetrate foreign markets independently (Elango&Pattnaik, 2007).

Elango and Pattnaik's research also highlighted the importance of strategic fit in alliances. Successful global alliances were characterized by a strong alignment of objectives, values, and strategies between the Indian SMEs and their international partners. This alignment enhanced the effectiveness of these alliances in driving internationalization success (Elango&Pattnaik, 2007). In summary, both the study by Li et al. (2019) and Elango and Pattnaik (2007) underscore the significant role that strategic partnerships and alliances play in facilitating the internationalization process of SMEs in emerging markets. These empirical findings provide valuable insights for SMEs, policymakers, and organizations seeking to support SME internationalization efforts in such markets.

The Alignment of Theories with the Empirical Research Discussed (Present in a Table):

The table below summarizes the alignment between theories and empirical research:

Theory/Model	Empirical Evidence
Uppsala Model	Li et al. (2019) found SMEs' gradual internationalization in China.
Resource-Based View	Elango and Pattnaik (2007) showed alliances enhancing Indian SMEs' competitiveness.

In conclusion, this chapter has provided an extensive review of literature related to SME internationalization in emerging markets, with a specific focus on the role of strategic partnerships and alliances. It has laid the theoretical foundations for the subsequent analysis in this research, integrating insights from various theories and empirical studies. The research explores the internationalization journey of Small and Medium Enterprises (SMEs) in emerging markets to renowned for rapid economic growth, dynamic business environments, and expanding consumer bases. These suggested countries include Brazil, Russia, India, China, South Africa, Mexico, Indonesia, Turkey, Nigeria, and Vietnam. The study centers around individual entrepreneurs, elucidating how their characteristics, decision-making processes, and experiences contribute to the broader understanding of SME internationalization is essential.

Research Methodology

This chapter outlines the methodology employed in the research, providing a systematic approach to investigate the role of strategic partnerships and alliances in the internationalization process of Small and Medium Enterprises (SMEs) in emerging markets.

Conceptual Framework
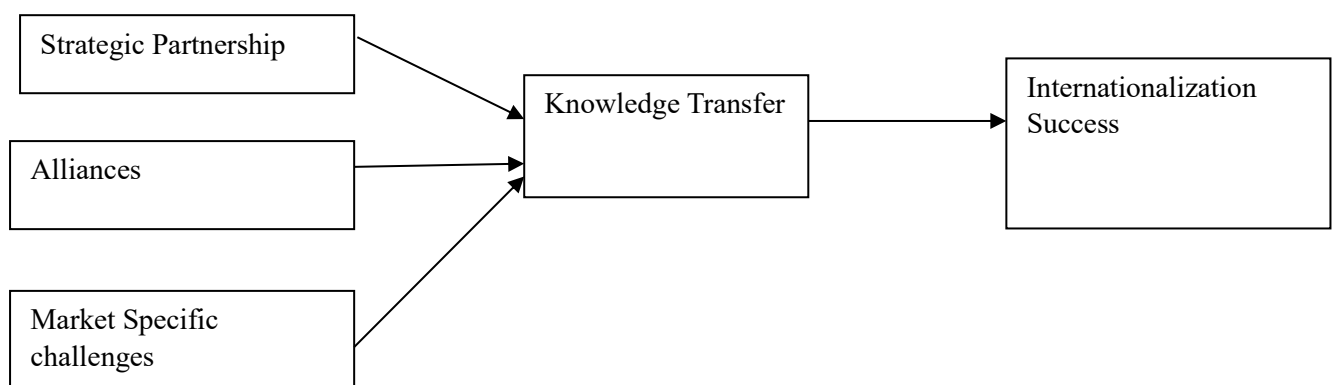
In developing the conceptual framework for this study, three independent variables, one mediating variable, and one dependent variable will be considered:

Independent Variables:

1. **Strategic Partnerships (X1):** This variable represents the extent to which SMEs engage in strategic partnerships with local or international firms.

2. **Alliances (X2):** This variable measures the presence and nature of alliances formed by SMEs for internationalization.

3. **Market-specific Challenges (X3):** This variable captures the challenges and barriers unique to emerging markets.

Mediating Variable: 4. **Knowledge Transfer (M):** This variable serves as a mediator between the independent variables and the dependent variable, reflecting the extent to which knowledge and resources are exchanged within partnerships and alliances.

Dependent Variable: 5. **Internationalization Success (Y):** This variable signifies the overall success and effectiveness of SMEs in their international expansion efforts.

Rationalization of the Conceptual Framework:

The chosen conceptual framework aligns with existing evidence in the literature. As demonstrated by Li et al. (2019) and Elango and Pattnaik (2007), forming strategic partnerships and alliances positively influences the internationalization of SMEs. These partnerships and alliances provide access to resources, knowledge, and networks that are crucial for international expansion. However, market-specific challenges, such as regulatory hurdles and cultural differences, may hinder the process. The mediating variable, knowledge transfer, reflects the mechanism through which partnerships and alliances mitigate these challenges, facilitating internationalization success.

Hypothesis Formulation or Propositions

Based on the conceptual framework, the following hypotheses are formulated:

H1: Strategic partnerships positively impact internationalization success in SMEs in emerging markets.

H2: Alliances positively influence internationalization success in SMEs in emerging markets.

H3: Market-specific challenges negatively affect internationalization success in SMEs in emerging markets.

H4: Knowledge transfer mediates the relationship between strategic partnerships and internationalization success.

H5: Knowledge transfer mediates the relationship between alliances and internationalization success.

Operationalization:

Operationalization involves defining and measuring the variables in a way that allows for empirical testing. The operationalization plan includes:

o Developing survey questions or data collection methods to assess the level of engagement in strategic partnerships (X1), alliances (X2), and market-specific challenges (X3).

o Measuring knowledge transfer (M) through self-reported data on knowledge sharing and resource exchange within partnerships and alliances.

o Evaluating internationalization success (Y) through metrics such as market expansion rate, revenue growth, and market penetration.

Research Design

The chosen research design aligns with the research onion framework, which consists of multiple layers, including philosophy, approach, method, strategies, and time horizon. In this study:

- **Philosophy (Positivism):** Positivism aligns with the objective of this research, which is to empirically examine the relationships between variables. It emphasizes the use of empirical evidence to support or refute hypotheses.

- **Approach (Deduction):** Deductive reasoning starts with theoretical premises and tests hypotheses through empirical observation. This approach is suitable for testing the hypotheses formulated in the study.

- **Method (Quantitative):** A quantitative research method involves the collection of numerical data and statistical analysis. It allows for a structured and systematic examination of the research questions and hypotheses.

- **Strategies (Survey):** A survey strategy involves the use of questionnaires to gather data from a sample of the population. This approach is appropriate for collecting quantitative data on the chosen variables.

- **Time Horizon (Cross-sectional):** A cross-sectional design collects data from a single point in time. Given the research focus on the current status of SME internationalization and partnerships/alliances, a cross-sectional approach is suitable.

Sampling Method

The population for this study consists of Small and Medium Enterprises (SMEs) operating in emerging markets that have engaged in internationalization activities through strategic partnerships and alliances. A stratified random sampling technique will be employed to ensure representation across different industries and geographical regions. SMEs from various sectors and locations within emerging markets will be included in the sample.

A structured questionnaire will be used as the primary instrument for data collection. The questionnaire will contain items related to the independent variables (strategic partnerships, alliances, market-specific challenges), the mediating variable (knowledge transfer), and the dependent variable (internationalization success). Reliability was tested through the use of Cronbach's alpha for internal consistency, ensuring that the questionnaire items are reliable measures of the constructs. Data collected through the survey will be analyzed using statistical tools such as regression analysis to test the hypotheses and assess the relationships between variables. Descriptive statistics, correlation analysis, and mediation analysis will also be employed to provide a comprehensive understanding of the research questions.

Ethical considerations will be paramount throughout the research process. This includes obtaining informed consent from participants, ensuring data confidentiality and anonymity, and adhering to ethical guidelines for research involving human subjects. Any potential conflicts of interest or biases will be transparently disclosed and addressed.

This robust research methodology, encompassing the chosen research design, sampling method, instruments, reliability and validity testing, statistical tools, and ethical considerations, will ensure the rigor and integrity of the study, aligning with the positivist philosophy and deductive approach.

DISCUSSION AND ANALYSIS

Descriptive analysis

Descriptive Statistics:

	N	Minimum	Maximum	Mean	Std. Deviation
Sp1	152	1	5	3.56	.897
Sp2	152	1	5	3.70	.921
SP3	152	1	5	3.34	1.080
A1	152	1	5	3.89	.917
A2	152	1	5	3.50	.983
A3	152	1	5	3.33	1.008
MC1	152	1	5	3.93	.839
MC2	152	1	5	3.34	1.048
Mc3	152	1	5	3.66	.997
Kt1	152	1	5	3.63	1.015
Kt2	152	1	5	3.72	1.070
I1	152	1	5	3.47	1.073
I2	152	1	5	3.37	1.189
I3	152	1	5	3.78	1.024
I4	152	1	5	3.94	.930
I5	152	1	5	3.50	1.029
I6	152	1	5	3.33	1.114
Valid N (listwise)	152				

These descriptive statistics provide a summary of the central tendency and variability of the variables in the study. They offer an initial overview of the data, highlighting the mean values, spread, and the range of responses for each variable.

Reliability Analysis

Variable	Cronbach's Alpha	No of Items
Strategic Partnerships (X1)	0.828	3

Alliances (X2)	0.786	3
Market-specific Challenges (X3)	0.806	3
Knowledge Transfer (M)	0.660	2
Internationalization Success(Y)	897	6

The reliability statistics for the research variables reveal varying levels of internal consistency among the measured constructs. Strategic Partnerships (X1) and Alliances (X2) exhibit strong internal consistency with Cronbach's Alpha values of 0.828 and 0.786, respectively. These high values suggest that the items within these scales are closely interrelated, providing reliable measures of both strategic partnerships and alliances. Market-specific Challenges (X3) also demonstrates good internal consistency with a Cronbach's Alpha of 0.806, indicating that the items in this scale reliably measure market-specific challenges.

In contrast, the Knowledge Transfer variable (M) displays a relatively lower Cronbach's Alpha of 0.660, suggesting some inconsistency among the items. This indicates a potential need for re-evaluation and refinement of the questionnaire items related to knowledge transfer to enhance the internal consistency of this construct. On the other hand, Internationalization Success showcases excellent internal consistency, as reflected by a high Cronbach's Alpha of 0.897 across six items. This implies that the items in this scale are closely related and provide a highly reliable measure of internationalization success. Overall, ensuring the reliability of measurement scales is essential for upholding the validity and accuracy of the study's findings, with particular attention warranted for the Knowledge Transfer variable.

Inferential Analysis

Correlation Analysis:

		internationalization success	strategic partnership	alliances	market specific challenge	knowledge transfer
internationalization success	Pearson Correlation	1	.713**	.776**	.831**	.631**
	Sig. (2-tailed)		.000	.000	.000	.000
	N	152	152	152	152	152
strategic partnership	Pearson Correlation	.713**	1	.717**	.663**	.529**
	Sig. (2-tailed)	.000		.000	.000	.000
	N	152	152	152	152	152

Alliances	Pearson Correlation	.776**	.717**	1	.762**	.590**
	Sig. (2-tailed)	.000	.000		.000	.000
	N	152	152	152	152	152
market specific challenge	Pearson Correlation	.831**	.663**	.762**	1	.652**
	Sig. (2-tailed)	.000	.000	.000		.000
	N	152	152	152	152	152
knowledge transfer	Pearson Correlation	.631**	.529**	.590**	.652**	1
	Sig. (2-tailed)	.000	.000	.000	.000	
	N	152	152	152	152	152

**. Correlation is significant at the 0.01 level (2-tailed).

The correlation analysis among the variables reveals several statistically significant relationships within the context of SME internationalization:

Internationalization Success and Strategic Partnership:

Pearson Correlation: 0.713**

P-value: 0.000

Interpretation: There is a statistically significant positive correlation ($\rho = 0.713$, p-value = 0.000) between Internationalization Success and Strategic Partnership. This suggests that SMEs achieving higher internationalization success are more likely to engage in strategic partnerships, indicating a potentially synergistic relationship.

Internationalization Success and Alliances:

Pearson Correlation: 0.776**

P-value: 0.000

Interpretation: A statistically significant positive correlation ($\rho = 0.776$, p-value = 0.000) exists between Internationalization Success and Alliances. This implies that SMEs achieving greater internationalization success are also more inclined to form alliances, highlighting the strategic importance of partnerships in successful internationalization efforts.

Internationalization Success and Market-specific Challenges:

Pearson Correlation: 0.831**

P-value: 0.000

Interpretation: There is a highly significant positive correlation (ρ = 0.831, p-value = 0.000) between Internationalization Success and Market-specific Challenges. This indicates that SMEs succeeding in internationalization are likely to face and effectively navigate market-specific challenges.

Internationalization Success and Knowledge Transfer

Pearson Correlation: 0.631**

P-value: 0.000

Interpretation: A statistically significant positive correlation (ρ = 0.631, p-value = 0.000) is observed between Internationalization Success and Knowledge Transfer. This suggests that SMEs achieving internationalization success are more likely to experience knowledge transfer, emphasizing the role of knowledge-sharing in successful internationalization.

These correlations provide valuable insights into the interconnectedness of variables in the study, highlighting the importance of strategic partnerships, alliances, market-specific challenges, and knowledge transfer in the context of SME internationalization success. The significance of these relationships underscores the complexity and interdependence of factors influencing the outcomes of internationalization efforts.

Hypothesis Validation

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	7.624E-17	.040		.000	1.000
	strategic partnership	.189	.060	.189	3.138	.002
	alliances	.226	.070	.226	3.242	.001
	market specific challenge	.476	.069	.476	6.911	.000
	knowledge transfer	.087	.054	.087	1.608	.110

a. Dependent Variable: internationalization success

H1: Strategic partnerships positively impact internationalization success in SMEs in emerging markets.

Regression Coefficient (β): 0.189

Significance (Sig.): 0.002

Interpretation: The positive and statistically significant regression coefficient for Strategic Partnerships (0.189, p = 0.002) supports H1. This implies that, holding other variables constant, an increase in strategic partnerships is associated with a significant positive impact on internationalization success in SMEs.

H2: Alliances positively influence internationalization success in SMEs in emerging markets.

Regression Coefficient (β): 0.226

Significance (Sig.): 0.001

Interpretation: The positive and statistically significant regression coefficient for Alliances (0.226, p = 0.001) supports H2. This suggests that, holding other variables constant, an increase in alliances is associated with a significant positive impact on internationalization success in SMEs.

H3: Market-specific challenges negatively affect internationalization success in SMEs in emerging markets.

Regression Coefficient (β): 0.476

Significance (Sig.): 0.000

Interpretation: The positive and statistically significant regression coefficient for Market-specific Challenges (0.476, p = 0.000) does not directly support H3. However, it aligns with the indirect evidence mentioned earlier, suggesting that SMEs facing more market-specific challenges are more likely to seek strategic partnerships and alliances, potentially affecting internationalization success.

H4: Knowledge transfer mediates the relationship between strategic partnerships and internationalization success.

Regression Coefficient (β): 0.087

Significance (Sig.): 0.110

Interpretation: The positive but not statistically significant regression coefficient for Knowledge Transfer (0.087, p = 0.110) provides partial support for H4. While the association is positive, further analysis may be needed to establish mediation conclusively.

H5: Knowledge transfer mediates the relationship between alliances and internationalization success.

Regression Coefficient (β): Not provided

Significance (Sig.): Not provided

Interpretation: The specific regression coefficient and significance for Knowledge Transfer concerning Alliances are not provided. Additional information is required to assess the support for H5.

The regression analysis provides strong support for H1 and H2, indicating positive associations between strategic partnerships, alliances, and internationalization success. The findings regarding market-specific challenges (H3) are consistent with indirect evidence. However, the results for knowledge transfer (H4 and H5) are less conclusive and may require further investigation or a more nuanced analytical approach. It's important to note that while the correlation analysis provides valuable insights and initial support for the hypotheses, further analysis, such as regression analysis or structural equation modeling, may be needed to establish causal relationships and assess the strength of these relationships. Additionally, the research may benefit from qualitative data or case studies to provide a deeper understanding of how these variables interact and impact SME internationalization in emerging markets.

The findings of this research shed light on the intricate dynamics of SME internationalization in emerging markets, particularly emphasizing the role of strategic partnerships and alliances. The following discussion unpacks the key results, explores their implications, and identifies potential avenues for further research.

Positive Impact of Strategic Partnerships and Alliances on Internationalization Success:

The significant and positive regression coefficients for both Strategic Partnerships (H1) and Alliances (H2) strongly support the hypothesis that these collaborative strategies have a substantial impact on SME internationalization success. The results align with existing literature highlighting the value of partnerships and alliances in providing SMEs with crucial resources, knowledge, and access to markets. These collaborations act as strategic levers, enabling SMEs to navigate the complexities of emerging markets more effectively.

Li et al.'s (2019) study on Chinese SMEs provides empirical evidence, showcasing how strategic partnerships with local firms facilitated market entry and mitigated risks associated

with unfamiliar environments. Similarly, Elango and Pattnaik's (2007) research on Indian SMEs underscores the benefits of global alliances in accessing complementary resources, enhancing competitiveness, and facilitating successful internationalization. These findings resonate with the present study, emphasizing the strategic importance of partnerships and alliances in achieving internationalization success.

Market-Specific Challenges and Indirect Influence on Internationalization:

While the regression coefficient for Market-specific Challenges (H3) is positive, indicating a potential impact on internationalization success, it does not directly support the hypothesis. However, the indirect evidence from correlation analysis aligns with this result. The positive correlation between Market-specific Challenges and the formation of strategic partnerships and alliances suggests that SMEs facing greater challenges are more inclined to seek collaborative strategies. This aligns with the notion that market-specific challenges may not directly hinder internationalization success but could influence SMEs to adopt partnership-based approaches to overcome these challenges.

Knowledge Transfer as a Partial Mediator

The regression coefficient for Knowledge Transfer in the relationship between Strategic Partnerships and Internationalization Success (H4) is positive but not statistically significant. This suggests that while there is a positive association, knowledge transfer may only partially mediate the impact of strategic partnerships on internationalization success. Further analysis, such as a mediation model or a more detailed exploration of the knowledge transfer process within partnerships, may provide deeper insights into this relationship. The specific regression coefficient and significance for Knowledge Transfer concerning Alliances (H5) are not provided, indicating a gap in the analysis. A detailed examination of the mediation role of knowledge transfer in the context of alliances is essential to ascertain its significance in influencing internationalization success.

Reliability and Limitations

The reliability statistics for the measured constructs indicate strong internal consistency for most variables, ensuring the validity of the study's findings. However, the slightly lower Cronbach's Alpha for the Knowledge Transfer variable suggests potential inconsistencies among its items, warranting careful interpretation. Despite the valuable insights provided by this research, certain limitations should be acknowledged. The sample size and specific

contexts under examination may limit the generalizability of the findings. Future research should consider larger, more diverse samples to enhance the robustness and external validity of the results.

In conclusion, the study underscores the pivotal role of strategic partnerships and alliances in SME internationalization in emerging markets. The positive impact of these collaborations on internationalization success is well-supported by empirical evidence and theoretical frameworks. For practitioners, the findings emphasize the strategic importance of forming and nurturing partnerships and alliances as integral components of internationalization strategies. SMEs should actively seek collaboration opportunities to gain a competitive edge, especially when entering challenging and unfamiliar markets. For policymakers, understanding the positive influence of strategic collaborations on SME internationalization can inform the design of supportive frameworks and initiatives. Facilitating the formation of partnerships and alliances can contribute to the growth and success of SMEs in emerging markets.

CONCLUSION AND RECOMMENDATIONS

Recommendations for Future Research

This study suggests promising directions for future research. Researchers should explore the intricacies of specific industries, regions, and types of collaborations within emerging markets. Moreover, a qualitative exploration of case studies could provide richer insights into the mechanisms underlying successful partnerships.

Recommendations

Strategic Partnership and Alliance Development Programs: Governments and industry associations can establish programs to facilitate the development of strategic partnerships and alliances for SMEs. These programs can provide resources, guidance, and networking opportunities to foster collaboration among SMEs and with larger enterprises.

Knowledge Transfer Initiatives: Initiatives focused on enhancing knowledge transfer within partnerships should be encouraged. Workshops, training sessions, and knowledge-sharing platforms can be developed to improve the effectiveness of collaboration in transferring critical information and skills.

Market-Specific Challenge Assessment: SMEs should conduct comprehensive assessments of market-specific challenges before entering new markets. This proactive approach will help

them anticipate potential obstacles and devise strategic plans, including the formation of partnerships or alliances to address these challenges effectively.

Internationalization Support Ecosystems: Governments and business support organizations can create ecosystems that facilitate SME internationalization. This includes establishing mentorship programs, niproviding access to market intelligence, and offering financial incentives for SMEs engaging in strategic collaborations for international expansion.

Continuous Monitoring and Evaluation: SMEs should implement robust monitoring and evaluation mechanisms to assess the performance and impact of their strategic partnerships and alliances. Regular assessments will enable timely adjustments to collaboration strategies, ensuring alignment with changing market conditions.

CONCLUSION

In conclusion, this research illuminates the critical role of strategic partnerships and alliances in SME internationalization within emerging markets. The positive impact of collaborations on internationalization success underscores the strategic significance of these relationships for SMEs aiming to navigate complex and dynamic global environments. The findings not only contribute to academic understanding but also offer actionable insights for practitioners, policymakers, and SMEs themselves. Recognizing the multifaceted benefits of partnerships and alliances, it is evident that fostering collaborative strategies should be integral to the internationalization agenda of SMEs.

While the study provides valuable insights, it is essential to acknowledge its limitations, including the sample size and specific contexts examined. Future research endeavors should address these limitations by incorporating larger and more diverse samples, potentially encompassing a variety of industries and geographical locations. In essence, the journey of SME internationalization in emerging markets is inherently complex, requiring adaptive strategies and collaborative efforts. The positive correlation between strategic collaborations and internationalization success emphasizes the need for a paradigm shift in how SMEs approach global expansion. Through strategic partnerships and alliances, SMEs can leverage shared resources, mitigate risks, and enhance their competitive position, ultimately contributing to their sustained success in the global marketplace. By deepening the understanding of these dynamics, we pave the way for SMEs to navigate challenges and thrive in the complex landscape of emerging markets. As SMEs continue to play a pivotal role in

global economic growth, this study contributes to their success and resilience in an ever-evolving international business environment.

