ICME 2025

CONFERENCE PROCEEDINGS
14TH INTERNATIONAL CONFERENCE ON MANAGEMENT AND ECONOMICS

"Entrepreneurial Bricolage: Steering Volatile Markets through Improvised Strategies and Innovative Thinking"

FACULTY OF MANAGEMENT AND FINANCE
UNIVERSITY OF RUHUNA, SRI LANKA

31ST JULY 2025

PROCEEDINGS

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"Entrepreneurial Bricolage: Steering Volatile Markets through Improvised Strategies and Innovative Thinking"

ICME 2025

31st of July 2025

Faculty of Management and Finance
University of Ruhuna
Matara
Sri Lanka

Proceedings of the 14th International Conference on Management and Economics - ICME 2025

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ISBN: 978-624-5553-76-1

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Cover Page Designed by

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Published by

Faculty of Management and Finance
University of Ruhuna
Sri Lanka.
Tel/Fax: +94 41 2227015
Web: www.mgt.ruh.ac.lk

MESSAGE OF THE VICE CHANCELLOR

It is with immense pleasure and honour, I extend my warmest greeting to all contributors and attendees of the International Conference on Business Management and Finance (ICME 2025), hosted by the Faculty of Management and Finance, University of Ruhuna.

I find that this year's theme of the conference, "Entrepreneurial Bricolage: Steering Volatile Markets through Improvised Strategies and Innovative Thinking," deeply resonates with the challenges and opportunities faced by the global business community today. In an era characterized by rapid change, uncertainty, and complexity, the ability to adapt, innovate, and make use of available resources has become a notable crucial factor for sustainable success.

I commend the organizers of the conference for choosing this timely and inspiring theme and creating a platform that unites academics, practitioners, and policymakers worldwide. ICME-2025 would not only function as an essential forum for exchanging ideas and scholarly research but also would act as a catalyst for fostering collaboration and leadership in management and entrepreneurship.

As a national university dedicated to academic excellence, the University of Ruhuna is proud to support initiatives like ICME-2025 that meaningfully contribute to the development of knowledge and practice. I am confident that the discussions, insights, and collaborations arising from this conference will inspire new ideas and solutions to meet the changing demands of the business world.

I wish the conference every success and extend my best wishes to all participants for an engaging and fruitful experience.

Senior Professor P. A. Jayantha
Vice Chancellor
University of Ruhuna
Matara, Sri Lanka.

MESSAGE OF THE CONFERENCE Co-CHAIR

It is with great enthusiasm that we announce the 14th International Conference on Management and Economics (ICME), scheduled for 31st July 2025. Since its inception in 2012, ICME has become a flagship event of the Faculty of Management and Finance at the University of Ruhuna. Over the years, it has earned global recognition for cultivating research excellence, fostering international collaboration, and facilitating meaningful knowledge exchange within the fields of management and economics. ICME 2025 offers both in-person and virtual participation, ensuring broader inclusivity and accessibility.

This time, ICME 2025 welcomes renowned scholars, researchers, and practitioners from across the globe to explore the evolving dynamics of entrepreneurship in an era marked by economic volatility. The conference will serve as a vibrant forum to deliberate on the innovative and improvised strategies that organizations adopt to navigate through complex market conditions and global challenges.

The theme of "Entrepreneurial Bricolage: Steering Volatile Markets through Improvised Strategies and Innovative Thinking" captures the essence of resilience and creativity in contemporary business practices. It reflects the ingenuity required to manage crises such as supply chain disruptions, recessionary pressures, and technological upheavals—especially in resource-constrained environments.

I extend heartfelt appreciation to the conference committee, the editorial team behind the Proceedings of ICME 2025, and all the dedicated presenters, keynote speakers, reviewers, and researchers whose contributions make this event a hallmark of excellence.

With confidence, I believe ICME 2025 will continue our tradition of impact-driven scholarship and mark yet another milestone in the journey of the Faculty of Management and Finance.

Professor Manjula K. Wanniarachchige
Co-Chair | ICME 2025
Dean | Faculty of Management and Finance
University of Ruhuna
Matara, Sri Lanka.

MESSAGE OF THE CONFERENCE Co-CHAIR

It is with great honor that I extend my warmest greetings to all contributors and participants of the 14th International Conference on Management and Economics (ICME), organized by the Faculty of Management and Finance, University of Ruhuna, Sri Lanka.

In an era characterized by persistent uncertainty, rapid technological shifts, and resource limitations, traditional strategic models are often insufficient to fully understand the new pathways to innovation and creativity. Entrepreneurial bricolage focuses on how entrepreneurs can navigate unstable markets by using unconventional, resourceful approaches and innovative thinking. Therefore, ICME 2025 conference theme timely resonates with today's reality and needs.

ICME has earned a consistent reputation nationally and internationally for bringing an impressive assembly of researchers, academics, industry experts, policymakers, and students from diverse regions and disciplines. ICME 2025 serves as a vibrant platform for intellectual exchange, critical reflection, and forward-thinking dialogue. The research presented in these proceedings contributes to the growing body of knowledge that not only enhances academic understanding but also offers practical insights for navigating complex, volatile market environments.

As Co-chair, I take immense pride in the continued success of ICME as a premier academic event in South Asia that fosters collaboration, knowledge sharing, and innovation in the fields of management, economics, entrepreneurship, and beyond. I commend all authors and reviewers for their commitment to scholarly excellence and rigorous inquiry. Your contributions are vital in shaping policy, informing practice, and equipping the next generation of leaders with the tools to think boldly and act resourcefully.

I also extend my heartfelt appreciation to the conference coordinator, organizing committee, academic reviewers, and supporting institutions whose dedication and hard work have made ICME 2025 and its proceedings a reality.

May the insights gained here spark new ideas, deepen research collaborations, and inspire actions that lead to sustainable, inclusive, and resilient futures.

I extend my best wishes to make the ICME 2025 a great success!

Dr. Jayarani Ramawickrama
Co-Chair | ICME 2025
Faculty of Management and Finance
University of Ruhuna
Matara, Sri Lanka.

MESSAGE OF THE CONFERENCE COORDINATOR

It is with immense pleasure and pride that I extend my warmest greetings to all participants, presenters, reviewers, session chairs, and contributors of the International Conference on Management and Economics (ICME-2025), hosted by the Faculty of Management and Finance, University of Ruhuna, Sri Lanka.

The ICME has evolved into a premier academic forum that brings together scholars, researchers, practitioners, and students from across the globe to share knowledge, explore new ideas, and engage in thought-provoking discussions on contemporary issues in management, economics, and related disciplines. Each year, the conference highlights a timely and relevant theme, and this year is no exception. ICME-2025 is centered on the theme "Entrepreneurial Bricolage: Steering Volatile Markets through Improvised Strategies and Innovative Thinking."

This theme recognizes the increasing importance of agility, creativity, and resourcefulness in today's highly uncertain and fast-changing business environment. It encourages researchers and practitioners to explore how entrepreneurial actors creatively utilize limited resources to navigate challenges and seize emerging opportunities in volatile markets.

I take this opportunity to express my heartfelt appreciation to all who contributed to the success of ICME-2025. Special thanks are due to our organizing committee for their commitment and hard work, the panel of reviewers for maintaining academic rigor, and the keynote speakers, panelists, and session chairs for enriching the conference with their insights and expertise.

The ICME-2025 conference proceedings represent a diverse and high-quality collection of scholarly work. These contributions are not only academically sound but also practically relevant, offering meaningful implications for research, teaching, and policy-making. We believe this publication will serve as a lasting resource for the academic community and beyond.

On behalf of the organizing committee, I thank all of you for being part of ICME-2025 and contributing to its success. We look forward to your continued support and collaboration in our future conferences and academic initiatives.

Warm regards,

Dr. E.K. Jayampathi
Conference Coordinator | ICME 2025
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Keynotes

ICME 2025 "Entrepreneurial Bricolage: Steering Volatile Markets through Improvised Strategies and Innovative Thinking"
Proceedings of 14th International Conference on Management and Economics

Entrepreneurial Bricolage and Co-creation Opportunities to Generate Dual Value

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Abstract

This keynote explores how businesses can respond to the growing imperative to create not only commercial value but also social and environmental impact. It highlights the power of entrepreneurial bricolage—the practice of creatively leveraging and recombining available resources to develop innovative, purpose-driven solutions. It explores how co-creation, as a pivotal form of improvised strategy and innovative thinking, enables businesses to simultaneously generate commercial, social, and environmental value, seizing opportunities and addressing challenges that are impossible within single organizational boundaries. Despite its recognized potential, a significant research gap exists in understanding the specific opportunities through which co-creation facilitates this multi-faceted value creation, especially given the inherent paradoxes of such collaborations. To bridge this gap, the keynote discusses a typology of four distinct co-creation opportunities: Core, Supplementary, Societal, and Ancillary. This framework is built upon two key dimensions: the degree of alignment between co-creation and core business operations, and the integration of commercial and social/environmental value creation potential. The keynote details the unique characteristics of each opportunity type across three interrelated stages—opportunity spotting, seizing, and transformation—illustrating how entrepreneurial bricolage manifests in identifying, mobilizing resources for, and scaling these improvised strategies to steer through market volatility.

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Faculty of Management and Finance, University of Ruhuna, Sri Lanka. July – 2025
ISBN: 978-624-5553-76-1

Faculty of Management and Finance, University of Ruhuna, Sri Lanka. July – 2025
ISBN: 978-624-5553-76-1

Accounting

Exploring the Driving Factors of Accounting Professionals' Intention to Adopt AI-Based Accounting Tools in Sri Lanka

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Abstract

AI-based accounting tools and the automation of accounting processes have emerged as a growing trend in the corporate sector, aiming to enhance efficiency and reduce costs. This study aims to investigate the organizational and individual factors that influence the adoption of artificial intelligence (AI) in accounting in Sri Lanka's public sector, focusing on understanding the role of technological, cultural, and socio-economic contexts in shaping adoption intentions. The methodology of this study follows a survey approach, targeting professionals working in the Accounting and Finance fields to examine the research model. The researchers employed a structured sampling method and distributed 302 questionnaires. Cronbach's alpha, Pearson correlation, and regression analysis have been used as statistical tools to measure the relationship among the variables. SPSS has been used as a statistical software for analyzing data. The Findings show that organizational culture, regulatory support, perceived usefulness, and ease of use significantly contribute to AI adoption. Additionally, perceived usefulness and ease of use indirectly influence AI adoption through accounting profit and behavioral intention. However, resource availability, effective communication channels, and competitive pressure do not significantly impact AI adoption. The findings of this study will be helpful in further studies related to AI-based accounting Tools in Sri Lanka and institutions interested in enhancing AI-based accounting tools and automating accounting processes in developing countries like Sri Lanka.

Keywords: Accounting profession, Artificial intelligence, Adopting technology, Sri Lanka public sector, public accountants

Introduction

In recent years, the rapid growth of Artificial Intelligence (AI) has brought significant transformations across various industries, reshaping conventional practices and enhancing efficiency. Once considered a futuristic technology, AI is a fundamental driver of modern

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ISBN: 978-624-5553-76-1

business operations. (Dwived et al., 2021). This comprehensive review delves into the profound impact of AI on modern accounting practices and financial reporting, recognizing the pivotal role that advanced technologies play in reshaping the fundamental tenets of economic management. Artificial Intelligence, often characterized by machines' emulation of human cognitive functions, has witnessed an unprecedented rise. Advancements in computing power, big data, and complex algorithms have driven AI's rapid growth across industries. AI now plays a key role in automating complex tasks, analyzing data for valuable insights, and driving innovation faster than ever before. (Adel, 2023).

There is an ongoing debate about whether AI will reduce accountants' workload and enhance accounting and financial reporting efficiency (Albawwat & Frijat, 2009). AI can enhance accounting professionals' productivity while improving the quality of outcomes (Fast & Horvitz, 2017; Solaimani et al., 2020). Further, AI can automate repetitive tasks, organize data, upload documents, analyze information more accurately, and suggest the best possible solutions for improvement (Maione & Leoni, 2021). Moreover, AI can offer valuable services to accounting clients, such as predicting trends, assessing risks, detecting fraud, and providing business insights. (Seethamraju & Hecimovic, 2022). As a result, automating accounting processes is essential for firms to stay competitive in today's fast-changing business world (Chukwuani & Egiyi, 2020).

AI is changing accounting beyond automation, reshaping Accounting and financial processes through advanced analytics, machine learning, and intelligent decision-making. This shift enhances efficiency and allows accountants to take on more strategic roles. AI also plays a crucial role in improving financial reporting, ensuring timely and accurate information for better decision-making. Understanding AI's benefits, challenges, and ethical considerations is essential for businesses, regulators, and professionals. This review explores AI's impact on accounting and financial reporting, offering insights to guide future practices and enhance organizational success.

Automation in Accounting

AI is revolutionizing accounting by automating routine tasks like data entry and reconciliation, reducing errors, and improving efficiency. Traditionally, manual processes were time-consuming and prone to mistakes, but AI streamlined these operations, allowing accountants to focus on more strategic roles. This shift enhances accuracy and transforms the accounting profession (Abdallah & Salah, 2024).

Machine Learning in Financial Analysis

Machine Learning enhances financial analysis by providing deeper, data-driven insights beyond traditional methods. It processes diverse data, including social media trends and economic indicators, giving accountants a broader understanding of financial performance.

ISBN: 978-624-5553-76-1

Machine learning in Financial Analysis thus enables accountants to make more informed decisions by providing a comprehensive view of the various influencing factors. (Birt, 2023).

AI in Auditing Processes

AI in auditing helps improve corporate governance by making financial reporting, risk management, and internal controls more effective. It uses advanced detection to ensure financial statements are accurate and transparent. Automated audits regularly check internal controls, allowing for real-time updates to governance. AI also quickly spots and manages risks, making organizations more resilient and supporting strong governance practices. (Habbal, 2024).

Financial Reporting Transformation

Natural Language Processing (NLP) improves financial reports by turning numbers into easy-to-understand stories that explain financial performance. It clarifies complex information for everyone, including those without financial expertise, helping stakeholders better understand the company's financial situation. (Sreejith & Sinimole, 2024)

What factors directly and indirectly influence the intention of accounting professionals in Sri Lanka to use AI-based accounting tools?

The main objective of this study is to examine how factors in the TAM model, directly and indirectly, influence accounting professionals in Sri Lanka to use AI-based accounting tools. The study also aims to achieve the following secondary objectives to support this. These objectives are divided into two categories: individual-level and organizational-level factors.