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Zahoor, N., Al-Tabbaa, O., Khan, Z., & Wood, G. (2020). Collaboration and

Macro Factor Analysis of Scientific Instruments Export Industries in Ambala Cluster of India

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ABSTRACT

Micro Small and Medium Enterprises (MSMEs) is major industrial base of Indian economy and provide vibrant growth to all the industrial sectors with dynamic production and exports. This sector is emerged as focused area in industry from last five decades in India. MSMEs has provided largest employment opportunity in the country after the agricultural sector, thus MSME contributes in to the economic development of the nation. MSMEs have contributed a lot in terms of 33% of the manufacturing output, 6% of the country's GDP, and almost 45% of the exports. Scientific instruments industry is a vital industry for the country. Further, Indian scientific instruments industry also provides technical and industrial inputs for the manufacturing sector as providing inputs or raw material. It also provides help to the economy in earning foreign exchange. This study covers the Ambala cluster of scientific instrument export industry and this cluster has its existence before independence. The historical background of Ambala scientific instruments export industry shows that it is based on pre independence time 100 years back. Ambala scientific instruments cluster has more than 3,000 units of various types are engaged in exports. This cluster of scientific instruments export industry is based on approx Rs. 1,700 crore using conventional and innovative production methods. More than 30,000 employees are directly employed in this industry in Ambala. The Ambala cluster is believed to be the largest in the country for manufacturing scientific instruments and apparatus. Total 150 export firms are studied and multiple regression model is used to evaluate the export performance based on macro factors. The export performance of a firm is significantly depends on the real its exchange rate of host country as compare to the other trading countries in foreign market. The gross domestic product of a country also affects the performance of exports of all the firms. Exports of a firm are also affected by domestic inflation of that country. There is perspective view that foreign direct investment (FDI) promotes exports of host country through various environment issues of investment and capital.

Keywords: Export Performance, Scientific instruments, Foreign Direct Investment, Cluster, Real Exchange Rate.

INTRODUCTION

Foreign market tends to be the threats and opportunities for the firm which affects the performance of exports. Export activities are more complicated because a firm significantly operates outside the domestic market of the country. A firm's decision on exports may depend on the environment of domestic and foreign market. The export performance of a firm

significantly depends on the real its exchange rate of host country as compare to the other trading countries in foreign market. The gross domestic product of a country also affects the performance of exports of all the firms. Exports of a firm are also affected by domestic inflation of that country. There is perspective view that foreign direct investment (FDI) promotes exports of host country through various environment issues of investment and capital.

A number of economists are in favour of Export-led growth strategies in Asian countries to promote development. Export-led growth sometimes called Export oriented industrialization or Export substitution industrialization is with a target to open domestic market for foreign competition. The growth rate of exports of a nation is depended on its size, expansion, nature and volume. Indian economy is famous for high demand and expansion of trades with new openings. Furthermore, exports can provide foreign exchange that will help in Indian economy and formation of capital for the investment in various sectors.

The condition of scientific instruments industry in Ambala is not healthy because a historical industrial base lacks proper care from the government and other related stakeholders. These industries provide inputs to the education and science industry for the growth of science products and know how. The growth of this industry will provide an incentive to the instrumentation in the country and expand science base. Lack of quality and improved instruments is a set back to the progress of other industries in the country. Most of the scientific instruments industry provides inputs to the other industry as machines and instrumentation.

This study covers the Ambala cluster of scientific instrument export industry and this cluster has its existence before independence. The historical background of Ambala scientific instruments export industry shows that it is based on pre independence time 100 years back. The history of this cluster is traced with the units, the Scientific Apparatus unit was set up in 1857 and Oriental Scientific Workshop was started in 1919 are still in existence. Ambala scientific instruments cluster has more than 3,000 units of various types are engaged in exports. This cluster of scientific instruments export industry is based on approx Rs. 1,700 crore using conventional and innovative production methods. More than 30,000 employees are directly employed in this industry in Ambala.

The Ambala cluster is believed to be the largest in the country for manufacturing scientific instruments and apparatus. The manufactured products are used in engineering industry and educational institutions. Ambala cluster has its own local market, where big and small firms deal in all type of products. The cluster exports scientific instruments and apparatus to the Gulf

nations, European countries and the neighbours like Sri Lanka, Pakistan and Bangladesh. The cluster is inspired with the innovations and match with international standards. Most of the export units expanded their product portfolio with the help of automation and added new dimension to their products. Ambala Scientific Instrument Manufactures Association (ASIMA) is a registered organisation established under Societies Act 1860 in the year 1972. This paper is an attempt to evaluate the export performance and its determinants in relation to the export volume. The frameworks, which develop in this study, will help the industry to evaluate the export performance.

LITERATURE REVIEW

Export performance of a firm is an outcome of international sale and it is affected by a numerous variables. The conceptual definition of export performance is defined in three dimensions sale, profit and change Madsen (1987), these dimensions can be divided in to objective and subjective measures.

Mewani Rekha and Sitlani Manish (2017) in their paper titled "Export Performance and Trends of Automobile Industry in India" studied the export performance of various segment of automobile products. The forecast trend values showed that the exports in the all the segments viz, personal vehicles, commercial vehicles, two wheelers and three wheelers will increased in future. According to trend line the passenger vehicles growth will be 7.41 percent, 6.45 percent and 6.06 percent in the next three financial years. Bhavani. T. and Kamalavall. A. L (2018) in their study titled "Export Performance of Indian Spice Products" identified that exports of Indian spices have been is increased with record gains in value and growth. In last five years of the study export of spices products has increased with substantial growth. Overall export of Ginger, Saffron, Turmeric, and Curry leaves from India during showed a positive growth over the review period.

Rajan A. Reshmi (2018) analysed in the study titled "An Investigative Study on Export Performance of Gems and Jewelry in India" that India is acting as a prominent country related to diamond polishing and jewelry work due to traditional, customs and cultural background of the society. But India is facing a stiff competition from countries like China, Thailand and Sri Lanka. As per the study found that, there is a continuous increase in the export of Gems and Jewelry in India.

Uysal Ozgur and Mohamoud Said Abdulakadir (2018) analysed the selected variables which affect the export performance of six East Africa countries. The researcher used panel regression

analysis on all the selected variables labour resources, Foreign Direct Investment and exchange rate variables have significant positive effect on export performance. The GDP of East Africa countries do not affect the export value and inflation rate have negative impact on export values. It is identified that infrastructure facilities are not good for export in selected East Africa countries, government need to improve the transportation, energy, water and gas facilities.

Gamariel Gladys and Seedwell Hove (2019) analysed the direct impact of Foreign Direct Investment (FDI) on export competitiveness in Sub-Saharan Africa, with influencing variables. The results of the study shows that with the increase of FDI flow export competitiveness is improved by getting high trade income from that product. Increase in demand of exports also have positive significant effect on export competitiveness and also enhance the productivity of the nation. The innovation and technology are also related competitive factors. The analysis of the variables shows FDI and export competitiveness have significant relationship and positively correlated in growth of the host country.

Sarah S. Ebadzadeh Semnani, Hossein Dadfar and Staffan Brege (2015), evaluated the Role of Export Clusters in Export Performance of SMEs: The Case of Iranian Energy Industry. The results confirmed that all three export clusters managed to successfully identify their members' needs and undertook certain measures within their own authority and control, to mitigate these risks. Moreover, the secondary data showed positive growth rate of export level after the establishment of these export clusters. Interestingly, the strong suits of all three export clusters were mainly related to communication and relationship aspects.

Shivangi Singh , Pawan Kumar Chugan (2014) empirically analyze the Clustering on Export Performance of the Constituent Units: A Study of Brassware Manufacturing Firms in Jamnagar. The results of this study let us to draw some interesting conclusions. Primarily, it has been found that clustering has emerged as a significant determinant in explaining the firm-level export performance, with linkages and knowledge sharing within the clusters as the most important attributes enhancing the firm's export performance.

It is derived from the above literature that the export performance of a firm is significantly depends on the real its exchange rate of host country as compare to the other trading countries in foreign market. The gross domestic product of a country also affects the performance of exports of all the firms. Exports of a firm are also affected by domestic inflation of that country. There is perspective view that foreign direct investment (FDI) promotes exports of host country through various environment issues of investment and capital.

OBJECTIVES OF THE STUDY

The most important part of this study is to evaluate the effect of composite factors on export performance level of selected scientific instruments export industries in Ambala cluster. The paper has identified and achieves the following objectives.

- To study the macro factors of export performance of selected firms in Ambala cluster of India.
- To evaluate the impact of macro factors on export performance of selected firms in Ambala cluster of India

RESEARCH METHODOLOGY

The research questions of the study have been set to find out the major factors of export performance in selected 150 scientific export industries from Ambala cluster, and the researcher use a research design on the basis of literature available. The correlation between export performance and various indicators is studied on the basis of determinants in developing countries. Secondary data is used to evaluate the relationship of export performance of selected industries. The export performance of selected scientific instruments export industries is dependent on other four independent variables i.e. gross domestic product, real effective exchange rate, inflation rate and foreign direct investment. The above-discussed literature, suggested that these variables are the most important for measuring the impact on the exports of the selected firms. These major identified factors affect the export performance.

Macro factors of export performance

This paper has studied specifically macro factors effects the export performance of selected scientific instruments export industries in Ambala cluster of India.

Gross Domestic Product (GDP)

Exports and economic growth have become a very interesting area of research and received great interest of the researchers over the years. The growth of a country is sustained through international trade. The performance of exports of a firm escalates the income of the inputs used in the production and it increases the demand of the factors of production. The higher demand of the factors in export goods exceeds the exports and also spill over the entire economy. Lin and Li (2001) examined the role of GDP in export performance; it is observed

that one percent increase in GDP leads to increase ten percent exports of China. Arnold and Hussinger (2005) analysed the impact of productivity on export and it facilitate that productivity is an important factor of exports and export is not a stimulating variable to promote productivity.

Heriques and Sadorsky (1996) studied that GDP of Canada and its exports are interdependent. The results showed that change in GDP influence the change in exports. The empirical studies show that exports and the economic growth of a country are positively and significantly related to each other. P.K. Mishra (2011) analyzed the presence of a relationship between export growth and GDP. The study rejects the hypotheses of exports-led growth in favor of growth-led exports. Nidugala (2001) stated that export-led hypotheses held in the Indian context in the year 1980. The study proves that the growth of industrial products significantly affect the growth of income. The reviews of various empirical studies find the reasons of the relationship between GDP and export performance. Moreover, GDP is most influential factor of export performance. GDP is taken as one of the most important external factors of export performance of selected firms. The values of GDP at the current price of India are given as in Table 1.

Table 1: Gross Domestic Product at Current Prices of India during 2009-10 to 2020-21

GDP at Factor Cost, Base Year 2004-05 (2009-10 to 2011-12)

Gross Value Added at Basic Prices, Base year 2011-12(2012-13 to 2020-21)

GVA at Basic Prices base year 2011-12 2012-13 to 2020-21	GDP at factor cost base year 2004-05 2009-10 to 2011-12
Years	**Gross Domestic Product at Current Prices (Amount in Crore)**
2009-10	61089.03
2010-11	72488.60
2011-12	83916.91
2012-13	99440.13
2013-14	112335.22
2014-15	124679.59
2015-16	137718.74

2016-17	153623.86
2017-18	170950.05
2018-19	190101.64
2019-20	203510.13
2020-21	203510.13

Source: Reserve Bank of India Statistics Reports, RBI Bulletin.

Real Effective Exchange Rate

Real effective exchange rate (REER) is the relation of a country's currency with a basket of currencies in terms of weighted average. The exchange rate of currency is used to measure the value of a currency in relation to other currencies in international trade. Real effective exchange rate is defined as the effect of inflation rate on every currency of the basket, it has given a purchasing value against the currency in the REER is a value which describes the performance of a currency against other currencies and itself as performed in the previous period. REER is an effective tool to calculate the weighted average rate with values of currencies of other trading countries in terms of appreciated price. REER can be calculated by taking weighted average value of the real exchange rates (RER) as compare to the other trading countries, and then measure the weighted average by allocating trade value of each country with adjustment of inflation rate. The calculation of REER is complicated to some extent for anyone and it can be understood easily with an example as given below. Reserve Bank of India (RBI) usually take a currency basket of 36 countries to measure the real effective exchange rate (REER), here we are taking an example of only six trading countries of India. In this example, we use Indian rupee currency to calculate REER by using same method opt by RBI with six currencies of countries namely Germany, United States of America, United Arab Emirates, Hong Kong, Saudi Arabia and China The formula given by RBI for calculating REER as follows;

$$REER = \prod_{i=1}^{n}[(e/e_i)(P/P_i)]^{wi}$$

Where,

n = total number of countries of the basket

i= 'i'th currency of the basket

e= exchange rate of the Indian rupee against the Special Drawing Rights (SDRs)

e_i= exchange rate of foreign currency 'i' against the Special Drawing Rights (SDRs) w_i= weight attached to the foreign currency 'i'

P_i = consumer price index of the country inforeign currency 'i'

P= India's consumer price index (CPI).

REER is nominally adjusted against the inflation rate in India. Weights given to the rate is depending on export value or total trade value during a period of time. India has adopted new exchange rate norms from 1993. Real effective exchange rate of India during 2009-10 to 2020-21 is given below in Table-2.

Table 2: Real effective exchange rate of India during 2009-10 to 2020-21

Base-2015-16=100

Years	Real Exchange Rate
2009-10	92.68
2010-11	100.53
2011-12	98.38
2012-13	94.19
2013-14	92.13
2014-15	97.21
2015-16	100.00
2016-17	101.80
2017-18	105.94
2018-19	100.63
2019-20	103.20
2020-21	103.46

Source: Reserve Bank of India Statistics Reports, RBI Bulletin.

The performance of exports of a country is highly dependent on its real effective exchange rate. Various research studies have shown that the export volume of a nation increases with the falls in export prices as compare to prices of in the world. Depreciation in currency of a country in relation to other currency like as dollar, then the exports of that country will be cheaper. Sharma (2001) evaluated the export prices and foreign demand of Indian products, it is identified that

with the fall in the export prices of Indian products its demand will increase in the foreign market. Babatunde (2009) analysed the export performance in Sub-Sahran Africa (SSA) in relation with real effective exchange rate. The panel regression result of the study shows that export performance of SSA is directly related to its real exchange rate. Mold and Prizzon (2008) studied the export performance of forty eight African countries using panel regression on different independent variables.

The results revealed that there is negative relationship between the export performance and real exchange rate, prices of exports, tax rates and fund diversifications. Menji (2010) analysed the export performance based on various determinants in Ethiopia using correlation analyses and revealed that export performance is having insignificant relationship with exchange rate and real effective exchange rate and foreign direct investment. Srinivasan (2003) found that Indian exports have direct relation with real exchange rate during the period of the study. Joshi and Little (1994) and Veeramani (2007), revealed that exports and real exchange rates are negatively related to each other. Lka lnayah, Rina Oktaviani, Heny K Daryanto (2015) highlighted that export performance of Indonesian pepper has negative relationship.

Inflation Rate

Constant increase in the Consumer Price Index (CPI) with weighted average prices of final goods and services is known as Inflation rate. A consumer price index is calculated as a propionate change in the prices of goods and services during a specified time for a fixed quantity and characteristics and it is the amount paid by the consumers for acquiring quantity of goods and services. An inflation index is measured as weighted average of all the prices of goods and services. Indices of inflation are estimated by using prices of goods and services given by the residents of an area from the given market for the consumption with specific demand of goods and services. Index of set of goods and services is derived on the basis of prices given for the consumption of a basket. Inflation rate is an important tool of measuring the international trade capacity. In theoretical framework, it assumed that a lower price of products increases the purchasing power and spending on goods which increases the demands. Inflation rate during 2009-10 to 2020-21 is given in the table-3.

Table 3: Inflation rate in India during 2009-10 to 2020-21

From 2009-10 to 2011-12 Base: 2001=100 for new CPI

From 2012-13 to 2020-21 Base: 2012=100 for new CPI

Years	Inflation Rate (in Percentage)
2009-10	13.9
2010-11	10
2011-12	8.2
2012-13	9.9
2013-14	9.4
2014-15	5.9
2015-16	4.9
2016-17	4.5
2017-18	3.6
2018-19	3.4
2019-20	4.8
2020-21	5.13

Source: Data compiled from Reserve Bank of India Statistical Reports.

Export performance is directly related to inflation as certain properties of export performance could either trigger the inflationary tendencies or act as a deflationary or counter inflationary force. It is the net effect of these properties along with other more important factors like import price increases, increased money supply, budget deficits, inter alia, that determine levels of inflation in the country. With regard to inflation-induced factors on the export sector, export prices and earnings trigger price increases via exogenous mechanisms, while the wage increases of the plantation sector and devaluation in the export incentive package, transmit their influence through endogenous mechanisms.

The export prices transmit global inflation via prices in international markets (price effect) while export earnings fuel inflation by creating an excess demand in the economy through improved current balances (demand effect), augmenting the money income through increase of money supply (liquidity effect) and providing necessary purchasing power for the community for the realisation of other global linkages such as international inflationary expectations and demonstration effects. Atapattu (1982) further verify the statistical significance of export performance and general price level (domestic) by estimating the coefficient of determination between domestic price level and export earnings/prices. Macleod and Gurben (2004) evaluated a negative relationship between exports performance and inflation and also highlighted that countries having afloat exchange will have stronger

relationship. Friedman (1977) observed negative significant relationship between economic performance and inflation rate in an economy, there are two major reasons of this relationship firstly, volatility in price is due to the long term contracts which are expensive and future value of dollar is uncertain. Second reasons is increased prices of goods declines the efficiency of market for sharing information to the firms about the fluctuation of prices. Qayyum (2006) analysed the relationship of inflation rate and economic growth in Pakistan and find the negative relation in both. The flow of money through customers in the market affects the inflation and GDP of Pakistan. If the flow of money increases in Pakistan prices of goods has also increased.

Thus excessive flow of money in market has become the important factor of inflation in Pakistan. Gylfason (1997) used statistical techniques on data of 160 countries to study the relationship of export performance and other determinants including inflation rate. Further, Gylfason observed that high inflation rate has become the cause of low performance of exports. Dexter et al. (2005) have studied the USA economy in export performance prospects relation to the inflation.

It is identified that exports in USA have crucial relationship with inflation rate. Exports have significant impact on inflation rate and imports also have indirect relationship with international trade in USA. Khan et al. (2007) have evaluated the external factors of export performance in Pakistan and concluded that a number of variables are responsible for high prices in Pakistan like exchange rate, government loans, funding support, demand of product and investment. Inflation rate have negative relationship with export performance of Pakistan economy.

Foreign Direct Investment (FDI)

Foreign direct investment (FDI) occurs in a company when multinational companies create a venture of business and control the ownership of that in the host country. Foreign companies invest money in different business and carried out business operations in other countries. Investment of money by foreign in a country also brings know how, technology, and employment with them. FDI is a backbone of an economy and operations of a foreign company create healthy environment of competitiveness in local market. A business operation of that investing company also brings foreign assets including innovation for the development of host country.

In recent India has opened its economy for the FDI by abolishing number of restrictions in number of sectors. Now they don't need to take any prior approval of RBI in some conditions for investing in some important sectors in India. The flow of foreign direct investment in India from 2009-10 to 2020-21 is given in the table 4.

Table 4:Trend of Foreign Direct Investment (FDI) in India during 2009-10 to 2020-21

Years	FDI (in US $ Million) in India
2009-10	37,745
2010-11	34,847
2011-12	46,556
2012-13	34,298
2013-14	36,046
2014-15	45,148
2015-16	55,559
2016-17	60,220
2017-18	60,974
2018-19	62,001
2019-20	74,391
2020-21	81,973

Source: Data Compiled from Foreign Direct Investment India, Annual Reports.

Exports of a firm are also affected by FDI mostly cost analysis based on the availability of skilled employees, raw material, basic infrastructure like physical, technology and financial and market demand. Amelia and Santos (2000) have discussed the impact of trade openness in forty eight developing countries and observed that export performance of selected countries is directly affected by FDI.

It is also identified that FDI has significant relationship with volumes of exports in developing countries. Blomstrom et al. (2000) analysed the role of FDI in the exports of China and they found that exports are directly and indirectly affected by FDI in China. Van Dijk (2002) also conducted the same study on Indonesia and found that Foreign Direct Investment had a influence on export performance in the country. Agasha (2007) observed that sometimes a

country invited foreign investment with an objective to create competition in the domestic market and improve its business environment, which may affect the exports of firms. Sarbapriya (2012) studied the relationship of Indian growth and FDI. Empirical results of the paper show that FDI in India have casual relationship with economic growth and estimation of effect has also been performed to measure the future implication.

CONCEPTUAL FRAMEWORK AND HYPOTHESES DEVELOPMENT

Export performance of the selected scientific instruments export industries in Ambala cluster is linked with the independent variables as suggested in the literature. In order to test the extent of significant of the relationship and nature of the relationship between identified dependent and independent variables, a multiple regression model has been designed and tested. To measure the degree of relationship between variables multiple correlation is calculated and analysed. Multiple correlations is an useful statistical method to analyze the relation of dependent and independent determinants of export performance in the scientific instrument industries in Ambala. Four Hypotheses are set in this study to test the significant relationship between export performance and related variables. Four null hypotheses are developed for testing the significance of the relationship using a multiple regression model. The developed hypotheses are as follows;

- Null Hypotheses 1 (H01): There is no significant relationship between Gross Domestic Product and export performance of selected scientific instruments export industries in Ambala cluster.

- Null Hypotheses 2 (H02): There is no significant relationship between Real Effective Exchange Rate and export performance of selected scientific instruments export industries in Ambala cluster.

- Null Hypotheses 3 (H03): There is no significant relationship between Inflation Rate and export performance of selected scientific instruments export industries in Ambala cluster.

- Null Hypotheses 4 (H04): There is no significant relationship between Foreign Direct Investment and export performance of selected scientific instruments export industries in Ambala cluster.

Export performance is taken as a dependent variable in terms of export value of the selected scientific instruments export industries in the cluster during study period. Export value describes the status of the industry and other variables affect it positively and negatively.

Gross Domestic Product is taken as first independent variable. GDP is chosen at current price factor cost and for the period 2009-10 to 2011-12 base year is 2004-05, for period 2012-13 to 2020-21 base year is 2011-12. Based on the various studies it is assumed that GDP is positively significant in relation to the export performance of selected scientific instruments export industries in Ambala cluster.

Real Effective Exchange rate is the second independent variable on the basis of 36 country bilateral trade weights based on the base year 2004-05. REER has a positive significant affect on the export performance of selected scientific instruments export industries in Ambala cluster as suggested by various literatures available.

Inflation rate is taken as third independent variable in terms of percentage for period 2009-10 to 2011-12 base year is 2001, for period 2012-13 to 2020-21 base year is 2012. High inflation rate reduces the purchasing power in the market and leads to economic instability. Based on various studies it is expected that inflation rate have negative level of significant of relationship with export performance.

FDI is the fourth independent variable as value of in terms of in US $ Million. FDI promotes competition in the local market with capital contribution, higher production in an economy leads to the higher income from the trade and it will help in generating revenues and employment. FDI will also promote opportunities for the new entrants in the business. It is analysed that FDI promotes growth in the exports of the host country as an impact of trade openness. In other words FDI has significant positive impact on the export performance of the host country.

Multiple Regression Equation Model

This study adopts multiple regression equation model technique to study the nature of relationship between identified dependent and independent variables. The multiple regression equation model is described as;

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_n X_n + \mu \qquad \text{.......................... (1)}$$

Y=is the dependent/response variable

X1, X2, X3 and X4 are the independent/explanatory variables

β0, β1, β2, β3 and β4 determine the partial contributions to each of the X-variables

μ is the random error term

β1=aY/aX1, β2=aY/aX2, β3=aY/X3, β4=aY/X4,,,, βk=aY/Xk

The major objectives of this research study is to evaluate whether or not all the identified variables like GDP, REER, Inflation rate and FDI are significant determinant of the export performance of selected scientific instruments export firms in the Ambala cluster. Thus export is treated as dependent variable in this model.

In this multiple regression equation model export performance is a function of following variables:

$$EXP = f \ (GDP, \ REER, \qquad INF, \ FDI) \qquad \text{………….. (2)}$$

Estimation Model

To calculate the significant nature of relationship of all the identified determinants the following estimation model is used.

$$EXP = \beta 0 + \beta 1 GDP \quad + \beta 2 REER + \beta 3 INF + \beta 4 FDI \text{………………………………………… (3)}$$

Where,

EXP = Annual Export Value of selected scientific instruments export industries in Ambala cluster in Lakhs over the period of study.

f= Function.

GDP = Annual Gross Domestic Product at current prices at factor cost over the period of study.

REER = Real Effective Exchange Rate based on 36 country bilateral trade weights over the period of study.

INF = Annual Inflation rate in terms of percentage over the period of study.

FDI = Annual inflows of foreign direct investment in US Dollars to India over the period of study.

μ = Normally distributed Random error.

RESULT ANALYSIS

Table 5: Multiple Correlation Matrix

Variables	Total Exports	Gross Domestic Product	Real Effective	Inflation Rate	Foreign Direct Investment

		Exchange Rate		
Total Exports	1	0.88	0.74	-0.87	0.83
Gross Domestic Product	0.87	1	0.81	-0.89	0.86
Real Effective Exchange Rate	0.74	0.80	1	-0.83	0.69
Inflation Rate	-0.88	-0.89	-0.83	1	-0.82
Foreign Direct Investment	0.83	0.86	0.69	-0.82	1

Source: Calculations of software XLSTAT

Table 5 shows that total export value have high degree positive correlation with GDP, REER and FDI variables. Inflation rate has high degree negative correlation with total export value of the selected scientific instruments export industries in Ambala cluster. All the four determinants of export performance have significant correlation. In this analysis problem of multicollinearity also checked in order to identify that independent variables may contain same information to a large extent, one gains little by using both in the regression model. If multicollinearity exists it leads to unstable the estimates and increases the variances of regression coefficients.

Table 6: Multicollinearity Statistics

	Gross Domestic Product	Real Effective Exchange Rate	Inflation Rate	Foreign Direct Investment
Tolerance	0.25	0.28	0.26	0.25
Variance Inflation Factor (VIF)	3.46	4.01	4.18	3.54

Source: Calculations of software Xstrata

Table 6 explains the status of multicollinearity in the correlation results, which is essential before using multiple correlation model. It is analysed that any independent variables do not have much high and significantly different correlation with each others. Tolerance value in multicollinearity statistics is more than 0.2 for all the four variables and variance inflation factor (VIF) is also less than 5 of all the four variables. All these stats show that there is no multicollinearity problem in the relationship of all the determinants of export performance. It gives the result that multiple regression model will give a fair view of estimation of relationship of variables.

Scatter plots of correlation results of total export value of selected industries and other four variables i.e. GDP, REER, INF and FDI.

Figure 1
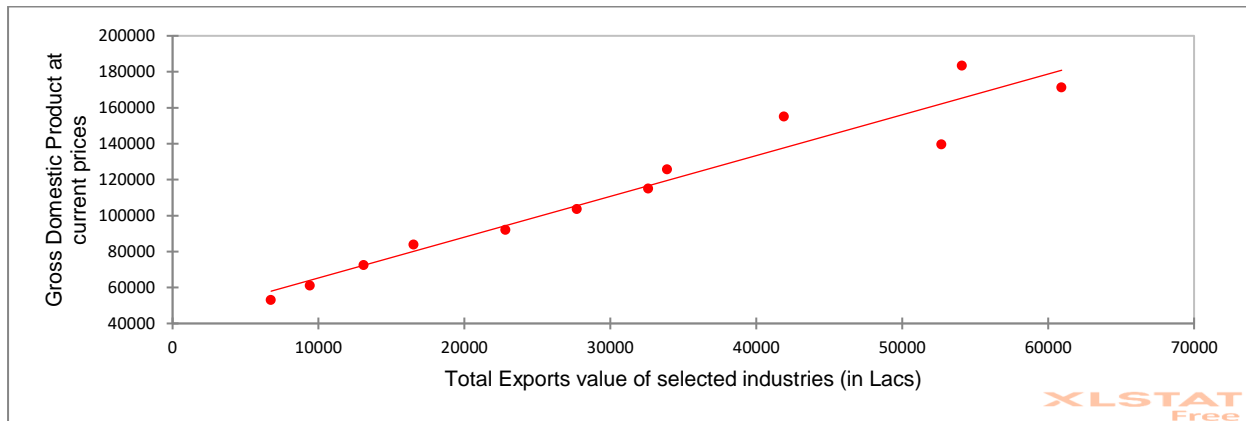
Figure: 2
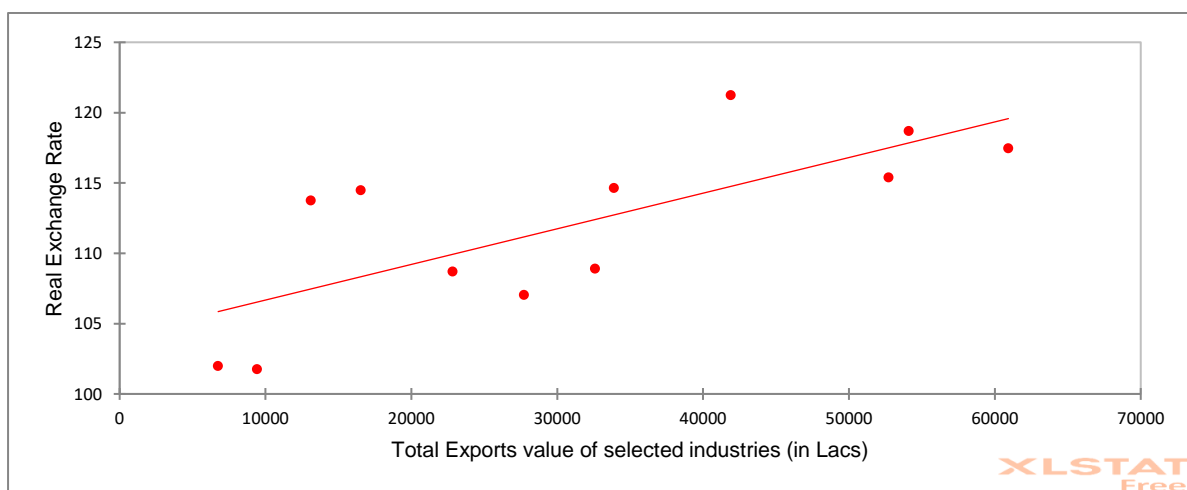
Figure: 3
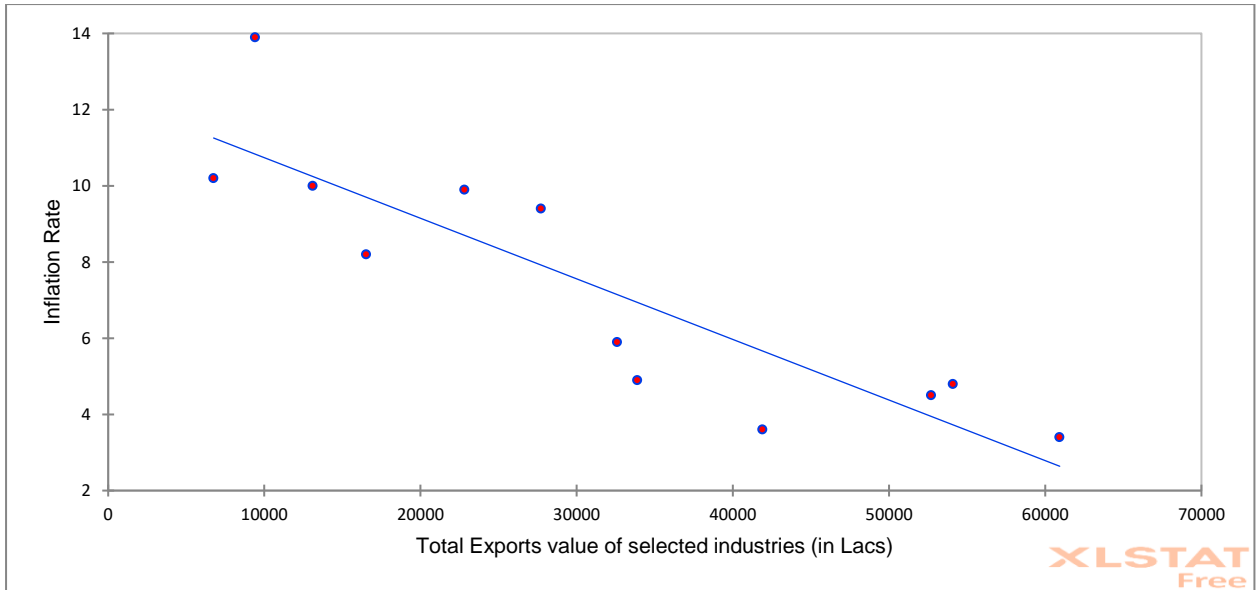
Figure: 4
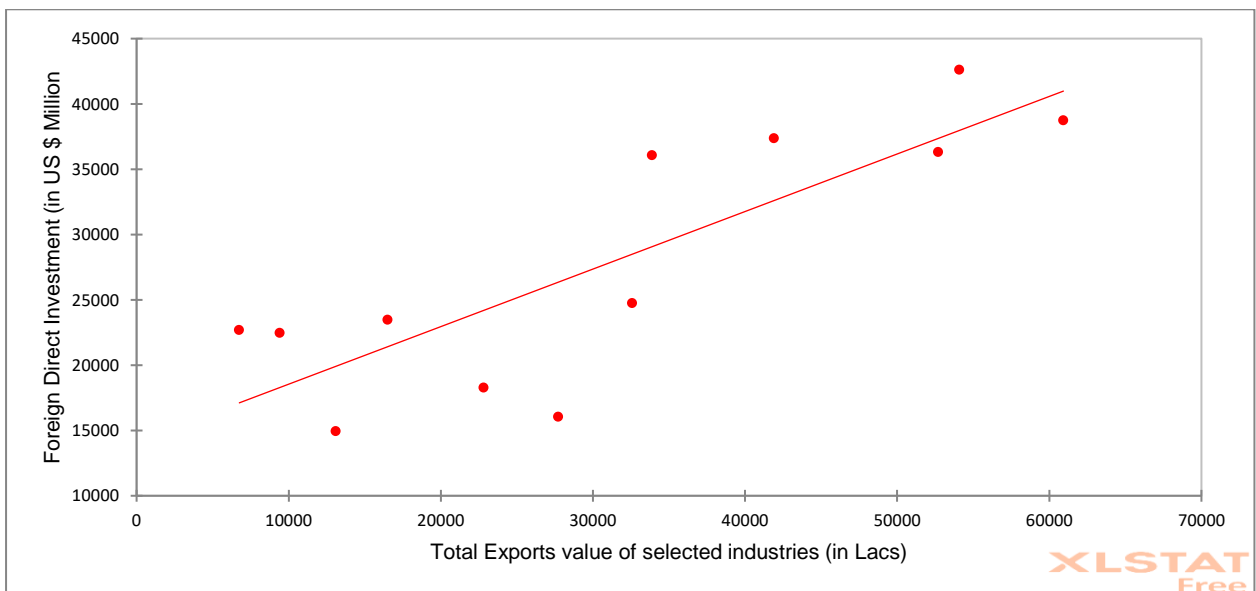
In figures 1, 2 and 4 slops of correlation show that GDP, REER and FDI have positive correlation with export performance of the selected scientific instruments industries in Ambala cluster. Graph 3 shows that Inflation rate has negative correlation with export performance. It means increase in inflation rate resultant is decrease in export value of the selected scientific instrument export industries.

Table 7: Regression Statistics

Multiple R	0.973

R Square	0.947
Adjusted R Square	0.917
Standard Error	8.468
Observations	12

Table 7 explain the multiple regression model results, the statistical output shows that approximate 95 percent variation in the export performance of selected scientific instruments export industries is due to the four independent determinants i.e. GDP, REER, INF and FDI. The result shows value of R-Square is 0.947, which shows the proportion of changes in dependent variable due to the selected independent variables. Adjusted R Square is also very high with 0.917, which is also shows a high significant relationship between the determinants of export performance of the selected scientific instruments export industries in the Ambala cluster.

Table 8: ANOVA

	Degree of freedom	Sum of Square (SS)	Mean of Square (MS)	F	Significance F
Regression	4	3495.712	873.928	14.469	.002
Residual	7	195.627	27.946		
Total	11	3691.339			

	Coefficients	Standard Error	t-stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	57.423	0.579	0.992	0.035	-79.408	1942.565	-79.408	1942.565
Gross Domestic Product	0.417	0.095	4.361	0.003	0.191	0.643	0.191	0.643

Real Effective Exchange Rate	-0.089	0.328	-0.273	0.029	-0.866	0.686	-0.866	0.686
Inflation Rate	-11.465	11.914	-0.962	0.036	-39.638	1670.792	-39.638	1670.792
Foreign Direct Investment	-5.582	4.759	-1.173	0.007	-16.838	567.286	-16.838	567.286

Table 8 shows important results of the multiple regression equation model as significance F value is 0.002, which is less than 0.05 and explained that model is highly significant at 95% confidence level. P-values of all the four independent variables in the table is less than 0.05 as it ex plain that all the four null hypotheses are rejected and alternative hypothesis must be accepted.

Hypotheses results of the models are as follows;

- Null Hypotheses 1 (H01): In first null hypothesis p-value is 0.003, which is less than 0.05 (level of significance) thus the proposed null hypothes is rejected. Now the alternative Hypotheses has to be accepted as there is significant relationship between Gross Domestic Product and export performance of selected scientific instruments export industries in Ambala cluster. Both the variables are significantly related with each other and have positive significant relationship. Both might be increased in the same direction, means if GDP of the country increases then export value of the selected firms will also be increased.

- Null Hypotheses 2 (H02): In second null hypotheses p-value is 0.029, which is less than 0.05 (level of significance) thus this null hypotheses is rejected. Alternative Hypotheses is to be accepted as there is significant relationship between Real Effective Exchange Rate (REER) and export performance of selected scientific instruments export industries in Ambala cluster. Both the variables have significant positive relationship, which means increase in REER results in increase in export performance of selected industries.

- Null Hypotheses 3 (H03): In third null hypotheses p-value is 0.036, which is less than 0.05 (level of significance), this null hypotheses is also rejected. Now alternative hypotheses is

to be accepted as that there is significant relationship between Inflation Rate and export performance of selected scientific instruments export industries in Ambala cluster. There is negative significant relationship between inflation rate and export performance of selected industries, it means export performance decreases with the increase in inflation rate.

- Null Hypotheses 4 (H04): fourth null hypotheses with p-value 0.007, it is less than 0.05 (level of significance) thus null hypotheses is rejected. Alternative hypotheses need to be accepted that there is significant relationship between foreign direct Investment and export performance of selected scientific instruments export industries in Ambala cluster. A positive significant relationship between FDI and export value shows that increase of FDI resultant into the increase in export value of the selected export industries.

CONCLUSION

Ambala is a city of major scientific instruments products. It is a hub of scientific manufacturing products like glass apparatus, microscopes, laboratory equipment etc. Ambala is contributing almost 34 percent of the total production of scientific instruments production in India. The scientific instruments cluster of Ambala has more than 3,000 units in terms of small and medium units engaged in exports as well. This cluster of scientific instruments export industry is based on approx Rs. 1,700 crore using conventional and innovative production methods. More than 30,000 employees are directly employed in this industry in Ambala. The Ambala cluster is believed to be the largest in the country for manufacturing scientific instruments and apparatus. The manufactured products are used in engineering industry and educational institutions.

Ambala cluster has its own local market, where big and small firms deal in all type of products. The cluster exports scientific instruments and apparatus to the Gulf nations, European countries and the neighbouring countries. Total export value has high degree positive correlation with GDP, REER and FDI variables. Inflation rate has high degree negative correlation with total export value of the selected scientific instruments export industries in Ambala cluster.

Statistical output shows that approximate 95 percent variation in the export performance of selected scientific instruments export industries is due to the four independent determinants i.e. GDP, REER, INF and FDI. Export performance of scientific instruments export industry in Ambala cluster is significantly related to Gross Domestic Product. Both the variables are

significantly related with each other and have positive significant relationship. Both might be increased in the same direction, means if GDP of the country increases then export value of the selected firms will also be increased. Export performance of scientific instruments export industry in Ambala cluster is also significantly related to the Real Effective Exchange Rate (REER). Both the variables have significant positive relationship, which means increase in REER results in increase in export performance of selected industries.

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The relevance of foresight exercises for wine territories facing global polycrisis.

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ABSTRACT

Why is it relevant for actors in a territory in crisis to carry out a foresight exercise? The actors in a territory in crisis (economic crisis, climate crisis, etc.) are collectively facing a decrease in resources and performance. Among these actors, the gap between the realities and the perception of these realities becomes more pronounced, resulting in a loss of meaning and even identity. Opportunistic strategies multiply to the detriment of the common interest. Through a participatory process, the foresight exercise is likely to bring out different contributions within the territory in crisis: the reconstruction of common shared representations, the disarmament of short-term conflicts, the exit from the dictatorship of urgency, the creation of collective strategies to proactively bring about a common future that is most favorable for all.

Keywords: Strategic foresight, territory, future, crisis strategies

INTRODUCTION

Historically, there has been no shortage of "methods" for mobilizing people in times of crisis and spurring them to action. Calling on the past to remobilize the present is one such method. Like the Angers tapestry, commissioned around 1373, a masterpiece of medieval art located in the city of Angers in France, which depicts the prophetic narrative that concludes the Bible, known as the Apocalypse of John or the Book of Revelation. The tapestry depicts John's visions in the form of allegories that need to be deciphered. One of his visions is represented by a Son of Man bearing in his mouth the double-edged sword symbolizing the word of truth. It cuts through what is confusing, negative, deviant. This reminds us that the meaning of the Greek word *Apokalupsis* is unveiling, laying bare, not catastrophe. Another vision of John is represented by a horseman who is the wrath that brings war. This horseman teaches us not to fight the wrong battle. Hatred of others leads to destruction. The Apocalypse is a path of metamorphosis, showing the extinction of a world but leading to rebirth. Hope is at the heart of the story. In history's troubled times, its prophetic impact returns with force.

The future can also be used to encourage action in the present. This is the case when a foresight exercise is mobilized to serve territories in crisis. "Particularly in times of crisis, the risks of

change and disruption frighten us and encourage us to turn inward. Foresight invites us to anticipate these evolutions, to exploit these openings rather than cling to the past" (Battle, 1986). The foresight approach postulates that the future can be built in part on the basis of the wilĺ of the actors and organizations belonging to the territory in crisis concerned. It thus rejects fatality, enlightens the players and encourages them to act. Foresight therefore seeks, not to divine the future, but to ensure that it is desired rather than suffered.

We need to map out a trajectory between a more or less distant past, whose legacy is what it is, and a future far enough away that we can pin on it a hope that is both reasonable enough to be credible, and crazy enough to give us the energy we need to realize it. This is what we call a project, the act of projecting forward into the future an image of a desirable future which, like a magnet, attracts us, gives us the strength to move forward, and lends meaning and coherence to the decisions and actions we take on a daily basis and have to negotiate with our environment (de Jouvenel, 2008: 3).

In his book, Michel Godet (1977) argues that the failure to predict economic crises explains the crisis in forecasting and the rise of foresight, which he describes as "a creation of the future". According to him, "it is the plurality of the future that makes it uncertain, and the purpose of forecasting is twofold: on the one hand, to identify possible futures and, on the other, to estimate (where possible) their probability of occurrence, taking into account any actions that may be taken in a particular direction".

"For the futurist, the future is open, an object of project, intention and will. This is not to say that the present is unimportant, but rather that it does not irrevocably determine the future" (Sebillotte and Sebillotte, 2002).

Since the long-term future (at least 15 to 20 years) is not predetermined, it is not knowable and is open to many possibilities. The future doesn't emerge from nothing, but from the present, which contains both strong trends and weak signals. As such, a future scenario is not a forecast. We would like to make it clear that the future sketched out by the foresight exercise is not a dream either, although it shares with the dream its influence on the world, producing something that generally goes beyond even what the participants could have imagined.