Objectives

Individual Level

1. To assess the relationship between perceived usefulness and adoption of AI-based accounting tools.
2. To assess the relationship between perceived ease of use and adoption of AI-based accounting tools.

Organizational Level

3. To assess the relationship between organizational culture and the adoption of AI-based accounting tools.
4. To assess the relationship between the communications channels to use and the adoption of AI-based accounting tools.
5. To assess the relationship between Competitive pressure to use and adopt AI-based accounting tools.

Literature Review

Artificial Intelligence (AI) is changing accounting by automating tasks, improving decision-making, and making financial reporting more accurate (Kokina & Davenport, 2017). Machine

learning, natural language processing, and predictive analytics help accountants work more efficiently and gain valuable insights (Sutton et al., 2016). However, in developing countries like Sri Lanka, AI adoption in the public sector faces challenges such as limited resources, cultural barriers, and regulatory restrictions (Heeks, 2002).

Also, combining AI and accounting is a complex but promising study area for researchers, business owners, and managers. (Ghura & Harraf, 2021). Additionally, the connection between AI and accounting has recently gained more attention (Nayak & Sahoo, 2021; Stancu & Dutescu, 2021). The growing integration of AI into accounting practices is driven by increased data availability and advancements in AI technologies. Given recent changes in the global economy, AI's role in improving the accounting industry is increasingly complex to overlook (Mohmmad et al., 2020), considering the Sri Lankan context. Technological factors play a crucial role in AI adoption. According to Davis (1989), perceived usefulness and ease of use are key determinants of technology acceptance. In the context of AI, accounting professionals are more likely to adopt AI tools if they believe these tools will enhance their productivity and are easy to use (Venkatesh et al., 2003). However, the lack of advanced technological infrastructure, such as reliable internet and computing resources, can hinder AI adoption (AIBAT) in Sri Lanka's public sector (De Silva & Ratnadiwakara, 2008).

Furthermore, organizational factors like leadership support and resource availability play a key role in AI adoption. Tornatzky & Fleischer (1990) highlight that financial and human resources are crucial for implementing new technologies. In Sri Lanka's public sector, bureaucratic hurdles and budget constraints often slow AI adoption (Wijewardena & De Zoysa, 2001). Moreover, the absence of proper employee training programs can further hinder the integration of AI (Al-Emran et al., 2018). Other than individual factors, including skills, attitudes, and job roles, AI adoption is also impacted. Accounting professionals with higher technical expertise are more likely to embrace AI tools (Tarhini et al., 2014). However, concerns about job displacement and ethical issues, such as data privacy and bias in AI algorithms, can create resistance among employees (Frey & Osborne, 2017). In Sri Lanka, where the accounting profession is deeply rooted in traditional practices, changing mindsets to accept AI-driven solutions remains a significant challenge (Hofstede, 1980). Furthermore, some Environmental factors, such as regulatory frameworks and industry standards, shape the adoption of AI in accounting. Governments play a crucial role in creating policies encouraging innovation while ensuring data security and ethical use of AI (Isson & Harriott, 2016). The absence of clear regulations and standards for AI adoption in the public sector in Sri Lanka has slowed progress (Bhatnagar, 2000). Additionally, competitive pressure from private sector organizations adopting AI technologies can motivate public sector entities to follow suit (Rogers, 2003). Another important thing is that cultural and contextual factors are particularly relevant to the Sri Lankan context. Hofstede's (1980) cultural dimensions theory suggests that societal values and norms influence technology adoption. In Sri Lanka, cultural resistance to change and a

ISBN: 978-624-5553-76-1

preference for traditional methods can hinder AI adoption (De Silva & Ratnadiwakara, 2008). Moreover, socio-economic conditions, such as limited access to technology in rural areas, further exacerbate the digital divide (Heeks, 2002). Other than that, while AI offers numerous benefits, such as improved efficiency and accuracy, its adoption in Sri Lanka's public accounting sector faces several challenges. These include limited technological infrastructure, lack of skilled personnel, and cultural resistance (Wijewardena & De Zoysa, 2001). However, opportunities exist in the form of government initiatives to promote digital transformation and collaborations with private sector organizations to share resources and expertise (Bhatnagar, 2000). Moreover, the Technology Acceptance Model (TAM) is a widely used theoretical framework in AI adoption and accounting research. It explains how individuals accept information systems by focusing on their behavioural intentions, which are influenced by two key factors: perceived usefulness (how beneficial the technology is) and perceived ease of use (how user-friendly it is) (Ma & Liu, 2004). TAM has been applied in accounting to study the adoption of accounting systems, helping researchers identify factors that drive technology acceptance and develop strategies for successful implementation (Souza et al., 2017).

Another relevant framework is the Unified Theory of Acceptance and Use of Technology (UTAUT), which expands on TAM by including additional factors like performance expectancy, effort expectancy, social influence, and facilitating conditions (Chao, 2019). UTAUT has been used to explore the adoption of technological innovations in accounting, such as cloud-based systems (Dwivedi et al., 2019). Both TAM and UTAUT provide valuable insights into understanding and promoting the adoption of new technologies in the accounting field.

This study specifically focuses on the use of AI tools, and the TAM model is applicable as it is a general framework that can be used for various technologies, including AI tools. Furthermore, the TAM model examines the following factors as predictors of AI technology acceptance and usage: perceived usefulness, perceived ease of use, accounting professionals' attitudes, organizational culture, communication channels, and competitive pressure.

Perceived Usefulness: PU

Perceived usefulness refers to how much accounting professionals believe AI tools can improve performance and productivity. According to Davis (1989), perceived usefulness plays a key role in the Technology Acceptance Model (TAM) and impacts the decision to adopt new technologies. In accounting, AI tools that automate tasks, enhance accuracy, and offer valuable insights are seen as particularly useful (Kokina & Davenport, 2017). For instance, AI-powered systems can simplify financial reporting, reduce mistakes, and support real-time decision-making, making them highly valuable to accounting professionals.

Perceived Ease of Use: PEU

Perceived ease of use refers to how accounting professionals find AI tools user-friendly and integrated into their workflows. Davis (1989) highlights that technologies perceived as easy to

ISBN: 978-624-5553-76-1

use are more likely to be adopted. In accounting, AI tools with intuitive interfaces and minimal learning curves are preferred, as they reduce the time and effort required for training and implementation (Venkatesh et al., 2003). However, if AI systems are complex or require significant technical expertise, they may face resistance from users, particularly in the public sector, where resources for training are often limited (De Silva & Ratnadiwakara, 2008).

Organizational Culture: OC

Organizational culture refers to shared values, beliefs, and practices that shape how an organization embraces innovation and change. A culture that promotes experimentation, collaboration, and continuous learning is more likely to support AI adoption (Tornatzky & Fleischer, 1990). In the public sector, bureaucratic structures and resistance to change can slow AI adoption (Heeks, 2002). However, organizations with a forward-thinking culture focusing on digital transformation are better equipped to integrate AI into their accounting processes (Al-Emran et al., 2018).

Communication Channels: CC

Effective communication channels are essential for disseminating information about AI tools and their benefits. Clear and consistent communication from leadership can help address misconceptions, build trust, and encourage adoption among accounting professionals (Rogers, 2003). In Sri Lanka's public sector, where hierarchical structures may limit open communication, establishing transparent and accessible channels for discussing AI initiatives is crucial for overcoming resistance and fostering a culture of innovation (De Silva & Ratnadiwakara, 2008).

Competitive Pressure: C

Competitive pressure refers to the impact of external factors, like industry trends and peer organizations, on adopting AI technologies. Organizations often adopt new technologies to stay competitive or meet industry standards (Chao, 2019). In accounting, the growing use of AI by private-sector firms and global accounting standards may push public-sector organizations to adopt similar technologies to stay relevant (Dwivedi et al., 2019). However, in Sri Lanka's public sector, limited resources and regulatory constraints could slow the response to these pressures (Bhatnagar, 2000).

Gap in Research

According to the literature review, there is a substantial gap in the literature regarding the Sri Lankan context. While AI adoption has been extensively studied in various contexts, there is a notable gap in research focusing on accounting professionals in Sri Lanka. The professionals' unique needs, challenges, and perceptions regarding AI-based accounting tools remain underexplored, highlighting a significant research gap.

Methods

This chapter explains the research design and methodology used to explore the Driving Factors of Accounting Professionals' Intention to adopt AI-based accounting Tools in Sri Lanka. The study framework is divided into two levels: organizational and individual. The organizational level includes factors encouraging organizations to adopt AI models, while the individual level focuses on factors influencing employees to use AI tools. The conceptual framework below is based on assumptions drawn from the previously mentioned literature.

Conceptual Framework

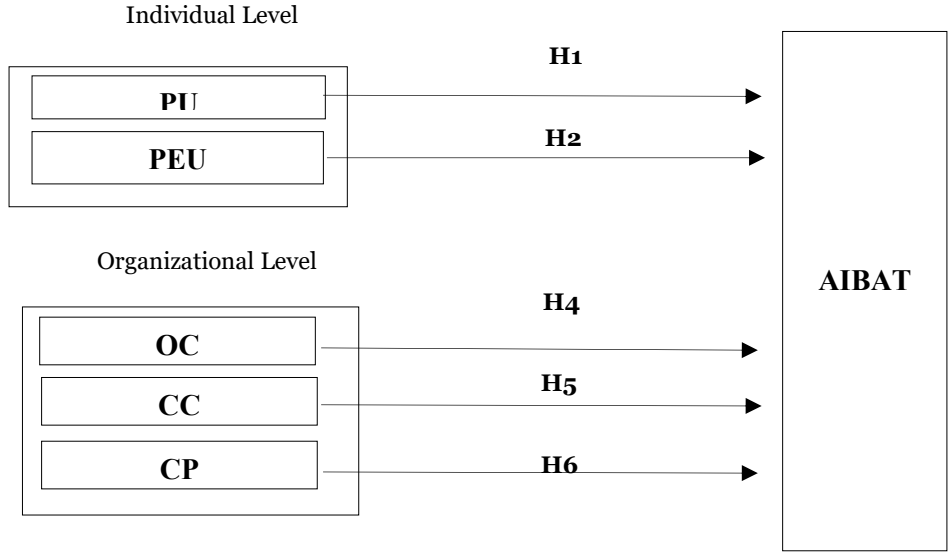

Figure 01: Conceptual Framework

Source: Author, 2025

Adopting new technology generates enthusiasm, particularly when financial incentives are involved (Van Noordt & Misuraca, 2020). Based on this, the study proposes the following hypothesis:

H1: Perceived usefulness positively impacts the adoption of AI in the accounting profession

Perceived usefulness refers to the benefits a company expects from using AI. This context shows how businesses go beyond improving efficiency and instead integrate AI into their existing systems (Kumar et al., 2016). The perceived benefits of new technology play a key role in a company's decision to adopt it. Research suggests that adaptability to innovation is linked to a company's readiness to embrace new technology (Aboelmaged, 2014). The likelihood of AI adoption increases when deep learning and machine learning (ML) are applied to daily accounting tasks.

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H2: Perceived ease of use positively impacts the adoption of AI in accounting.

Perceived ease of use is a key factor in adopting new technology, as it influences users' convenience and interest (Abdallah et al., 2023). For AI to be accepted, it must be user-friendly. Organizations implement AI solutions that fit their needs, simple AI for straightforward tasks, and more advanced AI for complex processes. Wang and Siau (2018) highlight that easy-to-use and reliable AI applications help build user trust, which develops over time and requires AI to be secure, capable, and supportive of human interaction.

To maintain trust, AI must address concerns such as job displacement while offering clear benefits like improved efficiency, data security, and better collaboration. Poor user experiences and complex interfaces can lead to rejection. Research by Chi et al. (2020) shows that AI with human-like features, such as anthropomorphism and technical knowledge, influences users' attitudes. However, reactions vary; some users may feel uneasy about human-like AI, while those with IT skills tend to appreciate it more.

Additionally, AI tools must provide practical benefits, such as saving time and resources, to encourage adoption. Based on these insights, this study proposes the following hypothesis.

H3: Organizational culture positively impacts the adoption of AI in the accounting profession.

Creativity in the workplace is influenced by leadership behaviour. Senior management's attitudes, actions, and work ethic shape the company culture (Aboelmaged, 2014). Leaders play a crucial role in encouraging innovation, so they must actively support and promote AI adoption. If management is reluctant to embrace new technologies, it may slow down AI integration.

H4: Efficient communication channels positively impact the adoption of AI in the accounting profession.

Effective communication from top management is essential for successfully implementing new ideas. Leadership must establish a strong communication system, as their commitment to engaging employees influences the organization's readiness to embrace innovation. According to resource-based theory, a lack of senior management support can reduce competitiveness and hinder technology adoption (Buzko et al., 2016). Clement and Eketu (2019) highlight that leaders prioritizing employee well-being foster higher motivation and job satisfaction, leading to greater employee retention and engagement. Gathering employee feedback on technological advancements can further enhance AI adoption. Therefore, this study proposes the following hypothesis.

H5: Competitive pressure positively impacts the adoption of AI in the accounting profession

Businesses frequently adopt new technologies in response to competitive pressure, driven by the need to stay relevant in a rapidly changing market (Yang et al., 2015). This pressure stems from the risk of losing market share, which motivates organizations to embrace innovative

solutions. Among these, AI technology has emerged as a key tool for maintaining competitiveness. Fast and Horvitz (2017) noted that AI adoption fosters innovation, enhances managerial decision-making, and improves customer experiences, creating significant value for individuals and organizations.

Research Design

This research was conducted in two phases: a pilot study and a primary survey. The pilot study aimed to refine and modify the measurement items, while the primary survey was used to test the measurement and structural models. Seven constructs were examined, including adopting AI-Based Accounting Tools (AIBAT), Perceived Usefulness (PU), Perceived Ease of Use (PEU), Accounting Professionals' Attitudes (APA), Organizational Culture (OC), Communication Channels (CC), and Competitive Pressure (CP). AIBAT was modelled as a second-order construct, while PU, PEU, APA, OC, and CC were treated as first-order constructs. The measurement items for these constructs were adapted from prior studies. Specifically, Adopt AI-Based Accounting Tools (AIBAT) was adopted by Xiao and Dew (2011) and included three items to measure participants' adoption intentions. The remaining constructs were measured using 16 items, drawing on established scales from the literature (Davis, 1989; Venkatesh et al., 2003; Rogers, 2003). Three items were used to measure each independent variable: Perceived Usefulness (PU), Perceived Ease of Use (PEU), Accounting Professionals' Attitudes (APA), Organizational Culture (OC), Communication Channels (CC), and Competitive Pressure (CP). This approach aligns with established practices in technology adoption research, where multi-item scales are commonly used to ensure reliability and validity (Davis, 1989; Venkatesh et al., 2003; Rogers, 2003).