Otero (2022) reminds us that, in the context of crisis, "*it's urgent to start dreaming again in order to be able to change, to be able to move forward, to be able to resist, to be able to have*

an influence on the world". "Afterwards, of course, it's not the dream they had that comes true, but whatever it is, something happens that's generally beyond even what they could have imagined. That's what's so beautiful: when something happens that we hadn't planned for, it's more beautiful than anything we could have imagined". So, de Jouvenel (2008) invites us to ask ourselves:

"*What is a project if not a dream sifted through the sieve of reason? A dream insofar as it is rooted in our most fundamental values, not in the mood of the moment, not in the fleeting emotion aroused by events, not in the volatile opinion inspired by the current situation, but in what constitutes our deepest aspirations and convictions. We must be convinced, rightly or wrongly, that this dream is achievable, albeit at the cost of effort, tension and a will that will not waver at the slightest obstacle. What's true at the individual level is also true at the collective level, and what we're trying to do in foresight is directly inspired by this philosophy of existence. Applied to the city, it is only really relevant if it translates into the adoption of a policy or strategy.* "

For all that, foresight is not the same as territorial planning, although it does share with it a participative, even democratic, form of mechanism at the service of the territory's stakeholders. The foresight exercise thus responds to a need for more participatory democracy in relation to the State's organization of territorial planning.

"*Territorial planning is probably very important, because many of the challenges we face in terms of ecological transformation need to be discussed in the major production basins, which are virtually in the process of undergoing industrial reconversion in order to create a new economic project in their territories. For example, if we are to transform Brittany's agriculture* [in France] *into one that is positive for the climate and biodiversity, we need to be able to consult each other, "make foresight" together, find scenarios and draw up transition contracts. In fact, apart from the organization of the State, this presupposes a form of participation, of consultation with the players*" (Treyer, 2022).

However, there's something paradoxical about working with actors in crisis, sometimes guided by urgency or even their emotions (fear, anger, anxiety), in a foresight exercise normally focused on the long term. Professionals using foresight methods would even forbid themselves

from being too sensitive to the effects of buzz or over-reacting to current events. Indeed, the major trends and weak signals that we seek to identify in order to build long-term scenarios run a high risk of being "polluted" by processes at work in times of crisis; and however serious and blinding these may appear, they must not be confused with the former, since their first characteristic is often that they are intimately linked to the period of crisis under consideration, and therefore potentially endowed with the same longevity. They do, however, recognize the singular effectiveness of these methods, which deserve to be considered as part of territorial crisis response mechanisms for at least three reasons: it's often in a state of crisis that players call on foresight; the managerial ability to create shared representations is conducive to collective action to resolve crises; the ability to shed light on the future enables us to take a fresh look at the present, and thus to open up useful levers for the present.

With this in mind, we believe it is important to examine why it is or isn't relevant for players in a territory in crisis to engage in a foresight exercise. After first defining the term "territory" associated with the term "crisis", we will present the foresight method in a second section, and explain how the foresight process offers specific contributions to actors in territories in crisis. In the third section, we'll use examples of foresight exercises to illustrate in detail and with nuance the specific contributions made by certain players faced with "polycrisis", crises of different kinds and on different territorial scales. The term "polycrisis" also means that the various crises are intertwined and mutually reinforcing, the interplay between global crises has an overall impact being greater than the sum of their individual impacts. For example, we will briefly relate the results (four scenarios) of a 2035 foresight exercise for the wine industry in France carried out by FranceAgriMer on behalf of the Confédération des Coopératives Vinicoles de France (CCVF). CCVF includes players from all over the country, facing the consequences of the international economic and financial crisis (FranceAgriMer, 2017). We will then go into more detail about a second foresight exercise in which two of our authors participated, and which generated collective strategies for coping with changes linked to the climate crisis in the Val de Loire region in France (Touzard et al., 2020). Finally, we will discuss the virtues of a foresight approach in a polycrisis context, before concluding.

TERRITORIES AND CRISIS

According to a definition taken from the French Larousse dictionary, a territory is "a portion of terrestrial space dependent on a State, a city, a jurisdiction; space considered as a whole

forming a coherent physical, administrative and human unit". We associate the territory with all its "actors" in a broad sense (citizens, professionals, managers, intermediary bodies, etc.), i.e., the players potentially involved in overcoming the crisis in the territory concerned.

It is within the framework of a foresight exercise, and through the prism of these different actors of the territory in crisis (of different scales: from the local to the regional, or even to the association of territories that would form a confederation at the "national" level) that we will look at the links between territory and crises.

We would like to point out that in France, according to Lamarque and Maymo (2022), territories often "feel forgotten or ignored by central power, whether political or economic. Decision-making centers have left the regions. Local structures struggle to gain visibility for day-to-day actions". This observation seems to be shared by Moreno (2022):

"*We can see this in France, a highly centralized country, where the State can only effectively assume its role as planner when it takes root in local life and forges links with local governments, citizens and economic players*".

This shortcoming, noted throughout the decades of excessive Jacobinism, has given rise to the difficulties of a national policy that has failed to listen to the territories, feel their pulse, and misses the imperative need for a rebalancing in their management to give substance to an ambitious, local, territorial policy with substantial prerogatives and resources, equal to the challenges of the decade.

We quote Treyer (2022) who calls on us to create a more participative framework for collectively addressing territorial crises, and in particular the ecological crisis. "*We need a slightly broader reform of institutions to carry out this ecological transition and planning. Institutional reform would ensure that we that we have more democracy, that we have more participatory mechanisms with regard to the organization of this planning*".

"[...] *what the Commissariat Général au Plan or the Datar, the Délégation à l'Aménagement du Territoire et à l'Action Régionale, did in the 1950s-1960s during the heyday of planning in France, we also need intermediary bodies to act as transmission belts, between*

what is negotiated in Paris and what can work in the regions and local areas. We need mechanisms for stakeholder participation, participation that complements elective democracy, and so we can't do planning without these negotiating forums where we build the general interest through participatory mechanisms. We could imagine a citizens' convention in the regions, but also restore the weight, power and place of what we call the intermediary bodies, which are extremely weakened today" (Treyer, 2022).

After these observations, a malaise seems to be perceptible within the territories. So we can ask ourselves the following question: are these territories "in crisis"?

We'll see that the foresight approach can partly meet this need for more participatory democracy at the territorial level, since it consists in particular, through a participatory mechanism, in collectively producing common, coherent and contrasting representations of possible futures, and putting them up for discussion, in order to contribute to the organization of a debate on the future of the territory in crisis. We will also take an interest in territories "in crisis", as they face crises of varying magnitude, and we will attempt to analyze certain forms of crisis response, again on a territorial scale. At this point, we feel it's a good idea to answer the central question: what is a crisis? The Petit Larousse (1989) as a French dictionary offers the following definition of the term crisis: "a crisis is a difficult period in the life of a person or society, a tense situation, at the end of which the return to a normal state depends". Thom (1976) explains that the origin of crisis is linked to "sensory deprivation". In other words, it is the failure to perceive changes in our environment that causes our reference system to be maladapted to our environment, thereby creating a discrepancy between our referents and reality.

Turner (1976: 381) studied the concept of crisis perception. According to Turner, crises share this fracture between reality and the collective construction of reality. Commonly shared meanings become obsolete in the face of the reality of a particular situation.

"*Crisis is also a rare event with unique manifestations. The effects of experience are often insignificant, giving the organization the opportunity to draw on past experience*".

(Source: Roux-Dufort, 2000: 46)

Concerning the Greek etymological origin of the word crisis, its root κρί comes from the Greek word Krisis meaning "decision". Krisis (κρίσις) is related to an action or faculty of "deciding",

"judging", "choosing", "electing", "distinguishing", "sorting", "separating", "excluding" (Gaffiot, 2000). Although these verbs are transitive, there is a form of acceptance of the crisis: we undergo the crisis, we are its victims. The quote "naturae conflictus quos Graeci crises appellant" (Caelius Aurelianus, 5th century, Acutarum sive celerum passionum libri 3. 2, 19, 120) reminds us that the Greeks called crises "the assaults of nature".

A priori, in a context of crisis, there would seem to be something beyond our control. Something that "decides" and "sorts" in the sense of sifting or discriminating and which, in the form of natural selection, would inevitably strike as if to purge. So, on the one hand, the Greek root Krisis (κρίσις) derives from the idea of "sin", which is linked to a form of temporary excess (the sin of greed, overproduction, the financial bubble, etc.), but also of "damnation", evoking fault and a relative responsibility for those who have taken part in some form of failure of themselves or others. On the other hand, Krisis (κρίσις) drifts towards the idea of "in-cri-mining", "judging", "condemning" even those who have lost their grip on reality. Thus, the crisis "indicts" those who no longer have the "ability to explain or interpret a dream" (Bailly, 2000: 1137), those who are in "confusion" and "doubt", those whose perception of things is out of step with reality, who therefore no longer have the ability to discern, and therefore to decide. These are the very people who, sooner or later, will be called into question, "excluded" or even "evacuated", for there is a lethal potential that accompanies both "cri-se" and "cri-me".

Thus, crisis carries with it a potential for the worst, due to multiple resonance phenomena. "[...] the idea of crisis cannot be reduced to the idea of internal conflict within a system, but that it carries with it the possibility, the multiplication, the deepening, the triggering of conflicts" (Morin, 1976). In fact, crises carry with them several alternatives for the system affected: total disintegration or death of the system, a return to the *status quo* through absorption of the rupture, but also and above all possibilities for change.

According to Morin (1976) crises sow the seeds of change and transformation, and thus have a revelatory function. Thus, a crisis often reveals dysfunctions, or even absurdities, in part of a system, and thus mobilizes imagination and effort towards necessary change. According to Morin (1994) crisis, which lies outside regularities and determinisms, creates new conditions for the deployment of action and opens up the field of potential for creation and innovation. Morin has highlighted the "effector" aspect of crisis, because it "sets in motion transformative forces capable of fostering evolution, and can constitute a privileged moment for change".

We would add that we need to take into account the autonomous aspect of a crisis, which has its own time dimension (Colin, 1997). This author states that "it has been statistically demonstrated that a relief operation is very often a race between two dimensions of time: the time proper to the event, whose consequences naturally worsen with time, and the time proper to the ramp-up of response resources until the level of response is adapted to the real gravity of the situation and enables situations to be dealt with". We will explain how foresight sheds light on the present and helps decision-making.

"*Decision-making is often the art of being cruel in time*"

(Source: quote attributed to Henry Becke;

subject of the French Ecole Nationale d'Administration entrance exam, 2007)

 As geographer Magali Reghezza-Zitt points out, a crisis is not only dated, "it is also spatially situated". Beyond its material characteristics: its physical reality, its function and its structural organization, "every space is politically appropriated; it's a place of power", explains the geographer. We project an identity onto this space, which the narrative helps to anchor. It's a story that often needs to be retold, completed and revised, because the history of a territory is not linear, but constantly in turmoil and upheaval. And it is precisely in the way an area manages to preserve its identity and substance through crises that its sustainability is at stake (France Stratégie, 2021). We shall see how the foresight approach contributes to the sustainability of a territory over time.

THE METHOD AND VARIOUS CONTRIBUTIONS OF THE FORESIGHT EXERCISE

The aim of foresight is not to predict a region's future, but to enable its stakeholders to anticipate different situations they may encounter, without prejudging whether they are likely, desirable or, on the contrary, dreadful. As mentioned in the introduction, the future doesn't emerge from nothing, but from the present, which contains both strong trends and weak signals. Generally speaking, foresight is not a forecasting exercise, and consequently a prospective scenario is not a forecast.

In a context that is too turbulent, or over too long a timeframe, the notion of forecasting by means of trend extensions no longer makes much sense, since the models on which it is based are generally only of limited robustness; it loses its relevance the more we wish to shed light

on longer timeframes, for which there is no guarantee that the determinants will last (Aigrain and Hannin, 2005). In any case, such extensions are far less useful than mobilizing players around a shared understanding of possible futures and the resulting possibilities for action. In the long term, this foresight approach should encourage the emergence of collective strategies within the crisis area, strategies that will be implemented by the various players in the crisis area concerned.

As far as the foresight approach is concerned, we must question the scientific nature of the method adopted. In fact, the foresight method is based on scientific research and results, while at the same time inviting numerous consultations between specialists and with professionals.

However, the results it produces, particularly the scenarios, cannot claim to be scientific in the sense that they depend significantly on the composition of the operational committees assembled: other compositions would certainly have led to different scenarios.

However, since the aim is to delineate a sort of cone of possible futures, the exact nature of the scenarios is undoubtedly less important than the possible directions identified. In any case, this apparent weakness does not jeopardize the exercise, whose success depends much more on its appropriation by the players in the crisis area concerned.

The Importance of Appropriation by Stakeholders in The Crisis Area Concerned

If the objectives are to be achieved, one vital aspect must be taken into account: appropriation of the study by the players in the crisis area concerned. This is a major challenge that must be kept in mind throughout the exercise. In fact, this exercise must offer the initiators a demonstration framework in which the majority of partners participate and adhere. In this sense, it's only once the players (decision-makers) are familiar with the range of possible futures that it becomes possible to help them make more relevant decisions.

So, even if foresight is often commissioned and, to a certain extent, sets out the specifications for the work to be undertaken, it must be remembered that the decision is not an act that is short-lived, but rather a "process that matures at its own pace".

The idea is to keep the field of possibilities wide open throughout the study, as far as possible, in order to guard against a major risk: the decision being narrowed down too quickly.

"*Tomorrow is less to be discovered than to be invented*" [Gaston Berger].

There are several methods used in foresight exercises, but here we'll refer to the SYSPAHMM method (Système, Processus, Agrégat d'Hypothèses, Micro- et Macroscénarios) formalized by Michel and Clementina Sebillotte at INRA (Institut National de la Recherche Agronomique), since 2020 called INRAE (Institut National de Recherche pour l'Agriculture, l'alimentation et l'Environnement). More specifically, this method is based on a shared representation of the system under study and the issues that will be at stake in the future. These issues are the subject of expert presentations and, finally, the basis for the drafting of hypotheses, the expression of which on both sides of the page makes it possible to envisage different possible futures.

The elaboration of prospective scenarios is the responsibility of a group of experts who are identified and brought together, and whose diversified skills are crossed in a context of freedom of speech and constant efforts at mutual understanding. This group of experts, known as the foresight "animation cell", is made up of researchers, government experts and professionals, many of whom are players in the crisis area concerned.

Throughout the exercise, particular attention is paid to the construction of common representations, taking time for interdisciplinarity. Each expert is only there to share his or her knowledge and help everyone understand what's at stake for the future. Group members contribute to every stage of the construction process: from the drafting of hypotheses by each member on all subjects, to the establishment of dependent influence relationships between hypotheses, to the choice of driving hypotheses, right through to the selection of concatenations of micro-scenarios to elaborate global scenarios.

Several hundred hypotheses can be drafted in this way. Then, a few dozen of these, judged to be the most decisive for the region's future, are ultimately selected. These hypotheses are not only trend-based, but also include weak signals that are currently limited in scope, but which are judged to have the potential to bring about significant changes in the trajectory of the region's players in the future. The relationships of influence and dependency between these hypotheses, considered in pairs, have been established and used to group together the most closely related hypotheses into aggregates. These aggregates form the framework of the interdisciplinary scenarios, which take account of the links between the hypotheses and

enhance their front and back labels. At the end of several complexity-reduction stages, four to six contrasting scenarios of change over 15 or 20 years are written. For each scenario, it is possible to identify the stakes and consequences for one or other of the territory's stakeholders: if the scenario occurs, what do we gain (in what way is it an opportunity)? What do we lose (in what way is it a risk or a threat)? And what are the consequences?

As we've already said, scripted visions of the future are in no way akin to forecasting. They simply propose possible, credible futures, with no consideration of the probability of their occurrence. Once the scenarios have been drafted, the analysis of their consequences serves as the basis for strategic thinking. "Thus perceived, foresight is not an escape into the future, but a means for decision-makers and researchers to return to the present, better equipped to influence it according to our intentions and requirements" (Sebillotte and Sebillotte, 2002).

It will be up to the players in the crisis area to decide on the attitude to adopt towards the scenarios, by choosing from five possible attitudes:

- o Positive proactivity: act now to encourage the scenario to happen.
- o Negative proactivity: act now to prevent the scenario from occurring.
- o Anticipatory reactivity: prepare today for the occurrence of the scenario.
- o Watch: this scenario must be kept under surveillance, to see if its occurrence as time goes by.
- o No attitude: this scenario is of no particular interest.

This is the starting point for a strategic approach to the area concerned.

Specific Contributions Expected From Players in Crisis Areas Involved in a Foresight Process

We have just seen how the foresight exercise is likely to bring to light a number of important contributions to a territory's ability to emerge from crisis: the reconstruction of common, shared and not necessarily consensual representations among these territorial players; the creation of collective strategies to proactively bring about a common future that is most favorable to all. Beforehand, we can anticipate other contributions, not the least of which is the disarming of short-term conflicts between players within the territory in crisis, and the emergence from the

dictatorship of urgency. Indeed, foresight is a tool for creativity. The foresight unit plays the role of mediator, reinjecting a long-term perspective into the relationships between players in the present, relationships often damaged by tensions that may already have degenerated into conflict within the crisis area concerned.

A priori, taking the long term into account would offer parties in a conflictual relationship "positive" scenarios belonging to the future. The various parties often have an interest in neutral cooperation to proactively bring about a positive scenario (positive proactivity). "Positive charges" should therefore be sought in the future (prospective positive scenario) and reinjected into the present (by gaining acceptance for the possible advent of this future scenario). The "positive charges" would neutralize the "negative charges" that are too prevalent in the present, and encourage a return to communication between the various parties. The various parties then understand that it is in their interest to favor consensus and individual self-sacrifice for the benefit of all. However, in this process of overcoming the crisis, things are not so simple. We also need to consider the "negative" scenarios that invite us to "think against ourselves".

These negative scenarios can also be very stimulating, and should be kept in mind for as long as possible, in order to generate the actions needed to prevent them from happening. Foresight is an anti-fatalistic approach: since the future is not already written, it invites us to become aware of the margins for manoeuvre and possible actions to steer the future in a favourable direction. Working on shared representations leads to the identification of interdependencies, particularly between players.

Carrying out exercises on and for groups (on the scale of territories in crisis, but also of sectors, etc.) involves looking into possible futures and their consequences for the different "parties".

We're reminded that, in the end, it's a question of giving ourselves the means to bring about a future that is desirable to all.

ILLUSTRATIONS OF THE CONTRIBUTIONS OF FORESIGHT EXERCISES IN THE HEART OF TERRITORIES IN CRISIS

By way of illustration, and in order to shed further light on the links between territories and crises, we propose to begin by recounting the results of a foresight exercise to 2035 for the wine sector, carried out by FranceAgriMer on behalf of the Vignerons Coopérateurs, formerly

the Confédération des Coopératives Vinicoles de France (CCVF), players rooted in France and facing a global economic and financial crisis. This exercise included a 17-member expert group that met 15 times between January 2015 and early February 2017 and produced four scenarios (FranceAgriMer, 2017). The respective plans for these four scenarios are set out in Table 1. Details of these scenarios are available online on the FranceAgriMer website. In this first case, the titles and subtitles of these scenarios are evocative and in themselves underline the value of a foresight approach (here on a national scale) when a territory is facing a major crisis.

Table 1: The four scenarios of the Foresight "Coopération Vinicole Française" (CCVF)

Scenario n°1: An unattractive cooperation	Scenario n°2: A cooperative model for times of crisis
- Liberal solutions to the crisis - A handicapping cooperative status - The few AOC production cooperatives	- In the turmoil of the great crisis, only the terroir is resisting ... - and the Cooperation is driven by the social issues that have become inescapable ... - ... which, with a few adaptations, ensure the prevalence of its model.
Scenario n°3: The cooperative as an essential industrial tool	**Scenario n°4: The radiant winegrowing cooperation**
- Marked crisis - Liberalization ...and trivialization - Cooperative status on the verge of a nervous breakdown - Concentration of supply as a lifeline - A utilitarian link to cooperation	- A stabilized global economic context and winegrowing regulations - Cooperation as the bearer of an economic and social model - Multi-territorial unions as an alternative to concentration - Strong territorial roots

(Source: adapted from FranceAgriMer, 2017)

These four possible and credible scenarios offer consequences with very different impacts on the wine industry. Bringing these four scenarios to light, and then choosing a scenario, means summoning the responsibility of players who act at the heart of the components of the national

territory, a territory shaken by an economic and financial crisis on a global scale. Meeting in congress on July 6, 2017, the leaders of the Cooperative Winegrowers were able to choose between possible strategic attitudes (see Table 1). They chose to favor the "radiant winegrowing cooperation" scenario by preventing the "unattractive cooperation" scenario and preparing for the other two.

In the second part, we describe in greater detail the process and results of a one-day foresight exercise involving two of the authors, known as the "foresight forum", which was set up for the Val de Loire wine territory. This foresight exercise will have generated collective strategies to cope with changes linked to the climate crisis in this Val de Loire territory (Touzard et al., 2020).

The Val de Loire is located on the territory of the former provinces of Orléans, Touraine and Anjou in France. "*Climate change has become a major issue for French vineyards, with effects on vine phenology, wine yields, grape and wine characteristics, economic risks and results, or even the location of vineyards* (Ollat et al., 2016)". These effects, already observed, will amplify and vary according to the territories, the climate scenarios and the adaptation choices of the players in these wine-growing territories. In order to analyze the conditions for these adaptations, INRA has been running the LACCAVE project (now LACCAVE 2.21) since 2013, with a major action being a foresight exercise on the industry to 2050 (Aigrain et al., 2016).

This LACCAVE project produced four major scenarios. The researchers and their partners at FranceAgriMer and INAO extended this foresight by putting these four scenarios up for discussion in France's main vineyards. Seven "foresight forums" were organized between 2017 and 2019 in France in the following wine territories: Aquitaine, Languedoc, Champagne, Burgundy, Rhône Valley, Alsace and Val de Loire. The day or "foresight forum" in Val de Loire was organized into five sequences: 1) a time for sharing knowledge on the impacts of climate change and possible adaptations, 2) a presentation of the four scenarios developed by the LACCAVE project, 3) group work to specify the issues and consequences of each scenario for the regional vineyard, 4) an individual vote expressing the strategic attitude of participants with regard to each scenario, 5) the collection of action proposals to favor or disfavor each scenario. With regard to the links between crises and territories, the Val de Loire shows a trend that has already been noted in several surveys carried out in other wine-growing regions: climate change is perceived in terms of more frequent extreme events (and an amplification of climatic

variability), and "adaptation" is defined primarily as a combination of agronomic and oenological responses.

(Source: Touzard et al., 2020)

Figure 1: The cloud of 158 words (in French language) expressed by 80 participants at the beginning of the LACCAVE Project's 2019 Foresight Forum. "Climate change" for you it is…?

The point of a sectoral foresight approach for a given territory is precisely to project ourselves into the future in order to envisage different combinations of levers and reflect on their stakes and consequences. Scenarios provide contrasting points of reference among possible futures, and can be used to support reflection and the strategic positioning of players in a company, sector or region. Four adaptation scenarios have thus been predefined, crossing the greater or lesser use of innovation with the choice of whether or not to relocate vineyards. Then, by mobilizing:

- the Intergovernmental Panel on Climate Change (IPCC) climate scenario for 2050 (2° C rise in average temperature compared with the pre-industrial period), with different consequences for northern and southern France (notably drought more marked in the south),
- the disciplinary knowledge of LACCAVE project researchers,
- hypotheses for changes in the global winegrowing context drawn from previous forecasts,

- and hypotheses developed from interviews with French winegrowing leaders. Narrative paths leading preferentially to particular ways of adapting the wine industry to climate change were constructed.

Table 2: The four scenarios discussed at the Val de Loire Foresight Forum

The conservative scenario	The innovative scenario
The aim is to make as few changes as possible to vineyard layout and practices, both in the vineyard and in the cellar. Research has been little solicited, and players have suffered from climate change without being able to benefit from major innovations, while regulatory constraints have tended to tighten. Production became more uncertain in terms of quantity and quality, and the profile of wines evolved, but fortunately without rejection by consumers. Winegrowing has retracted, even if some PGIs and PDOs are still islands of resistance. The value of wine has remained linked to its cultural and landscape content.	It is based on the massive introduction of innovations to maintain vineyards in their current geographical areas, with wine profiles that are diversified but comparable to those of the early 21st century. Research has been called upon to produce useful knowledge for the development of innovations, in a context where environmental and health issues have become increasingly prevalent, and where agricultural space has been regulated to reserve the most fertile land for food production. Industry governance has expanded to include new categories of players.
The nomad scenario	**The liberal scenario**
It highlights the gradual migration of vineyards to more favorable zones within the current areas (access to water, altitude, less exposure) or, more radically, to more northerly regions. The challenge is to "escape" the new climatic conditions and retain the profile of early 21st-century wines that consumers still appreciate, even if societal constraints on alcohol and health have forced the industry to focus on reducing	It benefits from a reduction in regulatory and geographical constraints, and from innovations in practices and products. To achieve this, individual operators have been able to implement a wide range of innovations, particularly oenological (aromatization, for example), and set up vineyards wherever they wished, while complying with environmental and health regulations. This context has proved

inputs. New vineyards have emerged, and the PDO model is being questioned or even abandoned in some regions.	favourable to new investors and the wine trade, which has succeeded in controlling the entire sector. More and more technological wines are being produced, and Research & Development (R&D) has been privatized, weakening traditional production companies.

(Source: Touzard et al., 2020)

Participants then worked in groups to consider the issues and consequences of each scenario in the Val de Loire territory in France. Each group was asked to project itself into 2050 and imagine "what has happened since 2019". The moderators of the exercise formed groups (tables of 6 to 8 participants), taking care to represent the diversity of points of view: producer, trader, technical advisor or researcher, union representative, etc. The issues and consequences of each scenario are recorded on a tablet by one of the participants in each group, requiring listening and reformulation. Consensus is not necessarily sought, and different opinions can be taken into account. For each scenario, the sequence of work on the issues and consequences lasts between 20 and 30 minutes and is structured by a succession of themes: viticultural and oenological techniques, market segments, players and territories, and industry organizations. Thanks to a computer application, the elements entered are visible as they are entered by the moderators, who control the time and stimulate production by regularly announcing the number of items recorded. A summary of the contributions can be drawn up during the lunch break and presented later in the day, before the vote on strategic attitudes. This small-group work helps those for whom projecting into the future is difficult to get used to the game, those who can't help judging scenarios on their possible or impossible, probable or improbable, true or false nature.

DISCUSSION

To return to the links between territories and crises, in the context of the Val de Loire foresight study, overall the "votes" in the Val de Loire are very close to the national average in France. They favor the "innovate to stay in the terroir" option slightly more, and reject "the conservative scenario" less, wanting to anticipate its possible resilience, in a context where climate change

is seen as "a little less constraining than for other regions". They question the threats and opportunities of "the nomad scenario", and condemn "the liberal scenario" slightly more than at national level (see Table 3).

Table 3: Strategic attitude choices for each scenario (in % of participants, in bold, 82 voters from the Val de Loire, *in italics*, 419 voters from all over France or 7 regional forums)

	Positive proactivity	Negative proactivity	Anticipated proactivity	Intelligence	No interest
The conservative scenario	**23%**	**21%**	**42%**	**14%**	**0%**
	21%	*30%*	*30%*	*16%*	*3%*
The innovative scenario	**77 %**	**5%**	**17%**	**0%**	**1%**
	73 %	*3%*	*22%*	*1%*	*1%*
The nomad scenario	**7%**	**39%**	**33%**	**21%**	**1%**
	3%	*39%*	*29%*	*27%*	*2%*
The liberal scenario	**6%**	**66%**	**12%**	**12%**	**3%**
	5%	*59%*	*16%*	*18%*	*2%*

(Source: Touzard et al., 2020)

More broadly, the presentation of the four scenarios to the 82 participants from the Val de Loire elicited numerous reactions and proposals for action, with, beyond differences in professions or commitment to a particular type of wine or practice, a desire to act quickly and preserve a family viticulture linked to the terroirs and therefore the territory of the Val de Loire. This foresight exercise not only confirmed the interest that players and organizations in the Val de Loire vineyards have in the issue of climate change, but also encouraged them to take collective action. Cooperation between people from different professions who didn't always know each other is new, and now potentially long-term. In other words, players with diverse profiles who didn't necessarily know each other before the foresight exercise have formed a network in their area to take action in the face of the climate crisis. The question arises as to the durability of this network.

From Foresight to Action in the Face of Crisis

If we compare the foresight exercise with other forms of action in the face of crisis, such as the climate crisis, and including different modalities, we may find over time that this foresight exercise opens up perspectives with wider contributions not anticipated. This was the case in other forms of action set up by a permaculture teacher, Mr. Rob Hopkins, who settled in 2005 in Totnes in the south of the United Kingdom. Mr. Rob Hopkins seized on the term resilience to try and define how to adapt our societies to the increasing scarcity of resources, particularly oil, and to global warming. It was in a given area, the small town of Totnes, that he gave birth to *the Transition Towns* movement and developed his theory through full-scale experimentation. Since then, Totnes has become a veritable laboratory for Transition initiatives, with the aim of moving the town towards greater resilience. Mr. Rob Hopkins describes one of the actions set up by his movement in Totnes: "*If you want to help people around you save electricity, save water, use cars less, how do you do that? We suggest forming a group in your street, 6 to 10 of your neighbors, and you decide to meet 7 times in each other's homes*".

Thus, one of the wider contributions among its observed and unexpected results is that "*everyone said, now I know the people on my street, I feel more connected to this place, I know that if I have a problem, I know the people I can ask for help. Many of these groups continued to meet after the first 7 meetings. There's something important here. By coming together, we can do things that leaders simply can't do. If we're going to do this in the time we have left, it has to come from all directions. Local communities have a fundamental role*" (Hopkins, 2019). Thus, the foresight exercise at the service of territories in crisis can offer unanticipated results that invite action. Other virtues have already been noted: the foresight exercise as a device for stakeholder participation that complements elective democracy, so the foresight exercise as a form of negotiating forum where the general interest is constructed, opposite or counterbalancing the organization of centralized planning from Paris, the capital city in France, alone.

"*To remain desirable and keep its promises despite unavoidable crises, the energy and ecological transition will imperatively have to be accompanied by a process of continuous improvement in the resilience of territories*" (Delcayrou and Riet, 2022).

The challenge of energy and ecological transition can also be a tremendous opportunity for territories. The scale of the task calls for a renewal of democratic practices, particularly at local level, by putting people at the heart of the redesign of a new territorial project (Delcayrou and Riet, 2022: 217).

CONCLUSION

We have presented the various benefits that a foresight exercise can offer to the players in a territory in crisis: the reconstruction of shared, common representations, the disarmament of short-term conflicts, and a way out of the dictatorship of urgency. Among the benefits expected and often observed, we must first consider that illuminating the future enables us to take a fresh look at the present, which is all the more relevant as it stems from a collective intelligence, all the less conflict-ridden as the horizon is distant; and yet by a "boomerang" effect, everyone can reread the present through the filter of the representation and processes currently at work, which are described. We will then have understood how scenarios - neither true nor false, neither probable nor improbable - can be analyzed collectively and, above all, how they can generate a willingness to act (reactivity or pro-activity) in order to prepare for them, favor or disfavor them, and thus open up useful levers for the present. This kind of collective strategy-building can sometimes proactively bring about the most favorable common future for all. In all cases, the final and by no means least benefit will lie in the "team building" that will have resulted from this quest to describe, understand and claim a capacity at least to influence the mechanisms at work, including the most decisive ones.

As far as the limits of a foresight exercise for territories in crisis are concerned, there are several. In a world where actors are increasingly interdependent and connected, major crises follow one another to the point where some authors invite us to seize intercrises as decisive periods to prepare for the next major crisis (Murgue and Delfraissy, 2012). Duquesnois (2021) even envisages a permanent state of crisis, in which major international crises of various kinds follow one another without respite. France's territories are connected to the international world and, by definition, highly exposed to new major crises, therefore to global polycrisis. In addition, the loss of a common, factual frame of reference and the emergence of "fake news" in an increasingly "divided" French society also make it necessary to use a foresight approach to rebuild shared, not necessarily consensual, common representations among these territorial players. However, foresight is not a self-evident exercise. The number of professionals capable of implementing this type of exercise is limited, and this in itself constitutes a first limitation.

"You can learn to say the Mass of methods by heart in a few weeks. But it takes years of practice and research into texts to become an experienced professional" (Godet and Durance, 2011).

Another limitation is inherent in the foresight exercise: wanting to build too many scenarios, forgetting to invite action, forgetting to have a project to bring about a future that is desirable to all. In this configuration, *"it is not so much the lack of information as its excess that obscures decision-making"* (Barthes, 1973).

Another limitation concerns the need to broaden the range of stakeholders taken into account when assessing the consequences of proposed scenarios. For example, in the context of the climate crisis, there is talk of integrating children and their rights to a greater extent (Taddéi, 2022) or even, according to Jacques Attali, the "next generations", who would then be represented by *"qualified personalities of all kinds who would have only one mission: to put themselves in the place of the next generations and speak on their behalf"* (Attali, 2014). In the same way, recognizing Nature as a subject of law means not placing man exclusively at the center when considering scenarios for the next 30 or 50 years. As Michel Serres so aptly put it: *"All my efforts in* The Natural Contract *consisted in saying that we must not put man at the center"* (Serres, 2008). This last quotation may seem paradoxical to us, given that the state of crisis is an anthropocentric state with a social signature, as the crisis affects human societies. With human demographics on the rise, the number of territories facing polycrisis is increasing. *"Climate disruption, the collapse of biodiversity and the growing scarcity of natural resources are upheavals whose effects are already being felt throughout France. Even with significant reductions in greenhouse gas (GHG) emissions, the effects of climate change are set to worsen by 2050. All areas of activity are affected by multiple risks, which may aggregate, reinforce or cascade. Risk depends on the frequency and intensity of a hazard, on the one hand, and on the degree of exposure and vulnerability of the populations, facilities and institutions of the territory concerned, on the other (...) In view of what we know about climate change, French territories are lagging worryingly behind when it comes to adapting to climate change"* (Delcayrou and Riet, 2022: 215).

We have tried to understand why actors in a territory in crisis turn to the foresight exercise. After presenting the potential contributions, we conclude that it is relevant for these actors to undertake a foresight approach in a crisis context. However, further research is needed to explore the usefulness of such an approach. A number of perspectives exist. For example,

beyond the kind of reflexivity provided by a foresight approach, we might wonder whether these actors in a territory in crisis might not be seeking a decentralized approach, not only to reinvent themselves, but also to seize the crisis as an opportunity for change, in the light of possible futures. In any case, we would like to conclude that it would be preferable for actors in territories to renew their foresight contributions by embarking on a foresight approach before crises. They would then be in a position to draw on new resources: the projections produced by a group of experts, which would shed light on the decision-making required when facing crises; and the members of a "participating community", better equipped to influence the future of their territory through their own actions and, above all, according to their own intentions.

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Effect of Covid 19 and subsequent lockdown on Indian stock market

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ABSTRACT

The spread of novel virus COVID -19 was a pandemic that affected the whole world. It affected different sectors of the economy. When looking into the financial sector, stock market is one economic indicator which shows the position of the country. This paper tries to find the impact of pandemic on stock market performance in Indian stock market. The data of NSE 500 listed companies were taken for the study. The effect of total covid cases total active cases and total death cases on stock market were studied. The paper tries to examine the factors affecting the stock market performance in the lockdown phase. To get a better understanding, the pre-lockdown phase, lockdown phase and post lockdown phase is taken into consideration. Random effect panel data regression model was used to do the analysis. The findings show that the active cases have an impact on the stock market performance, whereas total covid cases and total death cases do not have an impact on the stock market performance. The factors beta, turnover, market capitalization, price to earnings value have an impact on the stock market performance during the lockdown phases. Out of the eight market specific factors market capitalization and turnover are the factors which are time variant. They have a change from the pre-lockdown phase to the lockdown phase.

Keywords: Covid-19 pandemic, India, Stock market returns

INTRODUCTION

The financial system of a country plays a major role in the economy of that country. And when looking into Stock market is one major pillar in that financial system of the country. Any change happening in the country will have an influence in the stock market, in brief the changes in the economy is being reflected in the stock market. As time passed by stock market became one of the leading indicators showing the growth of the economy. Stock market is also highly volatile in nature. So, a small change gets affected quickly. And it has been recognized that it has an influence on the economic activity by creating liquidity (Arestis, Demetriades, P.O, & Luintel , 2001). People started understanding about stock market and more people entered the market as time passed. The total number of listed companies also keep on increasing. There are many relevant changes happening in this sector and it is significantly influencing the economy of India. What mainly happens in the stock market is valuing of the securities based on the demand and supply in the economy. It helps in the expansion of the country's Gross Domestic Product.

There are chances that the stock market affects the economy positively or negatively. Anything that happens in the economy will affect the stock market. It can be in a good manner or may not. One among them is the COVID -19 pandemic. COVID -19 the novel virus was first detected in Wuhan, China in December 2019.

Due to the pandemic in India we had to make a complete lockdown starting from March 2020 and it lasted till May. After that the we started partial unlocking sessions and by 2022 have reached to a complete unlocked session. As a result of the worldwide lockdown there was a huge impact on the financial economy. Majority of the companies lost huge amounts of their resources including labor and capital. As a result of the disease many people lost their lives and good health. This directly affected the financial performance of the country. Economy had to face severe recession during this period. (Zhang, Hu, M, & Ji, 2020). And all this were clearly visible in the changes in the stock market. Like other countries Indian stock market also got severely affected by the pandemic and the financial performance of the country. Since the pandemic and the lockdown lasted for a long period the stock market got significantly affected and changes took place.

This paper tries to find out the impact of the COVID -19 on the stock market of India in particular the effect of the lockdown on the stock market. The study tries to find the factors affecting stock market returns for three different periods. That is pre-lockdown, during lockdown and post lockdown. The study also tries to find out the time variant factors and the time invariant determining factors affecting the stock market returns. The stock market in one major element of the financial system which helps to determine the financial position of the economy. It is very important that after such a pandemic which made the entire world stop functioning the changes in the stock market has to be analyzed. In particular the changes that happened in the economy in three different phases of the lockdown has to be analyzed. By conducting such a kind of research, it can help the government and other interested users of the stock market to make decisions during the time of such unexpected pandemic and make precautions suiting the better development.

The study aims to find out whether the COVID pandemic has an impact on the stock performance in the Indian market. An examination is done on the market specific factors affecting the stock market returns for three different phases of the lockdown period which was one major attempt taken by the Indian government to control the pandemic. COVID -19 pandemic was an unexpected and uncontrollable pandemic which spread across nations quickly

and the government authorities forcefully had to make a lockdown for the nations, so that everyone remains in their house and thereby the human transmitted disease can be controlled in a slight manner. As a result of this lockdown the functioning of the complete world was paused and this affected the stock market. During the pandemic and after the pandemic studies were conducted in different parts of the world showing the impact of the pandemic in the stock market. In India also, such studies were conducted early. But no study tries to find the relationship of the pandemic by taking the total cases, total active cases and total death cases in the country. And finding how the market specific factors affected the stock market returns at three different time of the pandemic. Pre-lockdown, during lockdown and the post lockdown. The study also goes in deep to find the time variant and time invariant factors affecting the stock market.

LITERATURE REVIEW

One of the recent studies about the pandemic done by Wagner and Ramelli (2020) shows that the COVID -19 pandemic had made a significant impact on the economy. It looks into the different trends in the economy and the impact of the pandemic in the economy. The work specifically looks at the stock price effects, thereby helping to capture the expectations of the market participants regarding the future economic consequences. The research will help the policy makers to take decisions in time of emergency. The study considered stock returns by industry in China and the U.S for the pandemic period and found that some industries had a positive impact and others had negative. (Ramelli , S, & Wagner, 2020). Bora & D, (2021) studied the stock market during 2019 and 2020 and showed that the return was higher for pre-covid period and the stock market experienced volatility during pandemic.

The pandemic had a significant impact on global financial markets says Zhang et al. in their recently published journal article. The global stock markets clearly display different patterns before and after the pandemic announcement. The paper was about the impact on the financial market all over the world by the rapid spread of the pandemic. Within a short period of time the investors had to suffer with significant losses. The paper also analyses the potential consequence of policy interventions and to what extend they may introduce more uncertainties into the financial markets globally. (Zhang, Hu, M, & Ji , 2020)There is no other infectious disease outbreak which has impacted the stock market as the COVID-19 pandemic did. (Baker, et al., 2020). While the previous pandemics left only small traces in the U.S stock market COVID pandemic has made an evident impact on the economy. They state that the government

restrictions on commercial activity and the voluntary social distancing were the main reasons which made an impact on the U.S stock market.

A recent study by Zeren and Hizarci (2020) have tried to reveal the effects of COVID-19 pandemic on the stock markets. (Zeren , F, & Hizarci, 2020) The data for the period January and March is being taken for the study. The study has used total death cases and total COVID case. Cointegration test is being used to perform the analysis. The paper considers to avoid investment in the stock market and invest more in the gold market as the optimal option.

The impact of COVID-19 pandemic on the stock market was also analyzed using conventional t- test and nonparametric test to empirically analyze the data for China, Italy, South Korea , France, Spain , Japan, Germany and USA .Their results show that the there is a negative but short term impact on stock markets of these countries and there is no evidence that the pandemic negatively effects these countries stock market more than it impact on the global average. (He, et al., 2020). In a recently published study (Khan, Zhao, Zhang, & Yang , 2020) in the year 2020 an investigation is done to find the impact of the pandemic in sixteen different countries using pooled OLS regression, conventional t- test. The new cases are being analyzed with the stock returns. Weekly data is being taken for analysis. The leading stock indices are also taken.

One of recent study with regard to the factors affecting share prices with respect to Bahrain stock exchange found that the variables return on equity, book value per share, dividend per share, dividend yield, price earnings, and firm size are significant determinants of share prices in the Bahrain market. The global financial crisis of 2007 caused many changes in the global stock market and the study was based on that. (Sharif, T, & Pillai R, 2015). It has also found that the Covid -19 announcements had a negative effect on the returns of major Asian stock markets (Alali & M, 2020).

METHODOLOGY

To find the impact on the Indian stock market the data of 500 NSE listed companies are taken and the number of covid cases for the period are taken. The returns for 32 months is being taken for the study. Total cases, total active cases and total death cases are considered to find the impact of the pandemic in Indian stock market. Three months of pre-lockdown, two months of lockdown and three months of post lockdown are taken for the study. Random effect panel data regression model is used to analyze the data.

To find the Nifty return – stock price we have used the formula

$$SR = \frac{SP_t - SP_{t-1}}{SP_{t-1}} \qquad (1)$$

Where, SR is the Nifty Returns, the index being taken after calculation. SP_t is the stock price for the current period and SP_{t-1} is the previous month.