Population, Sample, Data Collection

Hair et al. (2010) recommend a sample size of at least 100, with a minimum ratio of five observations per item. In this study, quantitative data collection methods are planned to be used. The quantitative approach will involve surveys, observations, and experimental methods, while the qualitative approach will include focus group discussions and in-depth interviews.
Additionally, Sekaran (2003) cites Roscoe (1975), who provides general guidelines for determining sample size:

1. A sample size between 30 and 500 is suitable for most research.
2. If the sample is divided into subgroups (e.g., male/female, junior/senior), each category should have at least 30 participants.
3. For multivariate research, including multiple regression analysis, the sample size should ideally be at least 10 times the number of variables.
4. A sample size of 10 to 20 may be sufficient in tightly controlled experimental research.

The population of the current study consists of professionals working in the Accounting and Finance field in Sri Lanka's public accounting sector, working and living in Colombo. This

study's sample size was large and determined using the formula developed by Krejcie & Morgan (1970). The sample size is calculated as follows: Based on calculations for the general population, a 90% confidence interval, and a 5% standard deviation, the result is 302. Considering the respondent's errors and other things, the researcher used 302 responses for data analysis.

The first step in analyzing the data collected is to test the questionnaire's reliability using Cronbach's alpha, according to Hair. J, J. (2006). The following decision criteria have been used to identify the Accounting Professionals' Intention to Adopt AI-Based Accounting Tools in Sri Lanka. The same decision criteria were used in the study about factors influencing artificial intelligence adoption in the accounting profession: the case of the public sector in Kuwait by Al Wael, H and Abdallah (2023).

A Pearson correlation analysis was employed to examine the relationship between the dependent and independent variables to extend the research objectives. The following hypotheses will be tested:

H1: Perceived usefulness positively impacts the adoption of AI in the accounting profession.

H2: Perceived ease of use positively impacts the adoption of AI in accounting.

H3: Organizational culture positively impacts the adoption of AI in the accounting profession.

H4: Efficient communication channels positively impact the adoption of AI in the accounting profession.

H5: Competitive pressure positively impacts the adoption of AI in the accounting profession

In the case of measuring the impact of Perceived Usefulness (PU), Perceived Ease of Use (PEU), Organizational Culture (OC), Communication Channels (CC and Competitive Pressure (CP), towards adopting AI-Based Accounting Tools (AIBAT), the following models were tested.

Equation 01: PU, PEU, OC, CC, CP and AIBAT

$AIBAT = \alpha + \beta PU$ ----------◊ Model 01

$AIBAT = \alpha + \beta PU + \beta PEU$----------◊ Model 02

$AIBAT = \alpha + \beta PU + \beta PEU + \beta OC$----------◊ Model 03

$AIBAT = \alpha + \beta PU + \beta PEU + \beta OC + \beta CC$----------◊ Model 04

$AIBAT = \alpha + \beta PU + \beta PEU + \beta OC + \beta CC + \beta CP$----------◊ Model 05

Source: Author, 2025

(Adopt AI-Based Accounting Tools = AIBAT), Perceived Usefulness = PU, Perceived Ease of Use =PEU, Organizational Culture =OC, and Communication Channels =CC and Competitive Pressure =CP)

Also, the IBM SPSS Statistics 23 package is used to analyze the data.

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Results and Discussion

This chapter presents the findings from the data analysis conducted in this study. It outlines the chosen research methodology, including its rationale and strategies. The chapter covers the research approach, defines the target population and sample size, describes the data collection instruments, and explains the process. Additionally, it includes hypothesis testing based on the data gathered from the questionnaire.

Data

In this study, 450 surveys were distributed to experienced accounting professionals working in public organizations in Sri Lanka. A total of 302 completed surveys were returned, yielding a response rate of 67.1%. The respondent characteristics indicate a higher participation rate among males compared to females. Additionally, more than half of the participants hold a bachelor's degree. The age distribution of respondents is also well-balanced across different age groups.

Additionally, the survey gathered data on the job categories of the participants. The results show that the majority were accountants (70%), followed by auditors (17%), while bookkeepers had the lowest participation rate (13%). The findings also reveal that most participants had 5–10 years of experience, followed by junior professionals with less than five years of experience, accounting for 109 responses.

Reliability

The researcher used Cronbach's alpha to assess the reliability of the questionnaire. A pilot test was conducted with 50 participants, and the data were analyzed using IBM SPSS 23. The questionnaire was deemed reliable since all Cronbach's alpha values were above 0.70 (Taber, 2018).

Table 01: Reliability

Variable	Cronbach's Alpha	N of Items
AIBAT	.898	10
OC	.954	06
CC	.900	07
CP	.893	07
PU	.897	07
PEU	.907	07
Total	0.908	44

Source: Author, 2025

According to Table 01, Cronbach's alpha measures internal consistency reliability, reflecting how well a set of items functions together as a group. Its values range from 0 to 1, with higher values indicating greater reliability. According to George and Mallery (2003) and Nunnally

(1978), Cronbach's alpha of ≥ 0.9 represents excellent reliability, 0.8 to 0.9 indicates high reliability, and values below 0.7 suggest questionable or poor reliability.

In this study, the reliability analysis revealed that Organizational Culture (0.954), Communication Channels (0.900), and Perceived Ease of Use (0.907) exhibit excellent reliability, while AI Adoption (0.898), Competitive Pressure (0.893), and Perceived Usefulness (0.897) demonstrate high reliability. The overall scale reliability was 0.908, confirming excellent internal consistency.

These results indicate that all constructions in the study are highly reliable, ensuring that the items within each variable are consistent and suitable for further analysis.

Descriptive Statistics

Descriptive statistics provide an overview of the dataset, summarizing key variables using measures such as mean, standard deviation, minimum, and maximum values. Table 2 presents the descriptive statistics for the six primary constructs examined in this study: Organizational Culture (OC), Communication Channels (CC), Competitive Pressure (CP), Perceived Usefulness (PU), Perceived Ease of Use (PEU), and AI Adoption (AIBAT).

Table 02: Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
OC	302	1	5	3.60	1.097
CC	302	1	5	3.23	1.003
CP	302	1	5	3.66	1.181
PU	302	1	5	3.54	1.269
PEU	302	1	5	3.45	1.221
AIBAT	302	1	5	3.29	1.245
Valid N (listwise)	302				

Source: Author, 2025

The analysis of mean values reveals key insights into respondents' perceptions. Competitive Pressure (M = 3.66, SD = 1.181) emerged as the highest-rated factor, indicating that respondents perceive strong competitive influences in their industries, consistent with prior research emphasizing external pressures as drivers of technological adoption (Porter & Heppelmann, 2017). In contrast, Communication Channels (M = 3.23, SD = 1.003) had the lowest mean, suggesting moderate levels of effective communication within organizations. AI Adoption (M = 3.29, SD = 1.245) also showed a moderate mean, implying that while AI implementation is progressing, it has not yet achieved full integration within firms. The analysis of standard deviations highlights the variability in respondents' perceptions. Perceived Usefulness (SD = 1.269) and Perceived Ease of Use (SD = 1.221) exhibited higher variability, suggesting diverse opinions on AI technology, potentially due to differences in industry sectors, organizational readiness, or user experience (Davis, 1989). In contrast, Communication

Channels (SD = 1.003) had the lowest variability, indicating more consistent perceptions of the clarity and effectiveness of communication within firms. All variables ranged from 1 (Strongly Disagree) to 5 (Strongly Agree), confirming that the full scale was utilized in responses. This indicates a wide diversity in participant opinions across all constructs.

Correlation Analysis

The Pearson correlation coefficient assessed the relationships between independent, mediator, and dependent variables. This coefficient measures the strength and direction of a linear relationship, ranging from -1 (strongly negative) to +1 (strongly positive), with 0 indicating no correlation (Field, 2018). A two-tailed significance test was conducted, as the hypotheses were non-directional (Pallant, 2020). The significance level was 0.05, following standard social science research guidelines (Cohen, 1988).

Source: Author, 2025

Table 03: Correlation Analysis

		AIBAT	OC	CC	CP	PU	PEU
AIBAT	Pearson Correlation	1	.368**	.771**	.802**	.799**	.860**
	Sig. (2-tailed)		.000	.000	.000	.000	.000
	N	302	302	302	302	302	302
OC	Pearson Correlation	.368**	1	.338**	.361**	.358**	.308**
	Sig. (2-tailed)	.000		.000	.000	.000	.000
	N	302	302	302	302	302	302
CC	Pearson Correlation	.771**	.338**	1	.882**	.864**	.708**
	Sig. (2-tailed)	.000	.000		.000	.000	.000
	N	302	302	302	302	302	302
CP	Pearson Correlation	.802**	.361**	.882**	1	.893**	.773**
	Sig. (2-tailed)	.000	.000	.000		.000	.000
	N	302	302	302	302	302	302
PU	Pearson Correlation	.799**	.358**	.864**	.893**	1	.722**
	Sig. (2-tailed)	.000	.000	.000	.000		.000
	N	302	302	302	302	302	302
PEU	Pearson Correlation	.860**	.308**	.708**	.773**	.722**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	
	N	302	302	302	302	302	302

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

The Pearson correlation analysis examined the relationships between independent, mediator, and dependent variables. Correlation strength was classified based on established guidelines, ranging from weak (±0.1 to ±0.3) to extremely strong (±0.9 to ±1.0) (Field, 2018). The results revealed that AI Adoption had very strong positive correlations with Perceived Ease of Use ($r = 0.860$, $p < .001$), Competitive Pressure ($r = 0.802$, $p < .001$), and Communication Channels ($r = 0.771$, $p < .001$). Organizational Culture, however, exhibited moderate correlations with all

variables (ranging from r = 0.308 to r = 0.361, p < .001), suggesting that while it influences AI adoption, other factors such as perceived ease of use and competitive pressure have a more substantial impact. Additionally, some variables displayed very strong correlations (e.g., Communication Channels and Competitive Pressure, r = 0.882), indicating potential multicollinearity, which should be addressed using the Variance Inflation Factor (VIF) in further analyses (Tabachnick & Fidell, 2013). The significance of all correlations was tested using a two-tailed test at the 0.01 level, aligning with conventional research standards (Pallant, 2020). These findings emphasize the critical role of ease of use, competitive pressure, and Communication Channels in AI adoption, while also highlighting the need for multicollinearity assessment before conducting regression analysis or structural equation modelling (Hair et al., 2010). These details are summarized in the table below.

Table 04: Pearson Correlation Analysis

Dependent Variable	Independent Variable	Pearson Correlation	Status of the relationship
AIBAT	OC	.368	Moderate correlation
AIBAT	CC	.771	Very strong correlation
AIBAT	CP	.802	Very strong correlation
AIBAT	PU	.799	Very strong correlation
AIBAT	PEU	.860	Very strong correlation

Source: Author, 2025

Results of Hypothesis Testing

Table 05: Summary of Hypothesis Testing

Hypothesis	Regression weights	Pearson Correlation	P- value	Hypothesis: Accept or not
H1: Perceived usefulness positively impacts the adoption of AI in the accounting profession	PU → AIBAT	.368	.000	Accept
H2: Perceived ease of use positively impacts the adoption of AI in accounting	PEU → AIBAT	.771	.000	Accept
H3: Organizational culture positively impacts the adoption of AI in the accounting profession.	OC → AIBAT	.802	.000	Accept

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H4: Efficient communication channels positively impact the adoption of AI in the accounting profession.	CC → AIBAT	.799	.000	Accept
H5: Competitive pressure positively impacts the adoption of AI in the accounting profession	CP →AIBAT	.860	.000	Accept

Source: Author, 2025

Table 06: ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	259.962	5	51.992	256.581	<.001[b]
	Residual	59.980	296	.203		
	Total	319.942	301			

a. Dependent Variable: AIBAT -AI adoption

b. Predictors: (Constant), PEU - Perceived ease of use, OC - Organizational culture, CC - Communication Channels, PU - Perceived usefulness, CP - Competitive pressure

Source: Author, 2025

According to the table, the regression analysis confirms that the model significantly explains AI adoption (Field, 2018). The high F-statistics (256.581, $p < 0.001$) indicate that the independent variables have a substantial collective impact. The large regression sums of squares (259.962) compared to the residual sum (59.980) suggest that the predictors effectively account for the variance. Further analysis should include examining R^2 and Adjusted R^2 for explanatory power, reviewing the coefficients to identify significant predictors, and assessing multicollinearity using VIF values for reliability (Hair et al., 2019).

- H1: Perceived usefulness positively impacts the adoption of AI in the accounting profession.
- H2: Perceived ease of use positively impacts the adoption of AI in accounting.
- H3: Organizational culture positively impacts the adoption of AI in the accounting profession.
- H4: Efficient communication channels positively impact the adoption of AI in the accounting profession.
- H5: Competitive pressure positively impacts the adoption of AI in the accounting profession.

Based on the above hypothesis, all alternative hypotheses (H_1) are accepted, while the null hypotheses (H_0) are rejected (Hair et al., 2019).

Conclusion

Considering the current corporate sector, AI-based automation has significantly transformed the accounting industry (Fast & Horvitz, 2017; Solaimani et al., 2020). However, few studies

have explored accountants' perceptions of AI adoption in the public sector (Bakarich & O'Brien, 2021). Given the industry's complexity and accountability, implementing AI can be challenging (Agostino & Arnaboldi, 2016).

This study examines the factors influencing AI adoption in public-sector accounting, where most Sri Lankans are employed (Ghura et al., 2021). The research framework is based on AI adoption theories (Ma & Liu, 2004; Oliveira & Martins, 2011; Chao, 2019) and includes factors such as Organizational Culture (OC), Communication Channels (CC), Competitive Pressure (CP), Perceived Usefulness (PU), and Perceived Ease of Use (PEU). The findings show that organizational culture, regulatory support, perceived usefulness, and ease of use positively impact AI adoption among public accountants, helping organizations improve efficiency, accuracy, and cost savings.

According to the findings, AI adoption is more strongly influenced by individual-level factors than organizational ones. Perceived Ease of Use (0.860) and Perceived Usefulness (0.799) emerged as the most impactful, highlighting the importance of users viewing AI tools as easy to use and beneficial to their performance. On the organizational side, Competitive Pressure (0.860) stands out as the key driver, with Communication Channels (0.771) also playing a significant role. In contrast, Organizational Culture (0.368) has a more modest impact, indicating that while it contributes to adoption, its role may be less critical and warrants deeper qualitative analysis to understand the cultural factors at play better.