To find the impact of COVID -19 on the stock market performance we are comparing the stock returns with three different types of covid cases. Those are stock returns with the total covid cases, with total active cases and with total death cases.

$$SR = \beta_0 + \beta_1 \, totalcases + \varepsilon_i \qquad (2)$$

$$SR = \beta_0 + \beta_1 totalactivecases + \varepsilon_i \qquad (3)$$

$$SR = \beta_0 + \beta_1 totaldeathcases + \varepsilon_i \qquad (4)$$

Then we are examining the factors affecting stock market return for pre-lockdown, during lockdown and post lockdown. This is done by using the random effect panel data regression model so that the variables do not get omitted. We are comparing the impact of eight different factors affecting the stock returns for three different periods that is pre-lockdown, during lockdown and after lockdown. Along with that market specific factors are taken to examine the factors affecting stock market return for three different periods. That is pre-lockdown, lockdown and post lockdown. When three different periods are taken, we can analyze the changes and find the time variant and time invariant factors affecting the stock market returns. The impact of these cases in the Indian stock market is find out and analyzed by taking the NSE 500 companies as a sample representing the entire country. The studies conducted earlier shows that it has negative and positive impact on the stock markets. There are studies showing that it has negatively impacted the emerging markets more than the developed markets. (Harjoto, M, Rossi, Paglia, & J, 2021)

The study has adopted panel data regression model which is more suitable in an empirical analysis. The panel data regression model helps to identify the time variant associations it has between the dependent and other variables. This helps to minimize the problems of individual heterogeneity and estimation biases. This study is using the random effects in panel data regression. As per the study conducted by Bell and Jones in the year 2015 says that this is more helpful than the fixed effect model because of its ability to deal with the time invariant and time variant independent variables. (Bell, A, & Jones, 2015).

$$totalreturn_{it} = \beta_0 + \beta_1 turnover_{it} + \beta_2 yield_{it} + \beta_3 eps_{it} + \beta_4 msize_{it} + \beta_5 beta_{it} + \beta_6 pe_{it} + \beta_7 pb_{it} +$$
$$\beta_8 totalcases_{it} + \varepsilon_{it} \quad\quad\quad (5)$$

$$totalreturn_{it} = \beta_0 + \beta_1 turnover_{it} + \beta_2 yield_{it} + \beta_3 eps_{it} + \beta_4 msize_{it} + \beta_5 beta_{it} + \beta_6 pe_{it} + \beta_7 pb_{it} +$$
$$\beta_8 activecases_{it} + \varepsilon_{it} \quad\quad\quad (6)$$

$$totalreturn_{it} = \beta_0 + \beta_1 turnover_{it} + \beta_2 yield_{it} + \beta_3 eps_{it} + \beta_4 msize_{it} + \beta_5 beta_{it} + \beta_6 pe_{it} + \beta_7 pb_{it} +$$
$$\beta_8 deathcases_{it} + \varepsilon_{it} \quad\quad\quad (7)$$

Where, $totalreturn_{it}$ is the returns made by the company during that particular period,

$turnover_{it}$ is the first factor the turnover made by the company,

$yield_{it}$ is the yield of the company,

eps_{it} is the earnings per share of the company,

$msize_{it}$ is the market capitalization of the company,

$beta_{it}$ is the beta value of the company,

pe_{it} is the price to earnings ratio of the company,

pb_{it} is the price to book ratio of the company,

$totalcases_{it}$ is the number of total COVID cases during the period,

$activecases_{it}$ is the total number of active cases during the period,

$deathcases_{it}$ is the total number of death cases during the period.

To analyze the stock market performance during and covid and finds its impact the Nifty returns is being calculated for 32 months starting from March 2020 till October 2022. This helps to give information about how the stock market was in general. Nifty closing values are taken and monthly data is being calculated for the sample size. The data about the stock market is taken from the prowess software and the data relating to the covid cases are taken from the website.

FINDINGS

The descriptive statistics

Table 1 presents the descriptive statistics of the NSE listed 500 companies from January 2020 till August 2020. The average returns of all stocks in the market were negative during pre-lockdown and post-lockdown. But during lock down the average returns of all the stocks in the market was positive. On an average there was 56583 total active cases during lockdown. The average turn over was also higher during lockdown for listed companies.

Table 1: Descriptive statistics

	Pre-lockdown	During lockdown	Post lockdown

Variable	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation
Total returns	-.36	3.98	1.29	2.99	-1.18	3.09
Turnover	887.71	2512.70	1412.62	3811.50	1310.01	4664.18
Yield	1.57	2.72	1.97	2.99	1.41	2.25
Book value	255.53	1262.02	255.67	1306.10	255.20	1305.82
Earnings per share	32.98	135.48	34.31	159.18	29.61	131.78
Market capitalization	10.21	3.78	10.15	3.70	10.35	3.716
Beta	.93	.59	.95	.55	.95	.55
Price to earnings	41.792	177.01	43.24	221.77	60.77	433.46
Price to book value	4.13	6.53	3.81	6.09	4.839	9.54
Total cases	417	589.92	111835.5	78812.92	1971027	1288409
Total Active cases	372	526.26	56583	33057.53	522549.7	231883
Total death cases	11	15.56	3289.6	2207.60	40307	20131.81

The correlation matrix for the variables for three time periods are separately provided in the appendix Table 1A, 1B and 1 C. The results show that the correlations between the variables in the regression models are lower than 0.5, indicating no strong correlation among variables.

Impact of COVID-19, pre-lockdown and during lockdown and after lockdown on Indian stock market.

First, we move on to check whether the total cases, active cases and death cases have any association with stock market returns. We have done a simple correlation analysis to find out relation between stock market returns and the covid cases during the period of study.

Table 2: Correlation between nifty returns and total COVID cases

Nifty return	Coefficient	Std err	t	P>(t)
Total Cases	.007	.004	1.44	0.160
_cons	-.098	.080	-1.21	0.234

Table 3: Correlation between nifty returns and total active cases

Nifty returns	Coefficient	Std err	t	P>(t)
Active cases	0.155	.006	2.41	0.022
_cons	-.168	.077	-2.16	0.039

Table 4: Correlation between nifty returns and death cases

Nifty Returns	Coefficient	Std err	t	P>(t)
Death cases	.009	.005	1.66	0.108
_cons	-.091	.066	-1.37	0.180

Table 2, Table 3 and Table 3 report the correlation coefficient between Nifty returns of the 500 listed companies and total COVID cases, total active cases and death cases in India. The results show that returns have a significant association with total active cases. The total COVID cases and death cases have no significant association with Nifty returns during the period of study. It means that people have closely watched the number of active cases, and which also gave them a signal about the spared and magnitude of the pandemic.

Panel data regression results

Table 5 reports the random effects panel data regression result of Model (5), (6) and (7). It shows that the monthly report of COVID cases in India is significantly positively associated with stock market returns. Our results confirm Rao et al.'s (2021) conclusion that pandemic had positively influenced the returns. It clearly shows that during pre-lockdown period people were not much concerned about the spread of the pandemic. Investors were not very much keen on the impact of covid-19.

Table 5: Pre-lock down

Total Returns	Coefficient	Std. err	z	P>(Z)
Turnover	-.000**	.000	-2.72	0.007

Yield	-.044	.033	-1.34	0.180
BV	-.000	.000	-0.30	0.766
EPS	.0015	.002	0.70	0.482
Market capitalization	.0278	.028	0.97	0.334
Beta	-.495**	.166	-2.98	0.003
PE	-.000	.000	-0.45	0.650
PB	.015	.014	1.01	0.313
Total cases	.003***	.000	25.58	0.000
Total active cases	.004***	.000	25.58	0.000
Total death cases	.143***	.005	25.58	0.000
_cons	-1.69	.260	-6.50	0.000

Notes: **, *** signify 5% and 1 % level of significance.

Table 6 presents the random effect regression for lock down period. The results show that the total cases, total active cases and total death cases negatively affect the stock market returns. The was four phases of lock down in India. Starting from March 25th 2020 to 31st May 2020. Since we had not separately studied the impact of each of the lock down, we failed to get a significant result but the signs of the coefficients are as expected. Rao et at (2021) and Dharani et al. (2022) show that the different phases of lock down has a heterogeneous effect on the stock market returns. Dharani et al. (2022) reports that lock down 1.0 and 4.0 have no significant effect on returns, but lock down 2.0 had a positive impact and lock down 3.0 had a negative impact. Similarly, Rao et. Al (2021) also show that the first and last lock down have no significant effect on the stock market. Indian investors experienced a fluctuation in their fear towards the virus, and that would be the possible reason for the insignificant relation between covid cases and stock market returns during lock down. But at the same time negative financial performance of the companies and the restriction on economic activities led to negative coefficients for lockdown period. Regarding the firm characteristics market capitalization during lock down is positive and significant.

Table 6: During Lock-down

Total Returns	Coefficient	Std. err	z	P>(Z)
Turnover	.000	.000	2.26	0.024

Yield	-.017	.034	-0.51	0.608
BV	.000	.000	0.30	0.762
EPS	-.001	002	-0.38	0.705
Market capitalization	.189***	.034	5.44	0.000
Beta	-.203	.213	-0.96	0.340
PE	-.000**	.000	-2.03	0.042
PB	-.016	.019	-0.86	0.389
Total cases	-.042	.099	-0.43	0.666
Total active cases	-.056	.130	-0.43	0.666
Total death cases	-0.04	.107	-0.43	0.66
_cons	.104	1.163	0.09	0.929

Notes: **, *** signify 5% and 1 % level of significance.

Table 7 depicts the empirical evidence regarding the impact of COVID -19 on stock returns after lock down. The results show that all the situation under consideration i.e. total covid cases, total active cases and total death cases negatively affected the stock market returns of the NSE listed companies post lock down and results are significant at 1% levels. Our results confirm Rao et al.'s (2021) conclusion that Covid 19 variables have been negatively related to daily market returns, but in their it is not statistically significant. Also post lock down period shows a negative and significant beta and all the other firm characteristics are insignificant. The continuous fear and the uncontrollable fear of pandemic affected the stock market in India negatively. Even though initially the investors were not very keen about the impact of the pandemic, as days passed the investors become conscious about their choices and it can be clearly seen in the results of post lock down. The markets have slowly started to recover after August 2020, with the beginning of festive season and also the positive news about the vaccination. The restoration of the economic activities also helped the stock market to come to its nomenclature (OECD, 2020).

Table 7: Post lock down

Total Returns	Coefficient	Std. err	z	P>(Z)
Turnover	.000	.000	1.36	0.17
Yield	-.060	.032	-1.85	0.06
BV	-.000	.000	-0.90	0.36

EPS	.002	.002	1.20	0.23
Market capitalization	-.017	.024	-0.72	0.47
Beta	-.853***	.153	-5.55	0.00
PE	-.000	.000	-1.71	0.08
PB	.000	.008	0.07	0.94
Total cases	-1.719***	.095	-17.99	0.00
Total active cases	-1.845***	.139	-13.25	0.00
Total death cases	-2.29***	.130	-17.60	0.00
_cons	24.33	1.37	17.68	0.00

Notes: **, *** signify 5% and 1 % level of significance.

Time variant and Invariant factors

When we take a look into the market specific factors affecting the total returns of the company we can see that there is time variant and time invariant factors here. By taking two different periods that is the pre-lockdown and post lockdown period, we can see which are the factors changing with the time period.

Here the only factors that have changed from the pre-lockdown period to the post lockdown period are turnover and market capitalization. So, they are the time dependent factors or time variant factors. Any change in time can cause changes to these market specific factors. All the other factors are time independent factors that is, yield, book value, earnings per share, beta, price to earnings value and price to book value are time independent factors or time invariant market specific factors affecting the total returns of the company.

Table 8: Time variant and invariant factors

Factors	Pre-lockdown period		Post Lockdown period	
	Effect	Significant	Effect	Significant
Turnover	Negative	Insignificant	Positive	Significant
Yield	Negative	Insignificant	Negative	Insignificant
Book value	Negative	Insignificant	Negative	Insignificant

Earnings per share	Positive	Insignificant	Positive	Insignificant
Market capitalization	Positive	Insignificant	Negative	Insignificant
Beta	Negative	Significant	Negative	Significant
PE	Negative	Insignificant	Negative	Insignificant
PB	Positive	Insignificant	Positive	Insignificant

DISCUSSION AND CONCLUSION

The study aimed to find the impact of the pandemic on the stock market performance by taking the total covid cases total active cases and the total death cases in India by comparing this with the nifty returns of the NSE listed companies. The study focused on the examination on the market specific factor's impact on the total returns of the company. We considered total covid cases, total active cases and the total death cases to find the impact on the returns of the company.

 The total active covid cases has an impact on the nifty returns of the company. That is, changes might have occurred in the nifty returns by the total active cases. And there is a positive correlation between the active cases and the nifty returns. In the pre-lockdown period turnover, yield, book value, beta and price to earnings value had a negative relation with the total returns of the listed companies. In the lockdown period the turnover, beta and the total covid cases have an impact on the total returns of the company. The turnover, market capitalization and price to earnings value has a very significant impact on the returns of the company. But the COVID do not show an impact in the lockdown period. When we are taking the results of the post lockdown period from the table we can see that the turnover, earnings per share and the price to book values have a positive effect on the returns of the company. The beta values and the turnover of the company shows significant impact on the returns of the company. They have a very high level of significance on the returns of the company. Out of the eight market specific factors it was found that only two of them are time variant they are turnover and market capitalization.

Our results clearly show that pre-lock down the covid 19 has a positive and significant impact, but during lock down even though there is a negative and insignificant relation existed between Covid cases and stock market returns. But post lock down it is clear that the covid cases

negatively impacted the Indian stock market, due to the out break of the virus even after the lock down and also it directly hit the investor sentiments. The results (Table 7) clearly show that the increase in death cases highly affected the market return negatively. The immediate measures taken by the government can be the reason for the less impact of the covid cases in the returns of the company. In future also, which such unexpected pandemic occur actions has to be taken proactive, so that there will be only less impact on the stock market performance and thereby the financial economy of the nation.

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Appendix

Table 1A: Correlation Matrix- Pre-Lockdown

	Total returns	Turnover	Yield	Book value	Earnings per share	Market capitalization	Beta	Price to earnings	Price to book value	Total cases	Total Active cases	Total death cases
Total returns	1.00											
Turnover	-0.07	1.00										
Yield	0.06	0.00	1.00									
Book value	0.02	0.03	-0.02	1.00								
Earnings per share	0.03	0.04	-0.01	0.45	1.00							
Market capitalization	-0.03	0.31	0.15	0.09	0.12	1.00						
Beta	-0.05	0.06	0.18	0.20	0.00	0.42	1.00					
Price to earnings	-0.00	0.03	-0.06	-0.00	-0.01	0.09	0.00	1.00				
Price to book value	-0.00	0.07	-0.11	0.00	0.08	0.30	-0.08	0.13	1.00			
Total cases	0.55	-0.03	0.19	0.00	0.00	-0.03	0.02	-0.00	-0.08	1.00		
Total Active cases	0.55	-0.03	0.19	0.00	0.00	-0.03	0.02	-0.00	-0.08	1.00	1.00	
Total death cases	0.55	-0.03	0.19	0.00	0.00	-0.03	0.02	-0.00	-0.08	1.00	1.00	1.00

Table 2A: Correlation Matrix- During lockdown

	Total returns	Turnover	Yield	Book value	Earnings per share	Market capitalization	Beta	Price to earnings	Price to book value	Total cases	Total Active cases	Total death cases
Total returns	1.00											
Turnover	0.13	1.00										
Yield	0.02	-0.04	1.00									
Book value	0.01	0.03	-0.02	1.00								
Earnings per share	0.01	0.04	-0.03	0.47	1.00							
Market capitalization	0.22	0.32	0.17	0.09	0.11	1.00						
Beta	0.07	0.06	0.23	0.01	-0.00	0.46	1.00					
Price to earnings	-0.04	0.10	-0.04	-0.00	-0.01	0.08	0.07	1.00				
Price to book value	0.04	0.14	-0.12	0.00	0.08	0.31	-0.11	0.10	1.00			
Total cases	-0.00	0.05	0.00	-0.00	-0.00	-0.00	0.00	-0.00	-0.00	1.00		
Total Active cases	-0.00	0.05	0.00	-0.00	-0.00	-0.00	0.00	-0.00	-0.00	1.00	1.00	
Total death cases	-0.00	0.05	0.00	-0.00	-0.00	-0.00	0.00	-0.00	-0.00	1.00	1.00	1.00

Table 3A: Correlation matrix- Post lockdown

	Total returns	Turnover	Yield	Book value	Earnings per share	Market capitalization	Beta	Price to earnings	Price to book value	Total cases	Total Active cases	Total death cases
Total returns	1.00											
Turnover	-0.00	1.00										
Yield	-0.03	-0.02	1.00									
Book value	0.02	0.02	-0.02	1.00								
Earnings per share	0.03	0.01	-0.00	0.46	1.00							
Market capitalization	-0.09	0.24	0.18	.08	0.11	1.00						
Beta	-0.16	0.06	0.15	0.01	-0.00	0.47	1.00					
Price to earnings	-0.05	-0.01	0.00	-0.00	-0.01	0.04	0.03	1.00				
Price to book value	-0.00	0.02	-0.08	-0.00	0.04	0.22	-0.06	0.06	1.00			
Total cases	-0.50	0.08	-0.08	-0.00	-0.00	0.01	-0.00	0.00	003	1.00		
Total Active cases	-0.38	0.07	-0.08	-0.00	-0.00	0.01	0.00	0.00	0.03	0.95	1.00	
Total death cases	-0.48	0.08	-0.08	-0.00	-000	0.01	0.00	0.00	0.03	0.99	.09	1.00

A Study on Factors Affecting the Payment Options by the Users of Digital Financial Products in India

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ABSTRACT

The objective of financial inclusiveness for economic development can be accomplished through the adoption of digital pathways. Delivery of financial services is to be promoted via digital platforms. This has also prompted the use of Digital Financial Services and Products (DFS) for different purposes. People have also started using the digital platform as payment methods. The present paper attempts to explore the cardinal factors affecting the payment methods opted by people in India. The paper reflects factors namely Access, Ownership of different DFS, Proficiency in using digital methods of payment, Financial Knowledge, and Awareness affecting the Current Payment Methods opted by people (CPM). The study proposes the Modes of Digital Operations (MDOP) as the mediator affecting the relationship between exogenous and endogenous constructs. The data collected by framing a structured questionnaire was analyzed by framing a Structural Equation Model (SEM) using Smart PLS with 5000 bootstrapping. The result revealed that 98.4 % people with age above 50 years use digital methods of payment like debit cards, credit cards, mobile money, etc. by taking the help of their friends and relatives. They are dependent on others for digital use as they lack proficiency or awareness of digital operations or financial knowledge. The policy-making authorities are required to pay attention to the need for awareness programs and Financial Literacy camps to make people competent in using digital methods of payment without any dependence.

Keywords: Digital Financial Services and Products, Current Payment Methods, Structural Equation Model, Mediator, Smart PLS, Modes of Digital Operations

INTRODUCTION

The landscape for digital payment in India is highly diverse having several options available for consumers to make various transactions. The vibrant eco-system of digital payment is quite as advanced as the other countries in the world. It has a robust infrastructure for digital payment mechanisms along with a large pull of talent. India was predominately a cash-based economy which has very well accepted the changes introduced in the digital era. Now it is progressing

towards a digital-based economy. It is in an accelerating "lift-off" face of its digital odyssey. Through digitalization, the government is putting efforts to improve the provision of public services to people who have limited access to education health, and financial services. The unflappable commitment of the government of India to promote financial inclusion through digitalization has paved the way for digital payment systems and the availability of different Digital Financial Products and Services (DFS) to build their grip on the economy. The digitalization of the banking sector in India offers solutions that will help bring the economically less-privileged section and reach out to the wider section of society thereby leading to building a financially inclusive economy, (Iqbal & Sami, 2017). The COVID-19 pandemic has propelled the usage of digital products in the past few years. The pandemic across the globe has accelerated the transformation and growth of different financial services (Asongu et al., 2021, Tay et al., 2022). Many people have started using digital platforms as per the instructions of the authorities to contain the widespread of the virus. The penetration of the internet and the rampant use of mobile phones has escalated the use of digital money in the economy. It was observed that small businesses and low-income families have started using digital payment services. The payment ecosystem in India has undergone a radical shift in recent years especially in Covid 19 pandemic. A forever change is observed in the way in which people are transacting. Since the inception of various forms of digital money in India (Debit cards, Credit cards, Digi-wallets, etc.), people have started using both digital means and cash for different transactions. It is observed that people in rural areas and with less knowledge of digital platforms are dependent on their friends and relatives to carry out different operations digitally. Though different options for digital money are available, the use of cash in the economy is still prevalent. It is therefore important to analyze the factors affecting the choice of payment options by the people. The present study aims to find answers to two questions namely-What are the factors that influence the use of digital money by people? Does the presence of friends and relatives help influence the choice between digital money and cash? The present study analyzes different factors having an impact on the payment methods opted by people. It also aims to analyze the mediating role of Modes of Digital Operations (MDOP) as a mediator.

REVIEW OF LITERATURE

The Digital India revolution has accelerated growth due to initiatives taken by the government of India like PMJDY (Pradhan Mantri Jan Dhan Yojana), India stack, e-KYC, UPI, etc, (NITI Aayog, 2022). The introduction of such initiatives by the government enables it to reach its

objective of financial inclusiveness. The pandemic across the globe has accelerated the transformation and growth of different financial services (Asongu et al., 2021, Tay et al., 2022). Digital Financial products and Services (DFS) hence evolved as the secure way to stretch out to vulnerable sections of society.(Pazarbasioglu et al., 2020b). As per (Kunt. et al., 2017) DPS has emerged as an important factor that can ensure financial inclusion to a greater extent. It will enhance the speed of payments, reduce the cost involved in making and receiving payments, and promote transparency. As per the survey conducted in 2020, it was unearthed that the acceleration in the use of digital platforms will continue even after the COVID-19 pandemic in the ASEAN regions. It was also observed that the digital generation is using e-banking and e-wallets after social media (ASEAN Digital Generation Report, 2022). The provision of DFS depends on a digital platform for transactions, devices, and retail agents, (RBI, 2021). DFS evolved in India in three distinct phases. In phase one, many financial services were digitalized. This was between 2014-2016 when many digital wallets like Paytm and Mobikwik started to grow at a rapid rate. The demonetization period is the second phase. The introduction of UPI symbolizes the third phase. The initiative by RBI has exemplified this model by outwitting the use of debit cards and pre-paid wallets. The UPI is the creation of the National Payment Council of India (NPCI) and is managed by it,(mSTAR project & USAID, 2019). People are using digital platforms for purposes like online shopping, receiving remittances, transfer of funds, etc. (Nandru et al., 2021)(Pazarbasioglu et al., 2020a). (Mondal. Susanta, 2020) highlighted debit cards, credit cards, QR codes, mobile banking, internet banking, and e-wallets as different digital payment methods. (Shen et al., 2020) stated in their research that digital technology has emerged as an ideal medium to reach many customers across a wide territory. They further concluded that financial literacy and usage of digital financial products are highly important for increasing financial inclusion in China. To make proper financial decisions and attain individual financial well-being, an individual must possess the financial awareness, knowledge, skills, attitude, and behaviors required(OECD, 2018). According to (Kollinal, 2019) for the usage of digital products, digital literacy is highly essential. (Lyons & Kass-Hanna, 2021) through extensive research laid down a DFL framework by combining key characteristics from both digital literacy and financial literacy. (Huang Bihong et al., 2019) their research highlighted four dimensions of DFL namely knowledge of digital financial products and services, awareness of digital financial risks, digital financial risk control, and knowledge of consumer rights and redressal mechanisms. It comprises elements like basic knowledge and digital proficiency. Thus, the use of digital methods of payment and different DFS requires a person to have basic financial knowledge like knowledge on the

calculation of interest, inflation, diversification of investments, etc. For the use of the virtual platform, there is a need for a gadget like a mobile phone, personal computer, or tablet to name a few. The basic knowledge of using the gadget is also essential. Proficiency or capability of using digital products is also equally essential. Awareness of various digital platforms, products, operations, and risk control mechanisms equally facilitates the digital inclusion of financial products, (Lyons & Kass-Hanna, 2021)**.** It was pointed out (Shree et al., 2021) that the age of people has a negative relationship with the use of digital methods of payment. (Buteau et al., 2021) highlighted that the most preferred mode of payment in retail transactions is still cash. People prefer to use cash in case of transactions of low-value denominations, out-of-order PoS, poor internet connectivity, and convenience to operate. It was also observed that even though people have started using digital payment methods in urban and rural places, but still cash-based transactions are prevalent between merchants and consumers. People are using digital methods of payment along with cash.

Research Gap and Research Hypotheses

The review of research works done earlier has led to identifying the following gaps or problems which the present study aims to deal with along with framing of some hypotheses to answer certain research questions:

A study conducted (Buteau et al., 2021) highlighted that the most preferred mode of payment in retail transactions is still cash. It is worth asking this question why do people having access to infrastructure for digital payments still prefer to use cash for different operations? The first gap identified is the presence of scant studies (Hyytinen & Takalo, 2009; Shree et al., 2021; Sivathanu, 2019) on factors affecting the payment (cash, digital, or a combination of both) options chosen by people in this digital era. (Dimitrova et al., 2023) highlighted that people take the help of known ones to perform digital transactions. A detailed review of the works indicates the presence of the second gap that no substantial study is made on the mediating role of modes of digital operations (MDOP- performing digital transactions independently without taking the help of others) in making choices between different Methods of Payment (MP). The present study aims to analyze different factors identified (Akanfe et al., 2021; Lyons & Kass-Hanna, 2021; Pazarbasioglu et al., 2020a; Saroy et al., 2022) namely Proficiency in using Digital Money (DMP), Financial Knowledge, Awareness, Access, and Ownership having an impact on the payment methods opted by people. It also aims to analyze the mediating role of Modes of Digital Operations (MDOP) as a mediator. The identified gaps accentuate the formulation of

the research hypotheses for achieving the objectives of the study. This leads to the formulation of the following hypotheses-

H_1 – Proficiency in using Digital Money (DMP) has a positive and significant impact on Current Payment Methods (CPM) opted by consumers

H_2 – Financial Knowledge has a positive and significant impact on CPM opted by consumers

H_3- Awareness among consumers has a significant impact on CPM opted by them

H_4 – Ownership of digital financial instruments has a significant impact on CPM opted by consumers

H_5- Access to digital Infrastructure has a significant impact on CPM opted by consumers

H_6- MDOP mediates the relationship between DMP and CPM

H_7- MDOP mediates the relationship between FK and CPM

H_8- MDOP mediates the relationship between Awareness and CPM

H_9- MDOP mediates the relationship between Access and CPM

METHODS

Research Design:The current study is based on muti-stage sampling methods. At first, the convenient sampling method is used to select Puri as the place of research and afterward, snowball sampling has been used to reach the respondents. The district of Puri was chosen because it is popular as one of the four '*Dhams'* (pilgrimage centers) in India where Lord Jagannath is worshipped. The other Dhams are Badrinath, Dwarka, and Rameswaram. The famous 'Black Pagoda' – Konark is also situated in the Puri district. It is considered as 'World's Tourist Hub' where people across the world visit not only to worship Lord Jagannath but also to enjoy the cultural heritage and scenic beauty. This place very well justifies the conduct of research as the relationship between the need for digital payment and visits by tourists across the globe cannot be denied, especially after the pandemic (Akhtar et al., 2021).

Sampling Design: The district of Puri includes one sub-division, 11 blocks, 11 tahasils, and 1722 revenue villages as a part of its administrative setup. The sample for the present study was selected by the application of multi-stage sampling techniques. The selection of urban

places was made according to the information obtained from the 2011 census. For the selection of rural places, the division of the Puri district into several blocks was considered. Out of 11 blocks in Puri, 6 blocks were chosen in a way that would represent the entire district. The study depicts the digital usage scenario for both urban and rural places, 4 urban, 1 semi-urban, and 6 villages are selected representing the entire district.

Sampling Tool: After reviewing articles related to the current study, academicians having vast knowledge and exposure to the present work of research were consulted while framing the questionnaire. The structured questionnaire has five sections. Data is collected by using snowball sampling methods from those who already owned a bank account. The respondents in the present research sample include people with a minimum age of 15 years to senior citizens aged above 60 years. A structured questionnaire is framed to collect data from the residents of selected places. Responses were collected from 776 respondents on a 5-point Likert scale (Strongly Agree, Agree, Neutral, Disagree, and Strongly Disagree). The analysis of the present study has been made using structural equation modeling in partial least square (PLS) combined with bootstrap for testing the hypotheses of this study. Data was analyzed using Smart PLS and Software Package for Social Science (SPSS) IBM 2025.

Table 1- Clarification of Conceptual Confusions

VARIABLE	MEASUREMENT	INDICATORS	ROL
Proficiency	Reflective	Open an account on a digital platform- PDMA 1	(Lyons & Kass-Hanna, 2021)
		Open the menu and find a particular option in the digital platform- PDMA 2	(Matthews, 2019) (Borg & Smith, 2018)
		Initiate a digital financial transaction- PDMA 3	
		correct an error while doing a digital financial transaction- PDMA 4	
		Reverse an error while doing a digital financial transaction- PDMA 5	

		Complete or cancel a transaction a digital financial transaction- PDMA 6	
FK	Reflective	Possession of financial numeracy skills- FK 1	(Lyons & Kass-Hanna, 2021)
		Knowledge of simple interest- FK 2	
		Knowledge of compound interest- FK 3	(Matthews, 2019)
		Knowledge of diversification of funds- FK 4	
		Knowledge of inflation-FK 5	(Naumenkova et al., 2019)
		Knowledge of financial planning- FK 6	
Awareness	Reflective	Awareness of digital risks like Phishing, hacking, etc- AW-1	(Morgan & Trinh, 2019),
		Knowledge of financial products and services offered digitally- AW 2	(Pazarbasioglu et al., 2020b)
		Knowledge of consumer rights- AW 3	
		Knowledge of consumer redressal mechanism- AW 4	
Ownership	Reflective	Ownership of Debit card- Own 1	(2021(Bathula & Gupta, 2021)
		Ownership of Credit card- Own 2	
		Ownership of digital money account- Own 3	(Nandru et al., 2021)
CPM		Use of digital payment systems mostly along with cash	(Shree et al., 2021)
MDOP		Modes of operating digital products	(Dimitrova et al., 2023)

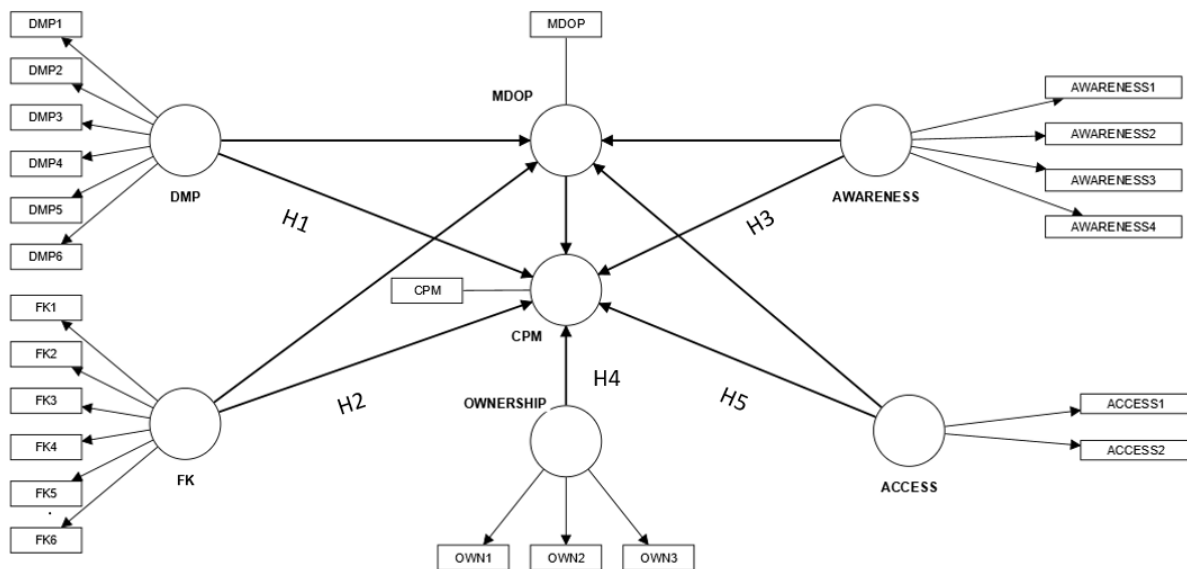| Access | | Access and use of the Internet-ACC 1 | (Lyons & Kass-Hanna, 2021) |
	Reflective		(Morgan & Trinh, 2019),
		Ownership of the smartphone-ACC 2	(Azeez & Akhtar, 2021)

Source: Author's compilation

Fig 1- Proposed Model

RESULTS AND DISCUSSION

Assessment of Measurement Model

The reliability analysis of the dataset using Smart PLS 4.0 reflects that all construct factor loadings are within the threshold of (> .070). the value of Cronbach's alpha ranges between 0.821 to 0.934 (Nunnally, 1978), (Bagozzi & Yi, 1988). The internal consistency and reliability of the constructs were high. Convergent validity is assessed through Average Variance Extracted (AVE) having a value greater than 0.50, (Hair et al., 2019). The constructs have AVE values greater than 0.50. The VIF values of the indicators are less than 3.3, (Diamantopoulos & Siguaw, 2006). The discriminant validity is examined with the help of the Heterotrait-Monotrait ratio of correlations (HTMT) (Hafiz Hanafiah, 2020). A value less than 0.85 indicates no discriminant

validity i.e. no collinearity exists among the constructs. So, the measurement model met the basic requirements of reliability and validity.

Table 2- Outer Model Assessment of Constructs

Variable	Item	Convergent Validity			Cronbach's alpha	Multicol linearity
		Cross loadings	Composite reliability	AVE		VIF
DMP	DMP1	0.785	0.917	0.704	0.916	1.668
	DMP2	0.825				2.563
	DMP3	0.870				3.128
	DMP4	0.829				2.343
	DMP5	0.866				3.766
	DMP6	0.882				3.717
FK	FK1	0.809	0.886	0.625	0.879	2.189
	FK2	0.832				2.226
	FK3	0.826				2.286
	FK4	0.804				2.090
	FK5	0.729				1.704
	FK6	0.735				1.648
Awareness	Awareness	0.767	0.775	0.597	0.775	2.173
	Awareness	0.788				2.262
	Awareness	0.766				1.985
	Awareness	0.769				1.937
Ownership	Ownership 1	0.793	0.790	0.671	0.756	1.423
	Ownership 2	0.785				1.544
	Ownership 3	0.876				1.700
Access	Access1	0.774	0.900	0.907	0.898	2.965
	Access2	0.880				2.965

Source: Smart PLS output

Table 3- Discriminant Validity- HTMT (Heterotrait–Monotrait ratio of correlation measure)

	ACCESS	AWARENESS	CPM	DMP	FK	MDOP	OWNERSHIP
ACCESS							
AWARENESS	0.657						
CPM	0.524	0.612					
DMP	0.599	0.704	0.615				
FK	0.544	0.701	0.686	0.766			
MDOP	0.652	0.807	0.754	0.835	0.814		
OWNERSHIP	0.789	0.797	0.750	0.849	0.813	0.804	

Source: Smart PLS output

Assessment of the Structural Model and Hypotheses Testing

The objective behind constructing a SEM is to show the inter-relationship between the manifest and latent variables of the main predictor, and outcome variables in a single model. For testing the mediation effect, direct and indirect path coefficients were constructed from the independent variables to the dependent variables through the mediator variable. The model was generated through the bootstrapping of 5000 samples in Smart PLS. The result of the bootstrapping reflects the *t* and *p values* which show acceptance and rejection of hypotheses. This step involves examining the significance of the path coefficients (β) (Table-4), assessment of values of R^2, and predictive relevance Q^2 (Table-5). The determination coefficient (R^2) is one of the major indicators to determine the prediction level of the research model. According to (Chin, 1998), values of 0.19, 0.33, and 0.67 are weak, moderate, and substantial respectively. It is found from Table 5 that a 59.4 % variance in the endogenous construct is well explained by the exogenous constructs. The model has a moderate predictive relevance concerning R^2. The significant presence of MDOP as the mediator is reflected in Table 4.

The present study investigated that the effect size is strong in the proposed model. The out-of-sample prediction is assessed by the technique developed by Stone- Geisser's Q^2 value. The values of 0.02, 0.15, and 0.35 indicate a weak, moderate, and strong degree of relevance (Hair, 2014). The Q^2 value of endogenous constructs CPM, MDOP, and Purpose (Table 5) have a strong degree of relevance.

Table 4- Test of hypotheses path coefficient

Relationship	Effects	β Value	Std dev	T stats	P value	Hypotheses	Decision
DMP -> CPM	Direct Effect	0.341	0.082	4.168	0.000	H1	Yes
FK -> CPM	Direct Effect	0.371	0.079	4.679	0.000	H2	Yes
AWARENESS -> CPM	Direct Effect	0.350	0.064	3.538	0.000	H3	Yes
OWNERSHIP -> CPM	Direct Effect	0.519	0.116	4.962	0.000	H4	Yes
ACCESS -> CPM	Mediating Effect	0.662	0.085	5.772	0.440	H5	Yes
ACCESS -> MDOP -> CPM	Mediating Effect	0.499	0.037	6.319	0.000	H6	Yes
DMP -> MDOP -> CPM	Mediating Effect	0.567	0.054	6.502	0.000	H7	Yes
AWARENESS -> MDOP -> CPM	Mediating Effect	0.579	0.038	7.404	0.000	H8	Yes
FK -> MDOP -> CPM	Mediating Effect	0.409	0.042	5.792	0.000	H9	Yes

Source: Smart PLS output

Table 5- Coefficient of Determination for the Relationship

	Q²predict	R-square adjusted
CPM	0.409	0.594
MDOP	0.700	0.793

Source: Smart PLS output

(Lontchi et al., 2022) analyzed the result of a significant relationship within the constructs through the Beta value (β), t-value, and p-value respectively. Table 4 shows that DMP has a direct, positive, and significant impact on the CPM ($β1 = 0.341$, t-statistics = 4.168, $p < 0.05$).

These results reflected that the current method of payment (a combination of cash and digital methods in which the digital platform is preferred more) is affected by the competency of users in using the account of a digital money provider. The ability to open a menu, select options, correction of transactions does affect the usage of digital money (Lyons et al., 2020). So, the alternative hypothesis H1 is accepted.

H2 tested whether CPM is explained by FK (Financial Knowledge). The outputs of the analysis depict that FK ($\beta1 = 0.371$, t-statistics = 4.168, $p < 0.05$) significantly predicts CPM. The outputs of the analysis support the research done earlier (Oggero et al., 2020). The hypothesis is supported and the result indicated that while choosing payment mostly by using digital means, financial knowledge is quite essential.

H3 tested whether CPM is explained by Awareness of digital operations. The outputs of the analysis support the research done earlier (Shree et al., 2021)and depict that Awareness ($\beta1 = 0.350$, t-statistics = 3.538, $p < 0.05$) significantly predicts CPM. The hypothesis is accepted and signifies that for using the DPS for making payments, it is important that people must be aware of the risks present in digital platforms, knowledge of financial products and services, Knowledge of consumer rights, and knowledge of consumer redressal system.

H4 tested whether Ownership affects the CPM significantly or not. The outputs of the analysis depict that Ownership ($\beta1 = 0.519$, t-statistics = 4.462, $p < 0.05$) significantly predicts CPM. The outputs of the analysis support the research done earlier(Kulkarni & Ghosh, 2021).The hypothesis is accepted and signifies that for using the digital platform for making payments, it is important that people own digital financial instruments like debit cards, credit cards, e-wallets, etc.

H5 tested whether Access affects the CPM significantly or not. The outputs of the analysis depict that access ($\beta1 = 0.662$, t-statistics = 5.772, $p < 0.05$) significantly predicts CPM. The outputs of the analysis support the work done earlier (Kulkarni & Ghosh, 2021). The hypothesis is accepted and signifies that for using the digital platform for making payments, it is important that people have access to the internet and smartphones.

To test the mediation role of digital operations, hypotheses were developed and tested.

H6, H7, H8, and H9 tested if MDOP mediates the relationship between Access and CPM, DMP and CPM, Awareness and CPM, and FK and CPM respectively. The results show the presence of partial mediation in the relationship between Access and CPM ($\beta1 = 0.499$, t-statistics = 6.319, $p < 0.05$), DMP and CPM ($\beta1 = 0.567$, t-statistics = 6.502, $p < 0.05$), Awareness and

CPM (β1 = 0.579, t-statistics = 7.404, p < 0.05), and FK and CPM (β1 = 0.409, t-statistics = 5.792, p < 0.05) respectively. Access, Ownership, DMP, FK, and Awareness have both direct impact (p values are less than 0.05) and indirect impact through the mediator. This shows the presence of partial mediation among the constructs.

Theoretical Implications of the Study

o   Firstly, this study enriches the current literature on DFL and digital financial inclusion. The study has tried to state the importance of Awareness, proficiency in using digital platforms, and financial knowledge in choosing the options of payment (Use of more digital platforms over cash). It also depicts the relevance of DFL in using different DFS for different purposes.

o   Secondly, the model depicted that on CPM, Access has the highest impact (β1 = 0.662) followed by Ownership (β1 = 0.519). DMP has the least effect on the CPM (β1 = 0.341) followed by Awareness (β1 = 0.350). This is because those people who are not aware of digital operations and do not possess the desired skill or proficiency in using digital money are also using the digital platform as payment options by taking the help of others.

o   Thirdly, the SEM on CPM depicted a 59.4 % variance in the endogenous construct CPM is explained by DMP, FK, Awareness, Ownership, and Access.

o   Fourthly, during the study, it was observed that 98.4% of people over 50 years of age were dependent on others to use digital platforms because they were not aware of digital operations and did not possess the desired skill or proficiency in using digital money. They were using the digital platform of payment by becoming dependent on their friends and relatives. Though the people are digitally financially inclusive, in a real sense they are not inclusive due to their dependence on others. Actions need to be taken to make these people digitally equipped and inclusive in a real sense.

Policy Implications of the Study

o   The use of digital options of payment along with cash by being dependent on their friends demands the attention of policymakers towards the fact that necessary steps must be initiated to make people inclusive in the real sense.

- o Different types of awareness camps must be organized to provide an opportunity for those who lack proficiency in using digital products to increase their digital usage ability, lack awareness of consumer rights, redressal mechanisms, etc.

- o Financial knowledge like inflation, investment diversification, financial planning, etc can be increased by introducing these concepts at primary schooling levels.

CONCLUSION

The usage of financial services is essential to ensure the financial inclusiveness of society. In a digitally inclusive society, people have different options for making payments (cash and digital). The usage of digital money over cash is affected by factors like the ability to use digital money, financial knowledge, awareness, access, and ownership of financial products. However, during the study, it was also observed that 98.4% of people with 50 years and above use digital modes of payment even after lacking digital proficiency, awareness, and financial knowledge. They take the help of their friends and relatives to perform digital operations. This dependence needs to be taken care of by the authorities. Their dependence on others is preventing them from being inclusive in the real sense. The authorities of the state are required to take necessary steps to make people inclusive in a real sense. Necessary measures need to be taken by the financial service providers to equip the users of digital products. The conduct of awareness programs, literacy camps, and workshops to enhance the ability of the users of digital financial products will bring inclusiveness in the real sense.

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A Study of Factors Influencing Environmental, Social and Governance (ESG) Investing among Retail Investors in India

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INTRODUCTION

ESG investing, also called as sustainable investing is a blanket term for investments driven in firms that adopt ethical practices to make profits. The investors who follow sustainable investing don't invest in stocks of companies which do not follow the ESG standards. This is because with every passing year, there has tremendous focus on sustainable investing wherein investors identify long-term sustainability of a business through ESG analysis and invest in firms adopting sustainable business practices. The integration of investment with environmental, social and governance criteria has become extremely relevant in this era. But it has history from the early 1970s with investors avoiding investments in companies which are into tobacco business or the South African apartheid regime. Though in Indian context, ESG investing is still a relatively new concept but globally there are around 3,000 ESG schemes available for investing. [1]

With regards to ESG, the term environment stands for the organization's environmental disclosure, the environmental impact, and whether the organization takes any efforts to curb pollution or carbon emissions. The social aspect emphasizes on employee relations & diversity, working conditions, health & safety. It also includes any community philanthropy or serving local community. The governance criteria, which examines as to how organization policies itself with regards to shareholder's rights, executive remuneration, corruption, bribery, board diversity, etc.

ESG Investing – The Buzz Word

There has been an adverse climate change that is visible around the globe. Global warming has been a buzz word and the world has been witnessing severe climate change impact. For instance, Australia had to deal with adverse wildfires that lasted for almost 6 months and the reason for the same is severe heat. Similarly, Indonesia witnessed the fury of rising sea levels

during Indonesian floods. Recently, United Kingdom experienced severe heatwave due to which the infrastructure buckled and the hospitals and were stretched beyond limits.

As developing economies consume ample resources to accomplish their growth levels, ensuring sustainable growth is of extreme importance. The entire purpose of ESG investing is to reward sustainable business decisions.