Limitations of the Study

This study focuses only on Perceived Usefulness (PU), Perceived Ease of Use (PEU), Organizational Culture (OC), Communication Channels (CC), and Competitive Pressure (CP) regarding the adoption of AI-Based Accounting Tools (AIBAT). While many other factors influence AI adoption, they are not considered in this research, making this a key study limitation.

Another limitation is that the study does not analyze specific AI-based automation systems but only discusses the factors affecting their adoption. Additionally, data will be collected solely through a questionnaire, which may impact the accuracy and reliability of the results. The study relies exclusively on primary data collection, and the limited time allocated for conducting the research, along with the difficulty in finding respondents, has restricted the distribution of the questionnaire.

Suggestions for Future Research

This study examines key factors influencing AI-based Accounting Tools (AIBAT) adoption, including Perceived Usefulness (PU), Perceived Ease of Use (PEU), Organizational Culture (OC), Communication Channels (CC), and Competitive Pressure (CP). However, it does not explore other potential influences, such as technological infrastructure, regulatory frameworks, or employee resistance, which could be explored in future research. Additionally, the study

focuses on adoption factors rather than analyzing specific AI-based automation systems. Future studies could investigate the implementation and performance of these tools for a deeper understanding. A key limitation is the reliance on questionnaire-based data collection, which may impact accuracy and reliability. Future research could adopt mixed-method approaches, incorporating qualitative insights to enhance validity. Finally, limited time, primary data reliance, and difficulty reaching respondents affected the study. Future researchers could overcome these challenges by utilizing secondary data, extending timelines, and broadening sampling techniques for a more comprehensive analysis.

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ISBN: 978-624-5553-76-1

Brewing Challenges: The Influence of Corporate Tax on Tea Factory Operations in the Southern Region, Sri Lanka

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Abstract

As the aroma of Ceylon tea wafts globally, a bitter aftertaste of escalating corporate tax threatens the operational vitality of private tea factories in Southern Sri Lanka. Recognizing the pivotal role of the tea industry in Sri Lanka's economy, this study investigates the specific ramifications of increasing corporate tax on the operations of these crucial manufacturing entities. Employing a quantitative research design rooted in positivism and a deductive approach, data were collected via an online questionnaire from a randomly selected sample of 123 private tea factory owners out of a population of 174 in the southern region. Statistical analyses, including descriptive measures, Pearson correlation, and chi-square tests, were conducted to identify and analyze the significant impacts. The findings reveal that heightened corporate tax burdens significantly impede the increase in Prices of Products and Services, Percentage Increase in Corporate Income Tax, Net Income Reduction and Decrease in Reinvestment, jeopardizing their factory operations. The research supports overcoming the issues that factory owners face in performing operations due to corporate tax increases and suggests policy interventions such as corporate tax rate adjustments, incentives for direct exports and foreign exchange earnings retention, and targeted tax relief for reinvestment in machinery modernization to foster a supportive environment for the continued prosperity of Sri Lanka's tea industry.

Keywords: Corporate Tax Impact, Tea Factory Operations, Sri Lanka Tea Industry, Financial Performance, Reinvestment Capacity

Introduction

The tea industry holds a position of significant importance within Sri Lanka's national economy, serving as a vital source of foreign exchange revenue, employment generation, and overall economic growth (Samanga & Sachitra, 2017). Tea factories play a crucial role in this

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ISBN: 978-624-5553-76-1

industry, undertaking the tea manufacturing process, providing essential advisory services to tea estate owners and smallholders, and contributing substantially to local economies. However, these private tea factories' sustainability and operational efficiency are increasingly challenged by the escalating burden of government taxation. As highlighted in the Daily Mirror (2022), a newspaper article, the increase of corporate tax affects 1) by reducing the ability to be competitive and grow, and 2) reducing the price that smaller tea factory owners. Sri Lanka already faces challenges in this competitive market, including the rise of corporate tax. This emphasized that it affects the tea factory owners and the country, which was once proud of being the best tea exporter in the world market. The imposition of increasing taxation presents considerable obstacles for private tea factory owners, potentially impacting their financial performance and overall factory operations. Therefore, a comprehensive understanding of how these tax increases affect various aspects of tea factory operations in Sri Lanka is essential for stakeholders and policymakers.

The Sri Lankan tea industry, with its significant contributions to the national economy (Samanga & Sachitra, 2017), faces growing challenges in maintaining the operational viability of its private tea factories amidst increasing government taxation. Research suggests that Corporate Tax can negatively impact business profitability (Pitulice et al., 2016). Furthermore, Saelim (2019) posits that passing the burden of tax hikes onto consumers through price increases can diminish their purchasing power, potentially reducing demand for the company's products. In the context of the competitive tea market, the feasibility of price hikes may be limited, forcing tea factories to absorb increased tax burdens, potentially leading to reduced profit margins and affecting various facets of their operations. While the Tea Exporters Association (2022) has stated that competitors of the Sri Lankan tea industry, Kenya and India, the governments have declared low corporate tax, which the small tea factory owners face the challenges of adding levy through out the supply chain. Though the newspaper articles emphasized the matter in the Sri Lankan context, there is no empirical evidence regarding the corporate tax and its influence on the operations of tea factories. Therefore, this research addresses the following central problem: What is the influence of Corporate Tax on Tea Factory Operations in the Southern Region of Sri Lanka?

Literature Review

Increase in Corporate Income Tax

Profitable companies can invest in modern machinery to improve efficiency and quality (Alshehadeha et al., 2024). While increased employee wages can boost satisfaction, performance, and efficiency (Nugroho & Tanuwijaya, 2022), companies might reduce wage growth in response to higher corporate taxes (Wawire, 2020). Capital investments, managerial knowledge, and investor market access also enhance factory operations (Simler,

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2020). However, rising corporate taxes can hinder business expansion and investment (Rodrigues, 2022), and inflation increases production costs (Musarat et al., 2020). Additionally, windfall taxes may create investor uncertainty and reduce valuable investment (The Treasury of New Zealand, 2023). According to Rotimi and Henry (2017), corporation tax is a type of direct taxation imposed on businesses by governments on many revenue streams generated by businesses and corporations, such as sales and investments. Jacob and Omar (2023) state that over 80% of overall government revenue is derived from taxes in roughly half of the countries in the world. According to a report published by KPMG (2022), the CIT rate was raised from 14% to 30% effective October 2022 in Sri Lanka. Therefore, examining how businesses are affected by the aforementioned tax is imperative.

Prices of Products and Services

According to Jayaweera et al (2023), higher corporate income tax rates will also reduce real GDP and, as a result, experience a price hike, discouraging investment. Baker et al (2023) claim that a net-of-tax elasticity of 0.24 indicates that corporate taxes considerably affect prices, with higher corporate taxes leading to higher product prices. Customers pay almost half of the corporate tax incidence, which implies that the models that policymakers employ may significantly understate the effect of corporate taxes on consumers. In addition, more expensive goods, those purchased by wealthy households, and those sold in less competitive markets all have higher pass-through rates. Moreover, Saelim (2019) strengthens this idea as it highlights that excessive tax increases lead to a greater proportion of the tax burden passing on to customers. Fuest et al (2018) suggest that due to an increase in corporate income tax, producers increase the prices of products, and the retailers mostly pass on the increase in wholesale prices to the customers. Conversely, Ahuja (2016) argues that based on the "Benefit Theory", taxpayers should receive an amount of taxation equivalent to the benefits they receive from government services or social goods.

Ha 1: There is a negative relationship between increased Prices of Products and Services due to corporate tax on factory operations of private tea factory owners in the southern region of Sri Lanka.

Percentage Increase in Corporate Income Tax

Enache (2023) reveals that thirteen nations modified their statutory CIT rates in 2023. Seven countries, most notably Austria and Guinea, decreased their corporate tax rates, while, along with Sri Lanka, six countries, namely Belarus, Morocco, Turkey, the United Arab Emirates, and the United Kingdom, increased them. Comoros (50%), Puerto Rico (37.5%), and Suriname (36%) account for the highest CIT rates in the world, while Barbados (5.5%), Turkmenistan (8%), and Hungary (9%) account for the lowest CIT rates. According to Vržina (2023), lower CIT rates are vital to attracting foreign investments. Hence, Slovenia, Serbia, and Croatia adopt moderate CIT rates, where consumption taxes are their primary source of

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tax revenues. For instance, Croatia has a corporate tax rate of 18% but adopts a progressive taxation system where small taxpayers are taxed at 12%. In comparison, CIT rates in Serbia and Slovenia are 15% and 19%, respectively. Bunn (2022) claims that the Organisation for Economic Co-operation and Development (OECD) is an international organisation that advocates for policies intended to enhance people's social and economic well-being globally. In contrast, the consumption taxes (32.1%), social insurance taxes (26.4%), and individual income taxes (24%) are considerably higher than corporate income taxes (9.2%). As per PWC (2021), larger corporations in Nigeria whose gross turnovers are greater than 100 million Nigerian Naira (NGN) pay 30% of their assessable profit in taxes to the government after all approved expenses have been subtracted as stipulated by the law. However, the CIT rate is 20% for medium-sized businesses with gross turnover between NGN 25-100 million, and 0% for small businesses with gross turnovers of NGN 25 million or less, signifying the importance of lower CIT rates to improve economic activity.

Ha 2: There is a negative relationship between the Percentage Increase in Corporate Income Tax on factory operations of private tea factory owners in the southern region of Sri Lanka.

Net Income Reduction

As per Gitonga (2023), the Kenyan hotel industry is affected by the implementation of a higher corporation tax rate of 30%. Businesses are forced to allocate a larger percentage of their profits to paying taxes, reducing the net income they have left after deducting operating costs, capital expenditures, and service expansion. The financial decisions and growth trajectory of hotels may be significantly affected by this decline in profitability. Jacob and Omar (2023) recommend that governments consider lowering their corporate tax rates, as doing so can boost economic activity and encourage investment. Jaffar et al (2021) argue that a company's profitability is an intuitive metric that can affect the effective tax rate. More profitable businesses are expected to have bigger earnings and, hence, pay more taxes when profitability is determined by pre-tax income. Olatunji and Oluwatoyin (2019) examined the effect of CIT on the profitability of Nigerian companies, using data from various sectors. The study spanned from 2018 to 2019 and was based on data from companies trading on the Nigerian Stock Exchange. Therefore, a tax structure that does not negatively affect regular income and encourages public investment and economic development is recommended.

Ha 3: There is a negative relationship between Net Income Reduction on factory operations of private tea factory owners in the southern region of Sri Lanka.

Decrease in Reinvestment

According to Rodrigues (2022), even though corporate taxation can raise taxes and encourage positive economic behaviour, it can be detrimental by hindering the growth of businesses and

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investment in innovation. Furthermore, Kaewsopa et al (2022) point out that the adverse effects of corporate income taxes on economic growth are evident in both China and Thailand. Andriati and Andriatno (2022) argue that the CIT rate adversely affects investment in Japan. Therefore, to encourage more investment, it is strongly advised that the government of Japan lower the CIT on businesses. Furno (2021) also asserts that if depreciation exemptions are generous, corporate tax rate reductions will affect investment. Babu et al (2020) also argue that an increase in CIT negatively affects private investment in countries in Sub-Saharan Africa.

Ha 4: There is a negative relationship between a Decrease in Reinvestment in factory operations of private tea factory owners in the southern region of Sri Lanka

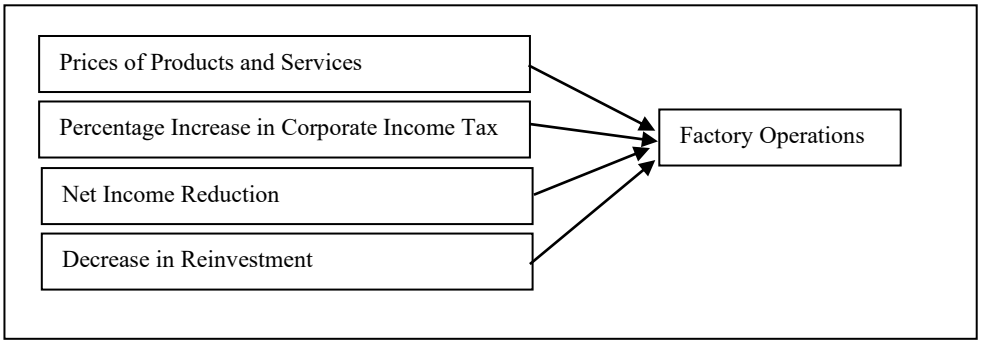

Figure 01: Conceptual Framework

Methods

This study employed a quantitative approach grounded in a positivist philosophical stance. A deductive research approach was adopted, wherein hypotheses were derived from existing theories. The research design was a mono-method quantitative study, as data were collected using a single quantitative method: an online questionnaire. The target population for this study consisted of all private tea factory owners in the southern region of Sri Lanka, totalling 174 according to information provided by the SLTFOA. Based on the Morgan table, a sample size of 123 private tea factories was determined to be representative of the population. A simple random sampling method was utilized to select the sample. To ensure randomness in the selection process, an online random sampling generator was employed to identify the 123 participating tea factory owners, thus giving each factory owner an equal chance of inclusion. The data collected through the online questionnaires were analyzed using descriptive and inferential statistical techniques. The data analysis was conducted using descriptive statistical analysis. Inferential statistical analysis, specifically Pearson correlation, is used to test the correlation, and the chi-square test is used to test the hypotheses. Furthermore, Cronbach's

Alpha was used to assess the instrument's reliability and KMO Bartlett's test for validity testing.

Data Analysis

Reliability Test Results

Table 01: Reliability Test Results

Variable	Cronbach's Alpha	No of Items	Conclusion
Prices of Products and Services	0.942	5	Excellent
Percentage Increase in Corporate Income Tax	0.947	5	Excellent
Net Income Reduction	0.962	5	Excellent
Decrease in Reinvestment	0.951	5	Excellent
Factory Operations	0.900	1	Excellent
Overall	0.981	21	Excellent

Source: Author developed 2025

The Cronbach's alpha for the independent and dependent variable questions is more than 0.9. According to Jain and Angular (2017), this indicates an excellent internal consistency as it is $\alpha > .9$. This value exceeds the accepted threshold of 0.7, thus further confirming the reliability of the scale as the data are free from bias.

According to KMO and Bartlett's Test conducted for the instrument used, the KMO value showed 0.936, which is "very good" according to Reddy and Kulshrestha (2019), as it is above the acceptable value of 0.7 and between 0.9 and 1. Therefore, it can be concluded that the dataset is valid.

Descriptive Statistical Analysis

Table 02: Descriptive Statistical Analysis

	Net income reduction	Decrease in reinvestment	Prices of products and services	Reduction in capital expenditures
Mean	1.58	1.54	1.56	1.58
Mode	1	1	1	1
Std. Deviation	0.66	0.71	0.663	0.66

Source: Author developed 2025

The net income reduction has a mean of 1.58, indicating that most respondents perceived a noticeable decline in their net earnings due to higher taxation. The mode of 1 suggests that most respondents strongly agreed with this sentiment. The standard deviation of 0.66 reflects a relatively low response variation, implying a consensus among participants about the adverse financial impact of increased taxes on profitability. The decrease in reinvestment was recorded as a mean of 1.54 and a mode of 1, meaning that most respondents agreed that higher corporate taxes have limited their ability to reinvest in factory operations. A standard

ISBN: 978-624-5553-76-1

deviation of 0.71 suggests slightly more variation in responses than net income reduction, possibly reflecting differences in how individual tea factories manage reinvestment under financial constraints. These findings align with studies indicating that higher taxation reduces retained earnings, leading to lower reinvestment rates and slower business growth. The prices of products and services had a mean of 1.56 and a mode of 1, indicating that most respondents acknowledged an increase in product and service prices due to the tax hike. The standard deviation of 0.663 shows relatively low dispersion, suggesting that tea factory owners have generally experienced and responded to cost pressures by passing them on to consumers. This aligns with economic principles stating that businesses often offset increased tax burdens by raising prices, which can impact demand and market competitiveness. Finally, the reduction in capital expenditures showed a mean of 1.58, identical to net income reduction, with a mode of 1 and a standard deviation of 0.66. This suggests that higher taxes have significantly constrained capital investments in infrastructure, machinery, and modernization efforts. The low response variability implies widespread agreement among tea factory owners that rising corporate tax rates directly hinder capital allocation, potentially affecting long-term efficiency and industry competitiveness.

Inferential statistical analysis

Table 03: Inferential statistical analysis

	Value	Asymp. Sig. (2-sided)	Pearson Correlation
Net income reduction	110.908a	0.000	.759**
Decrease in reinvestment	100.603a	0.000	.664**
Prices of products and services	134.543a	0.000	.780**
Reduction in capital expenditures	121.004a	0.000	.739**

Source: Author developed 2025

The Pearson correlation value of 0.759 and a p-value of 0.000 indicate a strong and statistically significant negative relationship between increased CIT and net income reduction. This supports Gitonga (2023), who found that Kenya's 30% corporate tax rate significantly reduces net income, affecting financial decisions, growth trajectories, and overall business performance. Similarly, Vržina (2023) argues that higher CIT rates deter investment and reduce business profitability. The study findings reinforce that the tea industry faces profitability challenges due to taxation, leading to lower financial sustainability. With a Pearson correlation of 0.664 and a p-value of 0.000, the results confirm a moderately strong negative relationship between increased CIT and reinvestment levels. This aligns with Rodrigues (2022), who highlights that higher corporate taxes discourage reinvestment in innovation and infrastructure, leading to long-term negative consequences for businesses. Similarly, Andriati & Andriatno (2022) found that Japan's high CIT rates negatively impact

ISBN: 978-624-5553-76-1

investment, supporting the recommendation for reduced tax burdens to encourage reinvestment. The findings indicate that tea factory owners cannot allocate sufficient funds toward business growth, affecting modernization, productivity improvements, and competitiveness. A Pearson correlation of 0.780 with a p-value of 0.000 suggests a strong and highly significant relationship between CIT increases and rising product prices. This aligns with Fuest et al. (2018), who demonstrated that corporate tax hikes increase manufacturing costs, which businesses pass on to consumers. Similarly, Saelim (2019) argues that price hikes transfer many tax burdens to consumers. The results confirm that tea factory owners adjust their pricing strategies to maintain profitability, potentially affecting demand and market competitiveness. The correlation coefficient of 0.739 and p-value of 0.000 indicate a strong negative correlation between CIT increases and capital expenditures. Jayaweera et al. (2023) argue that higher corporate taxes lead to lower private investment and reduced spending on research and development, slowing economic growth. Additionally, Mukherjee et al. (2016) found that increased state-level corporate tax rates in the US discouraged innovation efforts, further reinforcing the need for tax incentives to promote capital expenditures. The findings suggest that tea factory owners are cutting back on infrastructure, machinery, and technological upgrades, which may hinder long-term productivity and efficiency.

Conclusion

The findings indicate that the increased corporate income tax (CIT) has severely impacted the financial stability, reinvestment capacity, pricing strategies, and capital expenditures of private tea factories in Southern Sri Lanka, posing long-term challenges to sustainability and growth. To address this issue, it is recommended that the government consider reducing the CIT rate, aligning with global best practices to attract investment and improve profitability. Private tea factories should also be encouraged to use direct exports for foreign exchange earnings, fostering competitiveness and economic growth. To further enhance reinvestment, a 5-6% tax incentive on taxable earnings should be introduced to support machinery modernization, improving production efficiency and product quality. The successful implementation of these recommendations will require collaboration among key stakeholders, including the SLTFOA, the Ministry of Finance, and industry regulators, to create a conducive policy environment that sustains private tea factory operations and strengthens Sri Lanka's tea industry.

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ISBN: 978-624-5553-76-1

ISBN: 978-624-5553-76-1

Loan Portfolio Diversification and Financial Performance of Commercial Banks in Sri Lanka with the Moderating Effect of Firm Size

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Abstract

Banks face several challenges in strategically managing their loan portfolios to maximise wealth and long-term stability. In the financial sector, firm size appears to be a powerful variable in explaining organisational profitability since it has a more diversified portfolio with a larger scale of assets. Although numerous studies have been carried out to examine the relationship between loan portfolio diversification and financial performance, their conclusions are still inconclusive and often contradictory, as those studies have been conducted across multiple countries, over various periods and using diverse methodologies. Therefore, this study aims to examine the impact of loan portfolio diversification on the financial performance of licensed commercial banks in Sri Lanka and examine the moderating effect of firm size on the relationship between loan portfolio diversification and the financial performance of licensed commercial banks in Sri Lanka. Secondary data was collected from nine licensed commercial banks in Sri Lanka from 2012 to 2023. Hirschman Herfindahl Index was used to measure loan portfolio diversification. Return on Assets and Return on Equity were used as the measures of financial performance. Capital adequacy and liquidity were deemed as control variables. Firm size was considered a moderate variable. It was measured in terms of total assets. Descriptive statistics, correlation and panel data regression analyses were used to examine the data. This study employed the Hausman, Chow, and LM tests to select the best model among fixed, random, and common effects. The study found that product- and sector-wise loan portfolio diversification has an insignificant impact on ROA. However, product-wise loan portfolio diversification has a negative and statistically significant effect on ROE. According to these findings, product-wise loan portfolio diversification should be strategically managed to enhance the financial performance of banks in terms of ROE. Firm size has a positive and

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ISBN: 978-624-5553-76-1

significant moderate impact on the relationship between product-wise loan portfolio diversification and the financial performance of Banks measured by ROA. However, A negative and statistically significant moderating effect of firm size is observed in the relationship between product-wise and sector-wise loan portfolio diversification and the financial performance of the banks reflected in ROE. Moreover, from the perspective of the R-squared value, there is a significant increase in the model incorporating the moderating effect of firm size compared to the other models. It perfectly reveals a strong moderating effect of firm size on the relationship between loan portfolio diversification and the financial performance of the licensed commercial banks. Hence, licensed commercial banks should increase product-wise diversification by offering environmentally friendly loans like green loans in addition to overdraft, term loans, pawning, trading and leasing. Further, they must analyse the costs and benefits of pursuing diversification to enhance financial performance. According to the moderating effect of firm size, a bank with larger assets is likely to speed up diversification, particularly with better risk management strategies and customer relationships, and it will benefit from economies of scale.
Keywords: *Firm size, financial performance, Hirschman Herfindahl Index, loan portfolio diversification, Licensed Commercial banks*

Introduction

The banking sector plays a vital role in the economic development of a country by promoting the capital flow, managing risks, and strengthening financial stability. In Sri Lanka, licensed commercial banks are pivotal in this function, as they are entrusted with obtaining deposits, offering loans, and engaging in several financial services. One of the key strategies these banks employ to enhance their performance and manage risk is income diversification, which consists of direct and indirect income (Rossi et al., 2009). By spreading their various types of loans across different sectors, industries, or geographic regions, banks aim to reduce the impact of adverse shocks in any single area, thereby improving stability and profitability. However, the effectiveness of loan portfolio diversification in enhancing bank performance may vary depending on its various characteristics, one of which is firm size.

Firm size has been widely studied as an important determinant of a bank's performance, along with other independent variables, but firm size does not just affect performance independently. This study investigates how firm size can alter the relationship between loan portfolio diversification and performance by highlighting the effective diversification strategies for various banks of various sizes. Larger institutions often benefit from economies of scale, more extensive networks, and greater resource access. Understanding this dynamic is vital to finding

whether diversification benefits are consistent across different sizes of banks. However, while larger banks may be able to diversify more extensively, they may also face challenges such as increased complexity and managerial inefficiencies. In contrast, smaller banks may have limited diversification opportunities but could potentially achieve more targeted, efficient risk management.

Therefore, this paper aims to explore the moderating effect of firm size on the relationship between loan portfolio diversification and the financial performance of licensed commercial banks in Sri Lanka. By examining how different bank sizes influence this relationship, the study provides insights into whether diversification benefits in the loan portfolio are enhanced or diminished based on the institution's size. This research contributes to a deeper understanding of how different sizes of Sri Lankan commercial banks can make strategic decisions on loan portfolios to achieve better financial performance and stability. Through this investigation, the study offers practical recommendations for policymakers, banking executives, and regulators to consider the implications of firm size when designing strategies to improve the financial performance of the banking sector in Sri Lanka.

Literature Review

Loan Portfolio Diversification refers to spreading a lender's loan portfolio across different types of borrowers, industries, geographic regions, and risk profiles to minimise risk and maximise returns (Klein & Mayer, 2011). Afzal and Mirza (2012) and Craigwell et al. (2006) used the Herfindahl-Hirschman Index (HHI) to measure the loan portfolio diversification in their research. Financial performance is defined as the overall financial health of a business and its effectiveness in generating profits (Brigham & Houston, 2019). It is widely measured by Return on Assets (ROA), Return on Equity (ROE) (Mazood et al., 2015) and Net Interest Margin (NIM) (Obeid, 2024). Bank size significantly impacts the relationship between income diversification and performance. Nguyen et al. (2023) stated that larger banks are positively connected with income diversification as they have a larger proportion of non-interest income. It leads to higher performance than smaller banks. According to Alam and Yusuf (2024), larger banks frequently reveal lower non-performing loans, encouraging higher performance. Bank size is often measured in terms of total assets (Chowdhury et al., 2024)

The theories explored highlight different perspectives on the relationship between loan portfolio diversification, firm size, and bank performance. The Theory of Financial Intermediation suggests that diversification enhances credibility and performance through screening better borrowers (Diamond, 1984), while Corporate Finance Theory supports concentration on specific sectors for competitive advantage, although it signals that increased diversification can lead to inefficiencies (Porter, 1987; Jensen & Meckling, 1976). Market Power and Efficient Structure Theories argue that external market forces and internal managerial

efficiencies influence bank performance, focusing on profits and scale efficiency (Berger & Hannan, 1998). The Relative Efficiency Theory suggests that larger banks are more profitable due to operational advantages, though beyond a specific size, profitability may decline due to ownership-control separation. Finally, Modern Portfolio Theory advocates diversification to reduce risk and optimise performance by balancing expected returns with associated risks (Markowitz, 1952). These theories offer a comprehensive view of how different strategies and factors, including firm size, impact banks' financial performance and stability.

The literature on the impact of Loan Portfolio Diversification (LPD) on the performance of licensed commercial banks (LCBs) presents mixed findings, reflecting a complex relationship influenced by factors such as firm size, sectoral focus, and macroeconomic conditions. Several studies, such as those by Radojičić and Marinković (2023), Doan et al. (2018), Pisedtasalasai and Edirisuriya, (2020) and Paltrinieri et al. (2021) found a positive relationship between LPD and bank performance. Their research suggests that diversified loan portfolios can enhance financial stability, lower credit risks with diminished default rates, and improve profitability, especially for larger banks. These findings align with the Modern Portfolio Theory, which posits that diversification reduces risks and enhances performance by spreading exposure across different sectors and products. However, other studies present contrasting findings. Kurincheedaran (2015) and Lakmali & Disanayake (2021) found a negative relationship between LPD and bank performance. Kurincheedaran's study highlights that sectoral LPD, when conditioned on factors like equity ratio, credit risk, and ownership, can lead to poor performance. This suggests that while diversification is theoretically beneficial, its practical implementation may introduce inefficiencies, especially when banks lack the necessary expertise or management capacity to handle diverse portfolios. Similarly, Lakmali and Disanayake (2021) found a significant negative relationship, suggesting that over-diversification could potentially overwhelm banks with complexities, reducing their performance. Kumanayake et al. (2019) and Rathnamalal and Perera (2021) revealed that LPD harms bank performance, challenging the prevailing notion that diversification always leads to positive outcomes. These studies suggest that LPD could diminish returns if the bank lacks sufficient resources, knowledge, or market expertise to manage a diversified portfolio effectively.

Regarding global studies, several studies support the theories that LPD can enhance bank performance. For instance, Berger and DeYoung (1997) found that diversification can reduce risk and improve profitability, despite negatively affecting cost efficiency. Similarly, Demirguc-Kunt and Huizinga (1999) found that banks with more diversified loan portfolios tend to have higher returns on assets and lower risk. These findings are consistent with Modern Portfolio Theory, which suggests that spreading risk across different sectors or products can lead to more stable and profitable outcomes. Aarflot and Arnegård (2017) also found that diversification

improves bank performance, using data from 112 banks in Norway. These studies emphasise the potential benefits of diversification in reducing risk and improving the overall stability of banks. However, other studies highlight the potential downsides of diversification. Acharya et al. (2006) found that industrial and sector-wise loan diversification may reduce bank returns, especially when using the Herfindahl-Hirschman Index (HHI) to measure concentration. Freitakas (2013) states that LPD adversely affects asset yield and does not necessarily help reduce bank risk. Furthermore, Chen et al. (2013) found that sector-wise LPD might reduce return and risk simultaneously. However, this result was contradicted in studies from countries like Italy, Germany, Brazil, and Argentina. Similarly, Adzobu et al. (2017) found that LPD did not improve profitability or reduce credit risks for banks in Ghana, indicating that diversification may not always lead to the expected benefits, particularly in less developed banking systems. Moreover, the studies that emphasise the importance of firm size, Chowdhury et al. (2024) found the negative moderating effect of bank size on the relationship between Income and assets diversification and bank stability in the Bangladesh banking sector. Further, they indicated that larger banks can benefit more from diversification in terms of performance, only if they are better equipped to manage the risks associated with a more diversified loan portfolio. This observation is consistent with the Relative Efficiency Theory, which argues that larger firms tend to be more efficient due to economies of scale. These findings highlight the importance of considering factors such as firm size, sectoral focus, types of product and management capabilities when assessing the impact of LPD on the performance of commercial banks. The mixed results suggest that further research is needed to explore the optimal level and type of diversification that maximises bank performance, considering internal and external factors.