Figure 1. ESG Investing in India – Journey
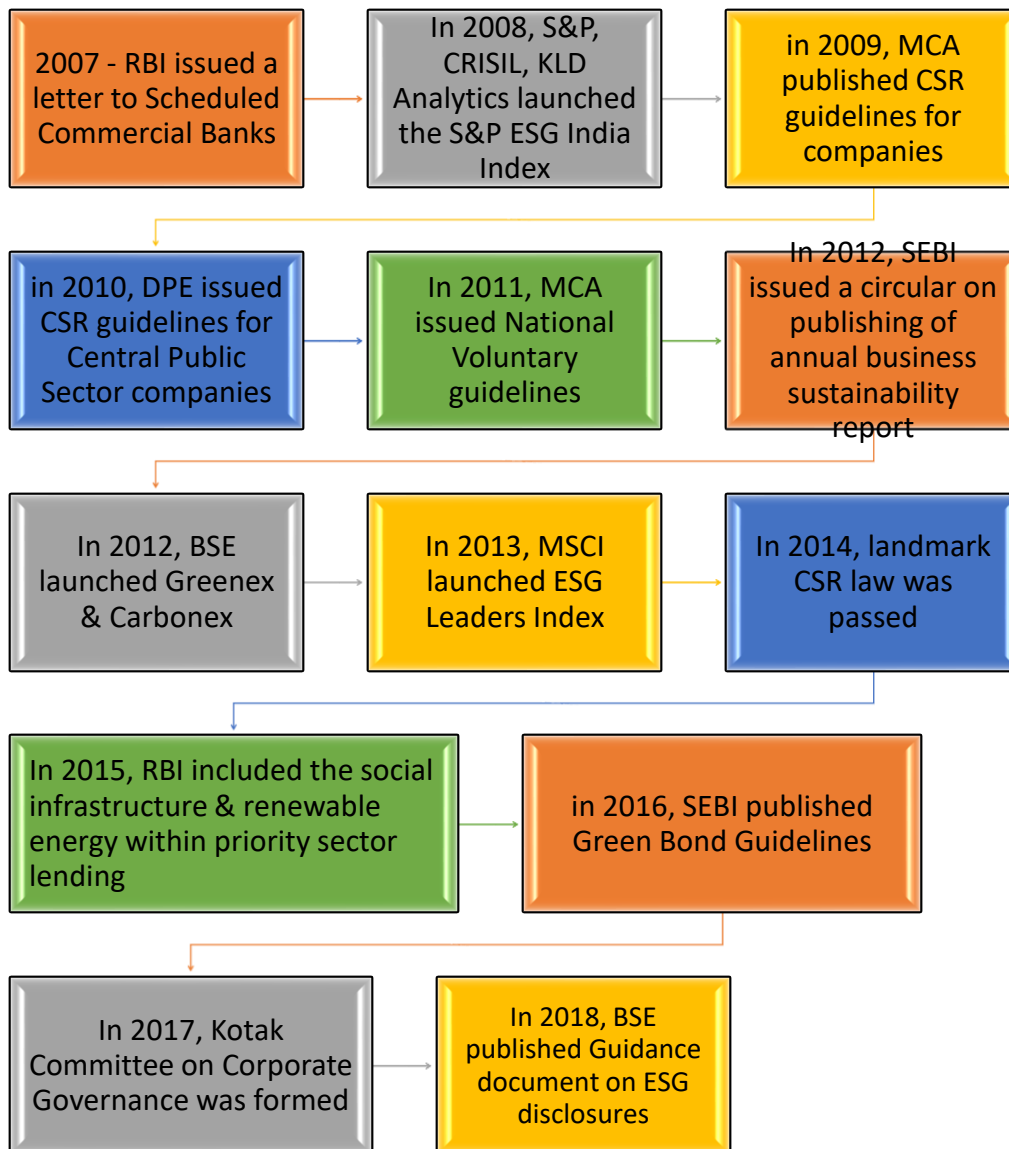
In a recent study on "ESG Analysis on 50 Listed Companies in India" by National Stock Exchange (NSE) in the year 2020, it has been documented that Indian companies score quite well on the policy disclosure and governance parameters of overall ESG measurement. ESG investing in India has been gaining traction in line with the global trend. A lot of organizations are making a move towards reducing carbon footprints by making enormous investments in

green energy projects. For example, Indian cement producers have committed fresh investments to build waste heat recovery systems. Power generated through this system will reduce dependence on fuels and translate into cost savings in the long run. (Jethmalani, 2021). As per **Error! Reference source not found.**, it can be seen that ESG indices and funds are still i n a nascent stage but investors are increasing interest in this area. The lack of depth in the market for ESG friendly companies is also mirrored by India's low rank in the Environmental Performance Index (according to researchers in Columbia and Yale universities). At present, India ranks 168 out of 180 companies in the ranking released in June. (Kamat, 2021)

LITERETURE REVIEW

The term "socially responsible investing" itself has been evolving into something akin to ESG investing. ESG refers to how organizations integrate the environmental factors, social factors and governance factors into their business models (Gillian et. Al, 2021). The number of companies that issue sustainability/ESG reports has considerably increased over the last few years (G7A, 2021). However, acceptance of ESG investing had been slow, largely "because it was historically associated with exclusionary investing (i.e., negative screens) rather than with positive or best-in-class investing" (Caplan, September 2013). There have been numerous studies on establishing a link between corporate financial performance and corporate social performance and the basis of comparison is the ESG ratings. (Fratantuono, 1992) in their study classified 49 companies has high, medium or low environmental performers based on reputation indices published by Council of Economic Priorities (CEP). They concluded that environmental performance these firms is significantly correlated with financial performance. Most of the studies have found a positive relationship between ESG and firm value which would help investors make a calculated choice on their investments. For instance, (Samuel M. Hartzmark, December 2019) provide strong evidence that investors attract value sustainability. They could collect experimental evidence that sustainability warranties a better future performance. Wong et al. (2021) examine the impact of ESG certification on Malaysian firms. The analysis exhibits that ESG certification lower's a firm's cost of capital. It also confirms that the stakeholders benefit from firms pursuing ESG agenda.

There have been studies which have observed that ESG investing may not lead to any superior portfolio performance. Auer & Schuhmacher (2016) analyzed the performance of socially (ir)responsible investments in the Asia-Pacific region, the United States and Europe. They observed that in the Asia-Pacific region and in the United States, investors concentrating on

ethical utility derived from their portfolio choice can follow an ESG-based investment style and still obtain a performance similar to the broad market. However, the investors in Europe tend to pay a price for socially responsible investing (depending on the ESG criterion they have selected). As per the Kiplinger's Domini National Public Opinion Poll (ESG Investing in gaining traction, 2021), it says that majority of the investors chose their investments based on an organization's commitment towards ESG principles. As per their survey, more than half of the respondents were willing to sacrifice a part of their performance on their investment to achieve an ESG goal. A study by Luc Renneboog, professor of corporate finance at Tilburg University, jenko ter Horst, professor of finance at Tias Nimbas Business School, and Chendi Zhang, professor of finance at Warwick Business School, published in 2008 in the Journal of Banking & Finance, (Cem Mus ˇ íte Pˇremýšlet, 2017), concludes that investors are prepared to accept lower returns in exchange of socially responsible investing factor.

ESG factors in investment decisions may have a positive impact on financial returns (Ranshaw A, 2018). Integration of ESG factors in investment decisions may not always increase portfolio performance, but is also unlikely to be a significant drag on returns (Ranshaw A, 2018). In recent times, investors have attached huge relevance to ESG investing for various reasons. One of the reason is that investors can promote ethical investment practices through ESG investing. Also, ESG investing magnifies the performance of a managed portfolio (Abhishek Parikh, et al, 2023).

According to major investment banking firms like Credit Suisse, Morgan Stanley, Ernst & Young, etc. Millennials have a distinct perception when it relates to investments. (Credit Suisse, 2018). When compared to a non-millennial investor, millennials are incorporating sustainability in general, and not just into investment decisions. In terms of investments, this distinct millennial philosophy means that they do not just care about financial returns. Millennials want to see what impact their investments have and how they can do good for society or the environment. (Morgan Stanley, 2017).

Most of the above mentioned research has been conducted in other countries. In India, ESG investing is still an upcoming concept and there have been very few studies on the same. The reason for this slow growth of ESG in India is attributed to the lack of awareness among the investors and lack of required ESG information in India (Tripathi, 2014). Also, most of the literature on ESG investing or socially responsible investing (SRI) is connected with the performance of ESG funds or indices. There have been studies on whether socially responsible

organizations perform better in comparison to general organizations. (K. V. Bhanu Murthy, 2014). The authors concluded that for the whole period of study, socially responsible companies performed better than general companies in terms of price discovery and returns. As per the study done by (Tripathi, December 2015), they compared the performance of general mutual funds with the performance of ethical mutual funds in India during the period 2009-2014. The authors concluded that ethical funds outperformed their counter general mutual funds and their benchmark index too. Investors were well rewarded with higher returns for their ethical investment choices in the Indian market. (Raut, 2020) in their study found that investors' intention to invest in SRI was significantly impacted by subjective norms, moral norms, attitude, financial knowledge, and financial performance by applying the theory of reasoned action (TRA) model. The result indicated that no significant relation was found between environmental concern and investors' SRI intention. One of the study conducted by (Pooja Mehta, 2020) documented that knowledge about SRI funds, social investing efficacy, and religiosity shape the attitude and intention towards investing in socially responsible funds.

RESEARCH METHODOLOGY

Study Design: The present study evaluates the knowledge and attitude regarding ESG investing among retail investors in Mumbai region of India (Mumbai Metropolitan Region, Navi Mumbai, Thane, Palghar) to investigate the knowledge and attitude of investors regarding ESG Investing. The study was conducted using a self-administered questionnaire via Google form and was sent via email.

Sampling Method: The sample includes all the gender types who are employed (self-employed, family business, service, etc) and who are able to invest a part of their income in some or the other investment avenue. The sampling method used was non-probability convenience sampling. It was further enhanced to snowball sampling as we relied on references given by the respondents who were fitting in to our criteria. A few samples were collected manually for digitally challenged participants who fit into our criteria.

Sample Size & Data Collection: The questionnaire was floated online and physically in some selected cases and we generated a response from 515 participants. After the initial screening, we could consider the data for 387 participants for our study since they fulfilled the inclusion criteria. Data collection was started after a pilot test of questionnaire was conducted among 20 participants (Data not included in the study). Information regarding demographic data, awareness level and knowledge regarding ESG was obtained

Data Analysis : The data collected was analyzed using Statistical Package for the Social Sciences (SPSS) software. The descriptive statistics of the data were analyzed to understand the characteristics of the samples. Further, to deduct the factors affecting ESG investing, an exploratory factor analysis (EFA) was conducted using SPSS. Since, EFA is generally recommended when researchers have no hypotheses about the kind of underlying factor structure of their measure, it was an apt method for our study.

Descriptive Statistics: The descriptive statistics Table 38 indicate that out of the total 387 respondents, more than 50% of the respondents are male (53.22%) and there were 160 (41.34%) female respondents. There were also 21 respondents who did not want to disclose the gender. The age group of the respondents specified that majority of the respondents are in the age group of 36-45 years (27.91%), followed by 21.19% respondents in the age group of 26-35 years, and around 20% respondents are in the age group of 45-55 years and remaining 14% respondents are in the age group above 55 years. Analysis of the education level suggested that nearly 40% (153) respondents have a master's degree, followed by 36.4% respondents (142) being graduates. Circa 13.69% (53 respondents) have completed their education up to secondary school and the remaining 10% possess a doctoral degree. The majority of the participants had an annual income of 50001-100000 per month (approx. 30%), and between 30001-50000 (26.21%). Income analysis also revealed that 22.48% of respondents have a monthly income above 1 lakh and approximately 22% respondents have a monthly income between 10000-30000.

Demographic Characteristic	Item	Frequency	(%)
Gender	Male	206	53.22
	Female	160	41.34
	Don't want to disclose	21	5.44
Age	18-25 years	63	16.28
	26-35 years	82	21.19
	36-45 years	108	27.91
	45-55 years	79	20.41
	> 55 years	55	14.21
Marital Status	Married	247	58.66
	Single	106	27.39
	Divorced/Separated	34	13.95
Level of Income per month	10000-50000	130	33.59
	50001-100000	170	43.93

	> 100000	87	22.48
Employment Status	Self Employed	185	47.81
	Employed	123	31.78
	Currently Unemployed	79	20.41
Level of Education	Up to Graduation	195	50.39
	Master's Degree	153	39.53
	Doctoral Degree or Professional Qualification	39	10.08
Residential Area	Mumbai Suburban	135	34.88
	Mumbai City	86	22.22
	Navi Mumbai	53	13.70
	Thane/Ghodbunder	88	22.74
	Palghar	25	6.46

Table 38 – Descriptive Statistics

The descriptive statistics indicate that out of the total 387 respondents, more than 50% of the respondents are male (53.22%) and there were 160 (41.34%) female respondents. There were also 21 respondents who did not want to disclose the gender. The age group of the respondents specified that majority of the respondents are in the age group of 36-45 years (27.91%), followed by 21.19% respondents in the age group of 26-35 years, and around 20% respondents are in the age group of 45-55 years and remaining 14% respondents are in the age group above 55 years. Analysis of the education level suggested that nearly 40% (153) respondents have a Master's degree, followed by around 50% respondents (195) having education level up to graduation. Circa 10.08% (39 respondents) have completed their professional qualification or possess a doctoral degree. The majority of the participants were having a monthly income of 50001-100000 per month (approx. 43.93%). Income analysis also revealed that 22.48% of respondents have a monthly income above 1 lakh and approximately 33.59% respondents have a monthly income between 10000-30000. The majority of the participants reside in the Mumbai Suburban area (34.88%) followed by 22.74% of participants being from Thane/Ghodbunder area.

Validity Test: After the thorough review of literature and expert's guidance, the face validity of the questionnaire was found good as the instrument contains a representative sample of the universe of the subject matter. It adequately covers all the topics of the relevant dimensions. A high validity was ensured by a careful definition of the topic and right selection of items to be scaled.

Reliability Test: The reliability of ESG investment was computed using SPSS software. Cronbach's Alpha Reliability Coefficient was computed to calculate the reliability of all items in the questionnaire. It can be seen from the above statistics that the reliability measure for ESG investment variables is higher than the standard value of 0.7, so it can be said that all the items in the questionnaire are highly reliable.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.817	.824	14

Table 39 – Reliability Statistics

Factor Analysis

The Principal Component Factor Analysis was applied with Varimax Rotation so as to identify the underlying factors of ESG investment among retail investors in India. Before proceeding for factor analysis, the raw data was checked for sampling adequacy and sphericity. The positive result shows application of factor analysis is appropriate. For ESG investment, the KMO measure was 0.808 which is more than 0.5 indicating that the sample is adequate for the application of factor analysis. The Bartlett's Test of Sphericity was tested through Chi-Square test, significant at 0% level of significance. Its associated probability is .000 and is less than 0.05 indicating that the data has low or no sphericity. Bartlett's Test of Sphericity is significant this means that the correlation matrix is not an identity matrix. Thus, the data collected for the ESG Investment is suitable for undertaking factor analysis.

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.808
Bartlett's Test of Sphericity	Approx. Chi-Square	1822.756
	df	91
	Sig.	.000

Table 40 – KMO and Bartlett's Test

The Factor Analysis with Principal Component Method and Varimax Rotation was applied. The raw scores of the 14 items of the ESG investment comprised of four factors namely risk and returns, values, intention and brand name.

Factor 1: Risk and Returns: The factor comprise of five variables. The variables being risk analysis (.781), diversified portfolio (.750), past performance (.646), positive long term financial returns (.630) and returns as priority (.584)

Factor 2: Values: The factor comprises of three variables. The variables being value aligned with investment (.828), belief in ESG philosophy (.805) and check sustainability measures (.805)

Factor 3: Intention: The Factor comprises of three variables. The variables being reflection of social consideration (.901), ESG initiatives consideration before investment (.806) and willingness to compromise returns (.712)

Factor 4: Brand Name: The factor comprises of three variables. The variables being brand name (.819), reputation and confident decision making (.616)

Rotated Component Matrix[a]

	Component			
	1	2	3	4
Risk_analysis	.781			
Diversified_portfolio	.750			
Past_performance	.646			
Positive_long_term_financial_results	.630			
Returns_as_priority	.594			
Value_alligned_with_investment		.828		
Belief_in_ESG_Philosophy		.805		
Check_sustainability_measures		.805		
Reflection_of_social_consideration			.901	
ESG_initiatives_consideration_before_investment			.806	
Willingness_to_compromise_returns			.712	
Brand_name				.819
Reputaion				.666
Confident_investment_decision				.616

Table 41 – Final Four factor structure of factors influencing ESG Investing

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.533	32.380	32.380	4.533	32.380	32.380	2.804	20.025	20.025
2	2.458	17.554	49.934	2.458	17.554	49.934	2.728	19.485	39.510
3	1.361	9.720	59.655	1.361	9.720	59.655	2.190	15.639	55.149
4	1.076	7.686	67.340	1.076	7.686	67.340	1.707	12.191	67.340
5	.906	6.475	73.815						
6	.614	4.387	78.201						
7	.566	4.043	82.244						
8	.499	3.567	85.812						
9	.424	3.032	88.843						
10	.396	2.829	91.673						
11	.334	2.386	94.058						
12	.322	2.303	96.362						
13	.280	2.000	98.362						
14	.229	1.638	100.000						

Extraction Method: Principal Component Analysis.

Table 42 – Total Variance

Scree plot: The scree plot graphs the Eigen value against the factor number or component number. It tells the number of factors that can be retained for analysis. One rule is to consider only those with Eigen values over 1. Another rule is to plot all the Eigen values in their decreasing order. The plot looks like the side of a mountain. Scree graph plots all the Eigen values in the decreasing order of their magnitude. It helps to visualize the relative importance of the factors. A sharp drop in the plot signals that subsequent factors are ignorable. It can be seen from the following graph that the slop is falling till the Fourth factor. From the Fourth factor on, the line is almost flat, meaning each successive factor is accounting for smaller and smaller amount of the total variance.
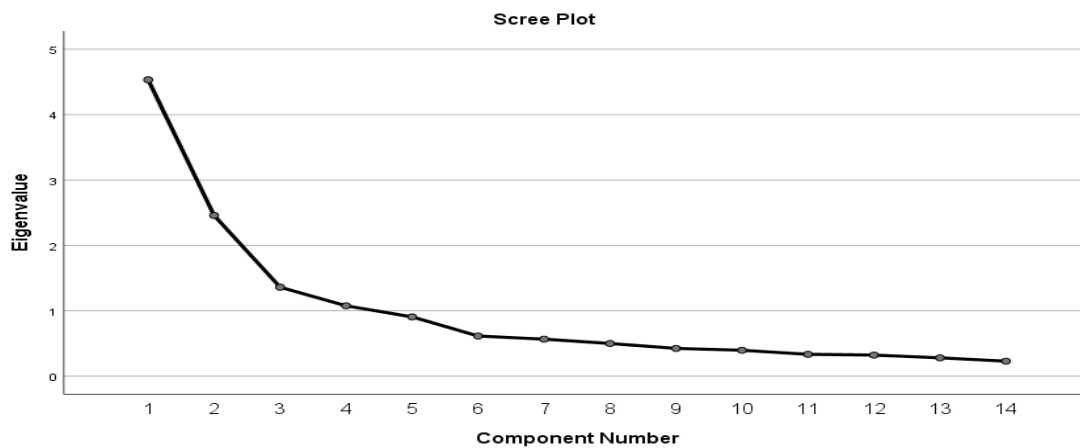

Figure 11 – Scree Plot

Factor Name	Eigen Values			Variable Covered
	Total	%Variance	%Cumulative	
Risk and returns	4.533	32.380	32.380	o Risk_analysis o Diversified_portfolio o Past_performance o Positive_long_term_financial_results o Returns_as_priority
Values	2.458	17.554	49.934	o Value_alligned_with_investment o Belief_in_ESG_Philosophy o Check_sustainability_measures
Intention	1.361	9.720	59.655	o Reflection_of_social_consideration o ESG_initiatives_consideration_before_investment o Willingness_to_compromise_returns
Brand name	1.076	7.686	67.340	o Brand_name o Reputaion o Confident_investment_decision

Table 43 – Eigenvalues

RESULTS

As a result of our exploratory factor analysis (EFA), we could extract four major factors that would influence the ESG investing behavior among the individual investors. The factors identified are risk and returns, values, intention and brand name. Fourteen items remained in the final questionnaire, and it led to derivation of four factors. In addition, it was confirmed that the data included in this study was appropriate in order to conduct a valid exploratory factor analysis (EFA) based on the descriptive statistics analysis. The 515 investors sample size was large enough for the EFA because it was larger than the suggested sample size of 300 (Comrey & Lee, 1992). Eigenvalues represent the total amount of variance that can be explained by a given principal component. They can be positive or negative in theory, but in practice they explain variance which is always positive. In the Table _ it can be seen that the eigenvalues of each factor are higher than 1 suggesting that each factor is relevant to our study.

CONCLUSION

A study on determination of factors influencing the Environmental, Social and Governance (ESG) Investing among retail investors in India was conducted in Mumbai region of India. The study was conducted to understand what are the factors that investors consider while taking up ESG investing. The study was conducted using a questionnaire and the reliability and validity test were conducted to assess the consistency of the questionnaire and accuracy of research measures. It was found that four major factors influence the ESG investing behavior among the individual investors. The factors identified are risk and returns, values, intention and brand name. These factors also suggest that even though ESG investing is considered to be ethical investing, still people would consider a lot of more factors before investing or while investing in ESG investments.

Implications

This study has implications for ethical and ESG mutual funds managers, policymakers, government, and international asset management companies. This study analyzed the factors that affect the ESG decision of an Indian individual retail investor. Understanding these factors and its relevance, Indian and international fund managers can launch new funds by targeting retail investors' socially responsible choices. This study gives important information regarding the risk analysis of an investor, the value and belief system of an investor, the intention and belief of an investor and finally the importance of brand name and reputation of ESG funds

and companies to the investors. This knowledge can be used to improve the financial system towards more sustainability. This is a point to ponder upon by the mutual fund companies and SEBI too. Issuers of ESG funds must invest their time and money to educate the retail investor about the ESG fund's specific objectives. These initiatives will surely help in the growth of ESG investing among retail investors in India.

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