The literature also highlights the importance of firm size in moderating the effects of LPD on bank performance. According to Clarke (1984), larger firms are often more efficient and profitable due to their scale advantages, as emphasised by the Relative Efficiency Theory. Kiyota (2011) and Karim and Alam (2013) found that firm size positively influences bank performance. Nodeh (2015) further demonstrated that firm size moderates the relationship between board structures and financial performance. Chowdhury et al. (2024) concluded that larger banks benefit more from LPD due to their ability to manage the complexities and risks associated with diversified portfolios. This aligns with the finding by Nisar et al. (2018) that diversifying revenue streams into non-interest sources improves stability, particularly for larger banks.

Further, Ngware et al. (2020) found a positive relationship between firm size and financial performance in Kenyan banks, emphasising the moderating role of firm size on the relationship between diversification and performance. However, the study also indicates that firm size plays a significant role in stabilising performance, especially in LPD. The literature on global studies

presents a complex picture of LPD's impact on bank performance. While diversification is generally seen as a risk management tool that can improve profitability, it is not always beneficial. The negative effects of LPD are particularly evident when banks cannot manage the complexities of a diversified portfolio or when firm size is not sufficiently large to absorb the risks associated with diversification. The moderating role of firm size is a critical factor, with larger banks often benefiting more from diversification, as they are better equipped to handle the associated risks. This mixed evidence underscores the need for further research to identify the optimal balance between diversification and specialisation in different banking contexts.

The existing literature on Loan Portfolio Diversification (LPD) and its impact on bank performance in Sri Lanka and globally presents valuable insights. However, several research gaps remain, particularly in the context of Sri Lankan banks and the broader global financial landscape. These gaps highlight areas that have not been fully explored, offering opportunities for further investigation. While some studies, both globally and in Sri Lanka, suggest a positive relationship between LPD and bank performance (e.g., Radojičić & Marinković, 2023; Doan et al., 2018; Paltrinieri et al., 2021; Pisedtasalasai & Edirisuriya, 2020), others report negative or insignificant effects (e.g., Kurincheedaran, 2015; Kumanayake, Gunarathne & Desahappriya, 2019; Freitakas, 2013). This inconsistency presents a key research gap, particularly in understanding the factors influencing these divergent outcomes, such as differences in market conditions, regulatory frameworks, or bank-specific characteristics. More research is needed to reconcile these findings and identify the contextual factors determining whether diversification is beneficial or detrimental. The moderating effect of firm size on the relationship between LPD and bank performance is well-documented globally (Chowdhury et al., 2024). However, in the Sri Lankan context, while studies have suggested that larger banks benefit more from LPD, there is limited empirical evidence on how firm size interacts with other factors such as management quality, market power, and risk management practices. Future research could explore how firm size influences the effectiveness of LPD in improving performance, particularly in the Sri Lankan banking sector, where market conditions and competitive dynamics differ from those in larger economies.

Although existing studies offer valuable insights into the impact of LPD on bank performance, several gaps remain, particularly in understanding the specific factors that moderate this relationship in Sri Lanka. These gaps present opportunities for further research to deepen our understanding of how LPD influences bank performance in Sri Lanka and globally, particularly in firm size, sector-specific diversification, types of new loans and risk management practices. Addressing these gaps will contribute to a better understanding of the optimal strategies for managing loan portfolios in licensed commercial banks.

ISBN: 978-624-5553-76-1

Methodology

This study aims to investigate the relationship between Loan Portfolio Diversification (LPD) and the performance of licensed commercial banks (LCBs) in Sri Lanka, and examine the moderating effect of bank size on the above relationship by focusing on data from 2012 to 2023. The methodology involves gathering quantitative data from secondary sources, specifically from the annual reports of licensed commercial banks, reports published by the Central Bank of Sri Lanka (CBSL), and the Colombo Stock Exchange (CSE) websites. The study utilises a purposive sampling technique. Out of 13 domestic licensed commercial banks, only nine were selected based on the availability and consistency of financial data over the entire study period. The remaining four banks were excluded due to missing data and incomplete financial statements. These selected banks include private and state-owned institutions, offering a comprehensive view of the country's banking sector. Since licensed commercial banks have overdraft facilities, they were particularly selected for measuring HHI and specialised banks were excluded.

Table 01: Scale of diversification

Value of HHI	Conclusion
1-0.76	Highly concentrated
0.75-0.51	Lowly diversified
0.5-0.26	Diversified
0.25-0	Highly diversified

Source: Acharya, Hasan & Saunders (2006)

Stiroh (2004) stated that the HHI diversification value of 1 indicates absolute concentration, where only one loan is granted, while a value of 0 represents a perfectly diversified portfolio.

Table 02: Variables and measurements

Variable	Measurement	Reference
Hirschman Herfindahl Index (product)	HHI Product = $((OVR/TOL)^2 + (TER/TOL)^2 + (PAW/TOL)^2 + (TRA/TOL)^2 + (OTH/TOL)^2 + (LEA/TOL)^2)$	Rathnamalala and Perera (2021)
Hirschman Herfindahl Index (sector)	HHI Sector=$((AGR/TOL)^2 + (MAN/TOL)^2 + (CON/TOL)^2 + (TRA/TOL)^2 + (OTH/TOL)^2 + (INF/TOL)^2)$	Rathnamalala and Perera (2021)
ROE	ROE=Net income/Total equity	Rathnamalala and Perera (2021).
ROA	ROA= Net income/Total assets	Rathnamalala and Perera (2021)

ISBN: 978-624-5553-76-1

Capital adequacy (CAP)	CAP=Total equity/Total assets	Rathnamalala and Perera (2021).
Liquidity (LDY)	Liquidity=Net loans/Total assets	Rathnamalala and Perera (2021)
Firm size (FS)	Logarithm of total assets	Chowdhury, et al. (2024)

Where:

HHI Product Diversification	HHI Sector Diversification
OVR – Overdrafts	AGR – Agriculture
TER – Term Loans	MAN – Manufacturing
PAW – Pawning Loans	CON – Construction
TRA – Trade Finance Loans	TRA – Trade (wholesale and retail sectors)
OTH – Other Loans	OTH – Other Sectors
LEA – Leasing	INF – Infrastructure
TOL – Total Loans	TOL – Total Loans

Return on Assets (ROA) and Return on Equity (ROE) are considered as dependent variables, and product-wise and sector-wise, the Herfindahl-Hirschman Index (HHI) is used as an independent variable. The liquidity (LDY) and capital adequacy (CAP) ratios are treated as control variables, while firm size (FS) is used as a moderating variable in this study. To measure the scale of diversification, the author used the Herfindahl-Hirschman Index (HHI), which was used by previous research (Acharya, Hasan & Saunders, 2006; Berger et al., 2010; Stiroh & Rumble, 2006; Stiroh, 2004) for measuring loan portfolio diversification. They defined this indicator as the summation of squares of individual exposure as a fraction of the sum of exposures under a set categorisation. The following diversification scale was adopted in this study to judge the values of the Herfindahl-Hirschman Index (HHI), as captured in the table one.

Data Analysis and Discussion

In this research, data analysis is undertaken to determine the relationship between LPD and financial performance through the moderating variable of firm size among the LCBs of Sri Lanka.

Table 03: Descriptive Statistics

	HHI_ PRODUCT	HHI_ SECTOR	CAP	LDY	FS	ROA	ROE
Mean	0.328367	0.291376	0.112165	0.65030	13.02676	1.250000	13.84213
Median	0.313605	0.279873	0.089150	0.660160	13.14500	1.270000	14.20000
Maximum	0.519111	0.917146	2.055390	1.383170	15.30000	2.560000	31.20000
Minimum	0.200996	0.023765	0.00483	0.447260	10.34000	0.100000	0.700000
Std. Dev.	0.077571	0.108939	0.192634	0.105679	1.117738	0.498551	6.067810

Skewness	0.465247	1.609916	9.651246	2.884145	-0.216871	-0.168851	-0.169409
Kurtosis	2.248412	12.70802	97.70560	22.77285	2.509354	2.754398	3.002534
Jarque-Bera	6.438164	470.7580	42037.82	1909.075	1.929892	0.784631	0.516615
Probability	0.03999	0.00000	0.00000	0.0000	0.38100	0.67549	0.77235
Sum	35.46358	31.46864	12.11385	70.2328	1406.89	135.000	1494.95
Sum Sq. Dev.	0.643844	1.269855	3.970546	1.194987	133.679	26.5952	3939.55
Observations	108	108	108	108	108	108	108

Source: Computed by the researcher from the data on the annual report

Table 3 above shows the descriptive statistics for the proxies of dependent and independent variables and the control and moderating variables. The HHI product and HHI sector are proxies used by the researchers to indicate the independent variable of LPD. Capital Adequacy and Liquidity are illustrated as control variables. Further, the dependent variables are ROA and ROE. The moderating variable is firm size. The descriptive statistics are based on 9 LCB and 12 years of data, including 108 observations. HHI recorded 0.328367 and HHI sector revealed 0.291376, the mean value, which shows that most of the banks have significant loan portfolio diversification in terms of both product and sector, as the values are not close to value 1 (Acharya, Hasan & Saunders,2006). Capital Adequacy as a control variable has shown the mean value of 0.112165, ranging between 0.004834 and 2.055390. Its standard deviation is 0.192634.

Correlation analysis is the most common and basic statistical method. The correlation coefficient is a measure of the linear relationship between two variables. The above table represents the correlation analysis for the LPD and financial performance of LCBs. It analyses the relationship between independent and dependent variables to check whether there is a positive or negative relationship. According to Table 4, the correlation coefficients of ROA and ROE are -0.381416 and -0.444865, respectively, which show a weak negative relationship with the HHI product. It is significant at the 0.05 level since the p-values are less than 0.05. ROA and ROE do not have a significant relationship with the HHI sector, with the R-squared value of 0.090535 and 0.059163, respectively, as those p-values are greater than 0.05.

Moreover, the control variables CAP and LDY have no significant relationship with ROA (r = 0.082731 and 0.142808 respectively). The correlation coefficient value between CAP and ROE is 0.156301, it has no significant relationship with ROE. However, there is a weak positive correlation between ROE and LDY (r = 0.275279), which is significant at the 0.05 level. Further, firm size shows a weak positive correlation with ROA and ROE (r = 0.285011and 0.314838 respectively), which is significant at the 0.05 level.

Table 04 - Correlation Analysis

Probability	HHI PRODUCT	HHI SECTOR	CAP	LDY	FS	ROA	ROE
HHI product	1.000000						
HHI sector	-0.150771	1.000000					
	0.1193	-----					
CAP	-0.072431	-0.067930	1.000000				
	0.4563	0.4848	-----				
LDY	-0.266363	0.006322	-0.025229	1.000000			
	0.0053	0.9482	0.7955	-----			
FS	0.092538	0.029614	-0.024192	-0.333404	1.000000		
	0.3408	0.7609	0.8037	0.0004	-----		
ROA	-0.381416	0.090535	0.082731	0.142808	0.285011	1.000000	
	0.0000	0.3514	0.3946	0.1404	0.0028	-----	
ROE	-0.444865	0.059163	0.156301	0.275279	0.314838	0.791878	1.000000
	0.0000	0.5430	0.1062	0.0039	0.0009	0.0000	-----

Source: Computed by the researcher from the data on the annual report.

Variance Inflation Factor Analysis

Variance Inflation Factor (VIF) is employed to test multicollinearity among independent variables in a regression model, which can alter the accuracy of coefficient estimates (Gujarati & Porter, 2009). As per the results in Table 5, all VIF values are below 2. It suggests that there is no multicollinearity among the variables in this model. The mean VIF of 1.10 indicates that multicollinearity is not a concern for the regression analysis.

Table 05: Variance Inflation Factor

Variable	VIF	1/VIF
Liquidity	1.21	0.829783
Firm size	1.13	0.886867
HHI product	1.11	0.898778
HHI Sector	1.03	0.968518
Capital Adequacy	1.02	0.984997
Mean VIF	1.10	

Source: Computed by the researcher from the data on the annual report.

Selection Method of the Regression Model

Estimating the regression model using panel data can be done through three approaches. They are fixed effect models, random effect models, and common effect models. Several tests, such as the Hausman, Chow, and Lagrange Multiplier Test, should be done to select the most appropriate model. The Hausman test determines the best model between fixed and random effects (Hausman, 1978). If the researcher has entered the Hausman test, the result is to choose fixed effects. It should be continued with the Chow test to determine whether the common

effect or fixed effect is most appropriately used in estimating panel data. However, suppose the results of the Hausman test indicate choosing a random effect. In that case, the Lagrange Multiplier Test should be conducted to determine whether random or common effects are most suitable (Breusch & Pagan, 1980).

Hausman Test

If the p-value in the Hausman test result is less than 0.05, the fixed effect model will be selected (Reject H_0). However, the random effect model should be selected if the Hausman results provide a p-value greater than 0.05(Accept H0).

Table 06: Hausman Test -Dependent Variable: ROA

Model NO	Chi-sq. Statistics	Prob.
Model 1	3.527489	0.4737
Model 3	8.671802	0.2777

Source: Computed by the researcher from the data on the annual report.

Table 07: Hausman test - Dependent Variable: ROE

Model NO	Chi-sq. Statistics	Prob.
Model 2	2.873755	0.5792
Model 4	68.226075	0.0000

Source: Computed by the researcher from the data on the annual report.

As per the above results, it is appropriate to run random effect regression for model 01, model 02 and model 03. Because their p-value is greater than 0.05, the fixed effect model is suitable for model 04.

Chow test

According to the Hausman test results, the fixed effect model is suitable for model 4. As mentioned above, the Chow test should be conducted to choose between the fixed and common effect models. If the p-value in the Chow test result is less than 0.05, the fixed effect model will be selected (Reject H_0). However, a common effect model should be selected if Chow test results provide a p-value greater than 0.05(Accept H0).

Table 08: Chow test

Model	Effects test	Statistic	Prob
Model 04	Cross-section	14.861650	0.0000
	Cross-section Chi-square	89.592832	0.0000

Source: Computed by the researcher from the data on the annual report.

As given in Table 4.14, the p-value of Model 04 is less than 0.05. So, fixed effects are better than common effects for model 4.

ISBN: 978-624-5553-76-1

Lagrange Multiplier Test

According to the Hausman test results, the Random effect model is suitable for models 1, 2 and 3. As mentioned above, the Lagrange Multiplier Test should be conducted to choose between the random effect and common effect model. If the p-value in the LM test is less than 0.05, the random effect model will be selected (Reject H_0). The common effect model should be selected if the LM test result provides a p-value greater than 0.05 (Accept H0).

Table 09: LM test

	Test Hypothesis		
Model	Cross-section	Time	Both
01	86.67320	0.003023	86.67622
	(0.0000)	(0.9562)	(0.0000)
02	128.5609	0.529554	129.0904
	(0.0000)	(0.4668)	(0.0000)
03	33.77653	0.194637	33.97116
	(0.0000)	(0.6591)	(0.0000)

Source: Computed by the researcher from the data on the annual report.

Table 9 above shows the results for the Breusch Pagan Lagrange Multiplier test. According to the p-values, the Lagrange Multiplier Test indicates that the best estimation model is the random effect model for models 01,02 and 03.

The table given below presents the results for the regression models 01 and 03. The adjusted R^2 value of model 01 shows that the independent variables selected for this study explain 6.58% of the variation in the financial performance. This model does not explain the remaining 93.42% of the variation. There is a 5% increase in the adjusted R^2 value in Model 03 with the moderating effect of firm size. It shows a small moderating effect of firm size on the relationship between loan portfolio diversification and ROA. F-statistic values in model 01 and model 03 are respectively 2.8841 and 2.9891, with the p values less than 0.05. It explains that the regression models 01 and 03 selected to analyse the direct and moderating effects are well fit for the study. Based on the regression results for model 01, the beta value for HHI Product is -1.1106 (p = 0.0809), which is insignificant. Similarly, the HHI sector (ß=0.104142, t=0.304292, p=0.7615) also does not exhibit a significant relationship with ROA. As control variables, capital adequacy (ß=0.296714, t=1.584435, p=0.1162) and liquidity (ß=0.512157, t=1.235490, p=0.2195) do not show a significant relationship with ROA.

ISBN: 978-624-5553-76-1

Panel Data Regression Analysis

Table 10: Panel data regression analysis of ROA

Variables	Model 01(without moderating variable)			Model 03(With moderating variable)		
	Coefficient	t-statistics	Prob.	Coefficient	t-statistics	Prob
HHI_PRODUCT	-1.1106	-1.7629	0.0809	13.5889	2.3872	0.0189
HHI_SECTOR	0.1041	0.3043	0.7615	6.3053	1.6394	0.1043
CAP	0.2967	1.5844	0.1162	0.239889	1.339995	0.1833
LIQUIDITY	0.5123	1.2355	0.2195	0.368665	0.421347	0.3837
FS	-	-	-	0.421536	2.110914	0.0373
HHI_PRODUCT*FS	-	-	-	-1.130001	-2.505893	0.0138
HHI_SECTOR*FS	-	-	-	-0.448461	-1.625597	0.1072
C	1.2180	2.809	0.0059	-4.260835	-1.663105	0.0994
R^2	0.100724			0.173036		
Adjusted R^2	0.065801			0.115148		
F-Statistics	2.8841			2.989173		
Prob(F-Statistics)	0.026121			0.006853		

Source: Computed by the researcher from the data on the annual report.

Regression analysis of model 03 shows that the beta value of HHI Product is 13.58894 (t=2.387244, p=0.0189), which shows a significant positive relationship between HHI Product and ROA. However, the HHI sector (ß=6.305346, t=1.639425, p=0.1043) has no significant relationship with ROA. As control variables, capital adequacy (ß=0.239889, t=1.339995, p=0.1833) and liquidity (ß=0.368665, t=0.874968, p=0.3837) do not show significant relationship with ROA. Firm size has a coefficient value of 0.421536 (p 0.0373). Since the p-value is less than 0.05, there is a significant positive relationship between Firm size and ROA. Moreover, the coefficient for HHI product through the moderating effect of firm size is -1.130001(p=0.0138), which is statistically significant and reveals a significant negative moderating effect of firm size on the relationship between HHI Product and ROA. The regression coefficient for HHI Sector through the moderating effect of Firm size is -0.448461 (p=0.1072). However, firm size has no significant moderating effect on the relationship between HHI sector and ROA.

Table 11: Panel Data analysis of ROE

Variables	Model 02(Without moderating variable)			Model 04 (With moderating variable)		
	Coefficient	t-statistics	Prob.	Coefficient	t-statistics	Prob.
HHI_PRODUCT	-15.0572	-2.23761	0.0274	234.5838	4.404876	0.0000
HHI_SECTOR	-3.6344	-1.005596	0.3170	86.24825	2.415211	0.0177
CAP	4.61971	2.33800	0.0213	3.072600	1.843606	0.0685
LIQUIDITY	12.4042	2.81397	0.0059	6.908382	1.741430	0.0850
FS				2.910104	1.488019	0.1402
HHI_PRODUCT*FS				-17.6052	-4.181452	0.0001
HHI_SECTOR*FS				-6.5460	-2.555757	0.0122
C	11.2607	2.38855	0.0187	-30.7472	-1.241854	0.2174
R^2	0.230049			0.771303		
Adjusted R^2	0.200148			0.734015		
F-Statistics	7.693695			20.68522		
Probe(F-Statistics)	0.000018			0.0000		

Source: Computed by the researcher from the data in the annual report

The above table shows the regression analysis results for models 02 and 04. The adjusted R^2 value for the above model 02 is 20.01%. It means that the independent variables in this study explain 20.01 of % variation in the financial performance. This model does not explain the remaining 79.99% of the variation. When incorporating firm size as a moderating variable in model 04, there is a significant increase in the adjusted R^2 value in model 04 compared to model 02 by 53.39%. It shows that a significant moderating effect of firm size exists between the loan portfolio diversification and ROE relationship.

Regression analysis of model 02 shows that HHI Product significantly negatively impacts ROE (ß=-15.05720, t=-2.237607, p=0.0274). When HHI Product value decreases, ROE value increases. According to Acharya, Hasan, and Saunders (2006), loan portfolio diversification will decrease when there is an increase in HHI value. It explains that when loan portfolio diversification is increased, the performance of LCBs will also increase. However, the coefficient for HHI Sector is -3.634376, which is insignificant at the 0.05 level. Capital adequacy (ß=4.619713, t=2.338001, p=0.0213) and liquidity (ß=12.40424, t=2.813974, p=0.0059) have a significant positive relationship with ROE.

Regression analysis of model 04 provides the results when considering the moderating effect of firm size. The regression coefficient of HHI Product is 234.5838 0 (t=4.404876 and p=0.0000), which is significant at the 0.05 level. It reveals a significant positive relationship

between HHI Product and ROE. Similarly, HHI Sector also has a significant positive relationship with ROE. ((t=2.415211=, p= 0.0177). In this model, both HHI Product and HHI Sector have a positive and significant relationship with ROE. As control variables capital adequacy (ß=3.072600, t=1.843606, p=0.0685) and liquidity (ß=6.908382, t=1.741430, p=0.0850) have not significant relationship with ROE. The regression coefficient of firm size is 2.910104, which is not significant with ROE since its p-value is greater than 0.05.

The findings revealed that the regression coefficient for HHI product through the moderating effect of Firm size is -17.60523. (t=-4.181452 and p=0.0001). As a result, firm size significantly and negatively moderates the relationship between HHI Product and ROE. The regression coefficient for HHI Sector through the moderating effect of Firm size is -6.546015 (t=-2.555757 and p=0.0122). It shows that the HHI sector also has a significant negative moderating effect on firm size and the relationship between the HHI sector and ROE. These findings are consistent with recent studies stating that the advantages of diversification may decline for larger banks due to increased operational complexity and agency problems (Beck, Demirgüç-Kunt, & Merrouche, 2018; Laeven & Levine, 2020).

Conclusion

This study explores the moderating effect of firm size on the relationship between loan portfolio diversification (LPD) and the performance of licensed commercial banks in Sri Lanka from 2012 to 2023. The results show that product-wise LPD significantly and negatively impacts Return on Equity (ROE), consistent with Stiroh and Rumble (2006), while sector-wise LPD does not significantly impact ROE. However, both product-wise and sector-wise LPD have no significant effect on ROA. A similar result was found by Adzobu et al. (2017) stated that increased diversification may not always lead to better financial performance. Firm size significantly and positively moderates the relationship between product-wise LPD and ROA, but not between sector-wise LPD and ROA. Larger banks have more capacity, systems, and intellectual assets to handle diverse loan products efficiently. They can manage risks better and optimise asset utilisation, directly impacting ROA. Sectoral diversification often involves external macroeconomic risks beyond the bank's control. Even large banks may struggle to manage sector-specific risks, which leads to the moderating role of firm size being less relevant for ROA. Further, a Significant and negative moderating effect of firm size is identified between the relationship of sector-wise and product-wise LPD with ROE, which is consistent with the result of the study done by Chowdhury et al. (2024). Theoretical implications suggest that diversification may not always lead to enhanced performance. Corporate finance theory supports this by highlighting over-diversification risks, particularly sector-wise. Conversely, the resource-based view and modern portfolio theory suggest diversification can improve performance by leveraging resources and managing risk (Barney, 1991; Markowitz, 1952; and

ISBN: 978-624-5553-76-1

Wernerfelt, 1984). The study also indicates that larger banks are better equipped to handle diversification risks. The findings suggest that larger commercial banks should tailor their diversification strategies to their size and capabilities. Banks should focus on managing non-performing loans and ensuring their loan portfolios are well-diversified to boost profitability. Limitations of the study include its focus on only two types of diversification and the exclusion of macroeconomic factors. Future research could examine other forms of diversification, such as geography and credit quality and incorporate additional control variables like banks' capitalisation and financial leverage. These findings offer valuable insights for bank management, policymakers, and financial authorities in shaping effective loan portfolio strategies.

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ISBN: 978-624-5553-76-1

The Effect of Audit Quality on the Financial Performance of Commercial Banks in Sri Lanka

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Abstract

This research aims to analyse the effect of audit quality on the financial performance of commercial banks in Sri Lanka. A mixed-method approach was employed for this investigation. Primary data was collected through self-administered questionnaires, while secondary data was obtained from the financial statements of commercial banks over the past five years (2019–2024). These analyses aimed to illustrate the relationship between various independent and dependent variables. The independent variables being studied are auditors' independence, competency, and experience, as well as audit committee size and international auditing standards, whereas the dependent variable is return on assets. A research hypothesis was formulated to evaluate the impact of audit quality on commercial bank performance and to test the relationship between them. The findings highlight that auditors' independence, competency, and experience, as well as audit committee size and adherence to international auditing standards, have a significant relationship with financial performance (ROA). The study highlights the significant role of effective audit quality in enhancing financial performance and achieving sustainable growth for commercial banks in Sri Lanka.

Keywords: *Audit quality, Audit Committee, Return on assets*

Introduction

Corporate organisations must have precise and trustworthy financial statements to make informed decisions about their future. The reason behind this is that the government, all stakeholders, current and prospective investors, depend on the financial statements when making investment decisions and any other relationships with the reporting entity (Amahalu, 2019). Nonetheless, management prepares these financial statements, which are then made available for all stakeholders for various purposes. Due to the persistent uncertainty and doubt surrounding the legitimacy and reliability of these financial statements, managers may alter the reports to suit their interests. Considering the lack of trust in the financial statements that

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ISBN: 978-624-5553-76-1

have been released, it is essential to employ an external auditor to monitor, prevent, detect, and report fraud and other illegal acts and errors that may be found in the financial reports.

When serious deficiencies have become apparent in the current environment, concerns have arisen over audit quality. According to the literature, notable scandals include the Enron scandal of 2001, the Parmalat scandal in 2003, the Cadbury Nigeria Plc scandal in 2006, the Afribank Nigeria Plc scandal in 2009, the Intercontinental Bank Plc scandal in 2009, and the Skye Bank Plc scandal in 2018.

Several high-profile company scandals have also been attributed to poor financial reporting, which has prompted stakeholders in various countries to demand higher quality corporate governance (Amahalu, 2020) Farouk and Hassan (2014) claim that financial providers are encouraged to expand their holdings in an organization when they have faith and confidence in its audited financial statements. Higher investment ultimately leads to improved performance, where high-quality financial reporting is essential.

Audit quality is defined as the probability that the external auditor will both detect and report any violations in the accounting system of the client (L.E. & Angelo, 1981). An independent audit ensures the quality of financial statements, supporting trust in their reliability and integrity, which is necessary for improved financial performance. Audit quality is crucial to preserving a successful market environment. External audits in compliance with auditing standards can encourage businesses to adopt accounting standards and ensure the accuracy, transparency, and usefulness of their financial statements. Auditors need to be independent in the opinions they express. In contrast, the work they do to form their opinions is highly dependent on and rooted in the real world, which can become challenging in some business environments.

Some prominent corporate failures include Galadari Hotels (Lanka) Ltd., ETI Finance Ltd., Vanik Incorporation Ltd., Ceylinco Group, Golden Key Credit Company, and the Finance Company Plc, which have recently highlighted the need for audit quality. The COVID-19 pandemic significantly impacted numerous businesses, raising concerns about their viability, which led to an increased emphasis on audit quality in their financial statements.

Even though users of financial reports depend on them to make financial decisions because the auditor has provided an opinion and assurance regarding their fairness, the financial trouble, bankruptcy, and eventual collapse of such organizations that were provided an opinion of going concern and a healthy status is concerning and raises questions about the level of quality of the auditors' audit of the financial statements. The perceived relevance of audited financial information has been rising, while the perceived trustworthiness of audited financial information has been falling, according to research on the quality of audit reports. As a result, it is crucial to consider the significance of audit quality and its impact on business performance. A company's financial performance improves when its financial statements are reliable, as they attract more capital and investment. The reliability of the financial statement depends on the

audit quality, which implies an indirect relationship between audit quality and financial performance (Brooks, Cheng, and Reichelt, 2013). Shareholders and potential shareholders make investment or disinvestment decisions based on information published in annual financial reports. Lack of accuracy in financial reporting will lead shareholders and prospective investors to make wrong judgments about the organisation (Iliemena & Rachael, 2019). The relationship and effect of audit quality on financial performance have received research attention over the years. Nonetheless, most of the literature appears to originate from highly developed nations, whereas evidence from less developed nations, such as Sri Lanka, is minimal. Therefore, this study aims to determine the impact of audit quality on the financial performance of banking sectors in developing nations, using the case of Sri Lanka.

Literature Review

To enhance understanding of audit quality and commercial bank financial performance, examining these two factors in Sri Lankan commercial banking has become increasingly important, as financial sector transparency and accountability are significant matters. This relationship between audit quality and commercial bank financial performance finds its theoretical foundation in agency theory, stakeholder theory, and signalling theory. The high-quality audits identified in agency theory help reduce shareholder-management information asymmetry, thereby strengthening financial decisions and leading to improved bank performance (Jensen & Meckling, 1976). Audits performed reliably according to stakeholder theory (Freeman, 1984) establish stakeholder trust while protecting depositors and assuring regulators in banking institutions. According to signalling theory, reports of superior quality serve as signals of financial stability, along with indicators of good corporate governance, to investors who experience enhanced performance (Spence, 1973).

Multiple studies from various parts of the world confirm the theoretical arguments to be sound. The review by DeFond and Zhang (2014) of archival auditing research revealed that audit quality leads to improved financial reporting reliability, ultimately enhancing firm performance. Al-Khaddash, Al Nawas, and Ramadan (2013) assessed Jordanian commercial banks and found that auditor independence, along with size and tenure factors, significantly affects financial performance, as audit quality is a major driver of profitability and efficiency in banking. Research conducted by Adeyemi and Fagbemi (2010) throughout Nigeria found that businesses with reputable, experienced auditors demonstrated better financial outcomes, thus supporting external audit as a performance multiplier. The research work by Rahman and Mohamed (2013) demonstrates how audit quality enhances the performance of Malaysian banks by improving internal control systems and reducing earnings management practices. High audit quality enhances bank efficiency and fosters customer confidence and financial stability, according to Hegazy's (2015) European research. These worldwide research results demonstrate that audit quality, measured through independence, along with the size and

ISBN: 978-624-5553-76-1

tenure of audit firms, significantly improves the financial performance of commercial banks, as strong auditing practices are vital for every financial institution worldwide.

Studies conducted in Sri Lanka confirm these theories at work. Rathnayake (2020) found that commercial banks under Big Four auditors achieved superior financial results, as measured by Return on Assets (ROA) and Return on Equity (ROE) metrics, compared to those under non-Big Four auditors, indicating a positive impact on audit quality and financial performance. Auditor independence and audit firm size are proven to be important factors affecting profitability levels in listed banks, according to Fernando and Jeyaraj (2021), highlighting the essential role of audit quality in financial success. Sri Lankan firms' performance within the financial sector improves through strong corporate governance mechanisms, accompanied by high-quality audits, as demonstrated by Pathirawasam and Wickremasinghe (2012). Audit quality, which results from the combination of auditor reputation, independence, and compliance with international standards, enhances financial performance while stabilising commercial banks in Sri Lanka.

Methods

This study examines the impact of audit quality on the financial performance of the banking sector in Sri Lanka. It emphasises audit quality proxies such as auditor independence, auditor competency and experience, audit committee size, and adherence to international auditing standards. Financial performance is proxied by Return on Assets (ROA). The study measures audit committee characteristics using average values from 2019 to 2024, based on the financial reports of commercial banks in Sri Lanka. Financial performance is also assessed using data collected through a structured questionnaire. Cassell and Dyer (2014). A mixed-method approach was employed for this research. Primary data was collected through self-administered questionnaires, while secondary data was obtained from the financial statements of commercial banks over the past five years (2019–2024). The study adopted a purposive sampling technique to select 80 participants from the population of audit committee members, as they possess relevant knowledge and play a key role in audit oversight within their respective banks. The sample size of 80 was determined based on a combination of factors, including the expected availability and willingness of qualified participants, prior similar studies in the banking sector, and the need to maintain statistical validity while ensuring manageability of data collection. This targeted sampling ensured that participants were well-informed on the issues under study and could provide meaningful insights on audit quality and financial performance. Based on the hypothesis;

H1: There is a significant effect of audit quality on the financial performance of the banking sector in Sri Lanka.

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Model Specification

A multivariate analysis of the effect of audit quality factors on the financial performance of commercial banks was performed by estimating linear regression as shown by the regression equation below:

$Y=ß0+ ß1X1+ ß2X2+ ß3X3+ ß4X4+ε$

Where,
Y Financial performance (ROI)

ß0=The model intercept

B1- ß4=Coefficient of independent variables

X1 - Independence of audit

X2 - Competency and experience of the auditors

X3 - Audit committee size

X4 – International standards of auditing

ε - Error term

Data Analysis

Reliability Analysis (Cronbach's Alpha)

Table 01: Reliability Analysis

Variable	No. of Items	Cronbach's Alpha
Auditor Independence	4	0.812
Auditor Competency & Experience	5	0.856
Audit Committee Size	3	0.788
International Auditing Standards	4	0.841
Overall Audit Quality Scale	16	0.869

All the scales demonstrate acceptable reliability, with the overall audit quality scale showing strong internal consistency ($\alpha = 0.869$). These results suggest that the items within each construct reliably measure the intended concept, and the overall measurement model is sound.

Correlation Analysis

A Pearson correlation analysis was conducted to examine the relationship between audit quality variables and financial performance (ROA). The correlation matrix indicates that ROA is positively and significantly associated with all the audit committee variables listed. Auditor independence is in a moderate relationship with ROA ($r =.452$, $p < 0.01$), indicating that there can be higher financial performance by having more independent auditors.

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Table 02: Results of Correlation Analysis

Variables	ROA	Auditor Independence	Competency & Experience	Committee Size	International Standards
ROA	1				
Auditor Independence	.452**	1			
Competency & Experience	.538**	.493**	1		
Audit Committee Size	.372*	.310*	.445**	1	
International Auditing Standards	.487**	.439**	.556**	.382*	1

*p < 0.05, **p < 0.01

The experience and ability of the audit committee correlate most with ROA (r =.538, p < 0.01), suggesting that experienced and able members of the audit committee are responsible for improving firm profitability. The audit committee's size also correlates positively with ROA (r =.372, p < 0.05), suggesting that relatively larger committees can improve monitoring and decision-making effectiveness. Application of global auditing standards is positively related to ROA (r =.487, p < 0.01), reflecting the importance of global best practice in attaining improved financial performance. Independence of auditors is also positively related to expertise (r =.493) and international standards (r =.439), reflecting how common these variables are inter-supporting. These findings imply that increasing audit quality and governance controls can considerably impact a firm's return on assets. In conclusion, the findings support the hypothesis that well-designed, independent, and strong audit committees are crucial for improved financial performance.

Regression Analysis

Table 03: Model Fit

R	R^2	Adjusted R^2	Std. Error
0.653	0.426	0.397	0.421

Table 04: *Results* of ANOVA

Source	df	F	Sig.
Regression	4	14.728	.000
Residual	75		
Total	79		

Table 05: Coefficient

Predictor	B	Std. Error	Beta (β)	t	Sig.
Constant	1.202	0.372		3.231	0.002
Auditor Independence	0.214	0.088	0.221	2.432	0.018
Competency & Experience	0.309	0.097	0.327	3.185	0.002
Audit Committee Size	0.176	0.079	0.198	2.228	0.029
International Auditing Standards	0.264	0.091	0.275	2.901	0.005

ISBN: 978-624-5553-76-1

A multiple regression analysis was conducted to determine the extent to which audit quality predictors influence return on assets (ROA). 42.6% of the variation in financial performance (ROA) in commercial banks can be attributed to the independent variables included in the model, specifically auditor independence, competency and experience, audit committee size and international auditing standards. This implies that the remaining 57.4% of the variability is attributed to factors not accounted for in the current model. The F-statistic, recorded at 14.728 with a p-value less than 0.05, suggest that the model is robust and yields statistically significant findings. In our research, auditor independence has a significant relationship with financial performance, as measured by ROA. This suggests that Independent auditors are more likely to generate honest and reliable audit reports, thereby preventing earnings manipulation and promoting transparency. This enhances investor confidence and internal efficiency, which are both reflected in improved ROA. While competency and experience have a significant relationship with financial performance, implying that experienced and competent members are better placed to identify financial malpractices, understand complex accounting issues, and provide strategic advice. Their experience brings quality to governance, reduces risks, and improves the ROA. The audit committee has a significant relationship with return on assets (ROA) in commercial banks, indicating that a larger committee can enhance oversight, bring in diverse perspectives, and distribute workload effectively. However, balancing size with functionality is crucial, as a considerable size may lead to inefficiency. Meanwhile, international auditing standards have a significant relation with ROA, which states that international standards improve audit quality, comparability, and transparency. It aligns the company with the best global practices, which boosts investor confidence and operational consistency, ultimately reflected in profitability.

The significant F-statistic (14.728, $p < 0.05$) provides strong evidence for the validity and robustness of the model, demonstrating the meaningfulness of audit quality in financial outcomes. The role played by auditor independence means that independent and unbiased audit practices have a direct impact on transparency and trust, most importantly, on investors' confidence in the organisation and its better profitability. On the same note, the competency and experience of the auditors prove to be a valuable investment, as they can help clarify financial facts and risks and provide strategic advice. The desirable effect of audit committee size suggests that a wider breadth of knowledge and competent control have the potential to influence positive governance; however, an optimal size needs to be determined to mitigate inefficiency. In addition to this, the use of international auditing standards is an indication of adherence to best international practices, not only guaranteeing the quality of the audit but also building greater confidence among stakeholders and ensuring financial soundness. Overall, these results suggest that the quality of audit is a strategic factor in financial performance, and further investment in the effectiveness of these governance mechanisms in the banking sector should be undertaken.

Conclusion

Audit quality is crucial for making economically rational decisions, but the perceived reliability of audit quality has declined with the increasing significance of audit quality. To this end, the literature concerning the effect of audit quality on firm performance was examined. The independent variables studied are the auditor's independence, auditors' competency and experience, audit committee size and international auditing standards, whereas the dependent variable is ROA. The findings highlight that auditors' independence, competency, and experience, as well as audit committee size and adherence to international auditing standards, have a significant relationship with financial performance (ROA). The empirical literature discussed here presents a unified view of the relationship between audit quality and firm performance; however, other audit quality measures and financial performance measures also offer conflicting views. Furthermore, a few studies employed fewer or single audit quality measures and were therefore unable to generalise their findings. More specifically, most papers do not consider the commercial banks in Sri Lanka. Regarding such issues, this study proposes a mixed-methods analysis of the impact of audit quality and firm performance, particularly in commercial banks in Sri Lanka.

This research falls under some restrictions. To begin with, it is limited to commercial banks; therefore, many of the employees' views cannot be generalised to include other sectors or financial institutions. The model explains 42.6 per cent of the variation in ROA, which means that it fails to include other relevant variables that influence financial performance. Additionally, the research will utilise secondary data that may be influenced by reporting biases or inconsistencies among institutions. As a future research possibility, the present study suggests exploring other predictors, including regulatory compliance, technological adoption, or internal control systems, to assess their predictive relevance. Conducting research on various levels of sectors or implementing longitudinal data would also be much more effective in illuminating the dynamic between audit quality and financial performance.

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ISBN: 978-624-5553-76-1

Impact of Integrated Reporting Disclosures on the Value Relevance of Accounting Information

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Abstract

The study examines the impact of integrated reporting disclosure on the value relevance of accounting information for listed firms in Sri Lanka's diversified financial sector. This study utilizes data from 23 listed firms in Sri Lanka's diversified financial industry for the period from 2017 to 2023. IR is the independent variable of the study, while the value relevance of accounting information is the dependent variable. The signaling theory provides the theoretical basis for this study. The study utilized year-wise statistics of the IR score and the results of correlation and regression analysis to draw its conclusions. The research findings reveal an increasing trend in terms of IR disclosures by listed firms in Sri Lanka's diversified financial industry. Additionally, we found a statistically significant positive impact on the value relevance of accounting information due to IR disclosures. This study offers organizations and investors valuable insights into the benefits of adopting IR. It also provides policymakers with unique insights for undertaking policy initiatives on IR. As the study was conducted in the Sri Lankan context, where IR is a voluntary practice, future studies can consider firms across several countries with different reporting legislations. It is recommended to analyze the impact of each content element on the firm value to reveal more meaningful information in future studies. Finally, future researchers are encouraged to employ a qualitative approach to validate the findings of this study.

Keywords: *Accounting Information, Integrated Reporting, IR disclosure level, Value Relevance*

Introduction

Integrated reporting (IR) is a novel reporting approach established to address the limitations of traditional reporting practices (Akpan et al., 2022). IR integrates both financial and non-financial information of an organization into a single report (De Villiers et al., 2017). Thereby, provides an overall picture of an organizational performance (Jensen & Berg, 2012). IR aids organizations in reducing information asymmetry and improving decision-making. (Brammer

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ISBN: 978-624-5553-76-1

& Pavelin, 2006). Organizations adopt IR for various reasons. Some adopt IR as it is mandated by law, while others adopt it voluntarily to enhance their reputation and proper capital allocation (Bal & Dhal, 2019).

IR practices are primarily overseen by the International Integrated Reporting Council (IIRC), which comprises regulators, investors, standard-setters, accounting bodies, academics, and NGOs. The International Integrated Reporting Council (IIRC) introduced the International Integrated Reporting Framework (IIRF) in 2013. However, the IIRF, which was updated in 2021, is the currently applicable framework for implementing IR. IIRF comprises seven guiding principles and eight content elements that organizations must consider when preparing their corporate reports. Since there is no standard template for preparing Integrated Reports, their content varies between different organizations and even within the same organization across different years.

Numerous studies have been conducted in the international context on IR disclosures and their impact. However, these findings cannot be directly applicable to the Sri Lankan context, as these studies were conducted in different countries with distinct reporting requirements (Baboukardos & Rimmel, 2016; Fernando et al., 2017; Lee & Yeo, 2016). In Sri Lanka, IR is a voluntary practice as it is not a mandatory requirement by law. Although IR is a voluntary exercise, Sri Lanka has reported a higher rate of diffusion of IR in the last few years (Cooray et al., 2020). Most Sri Lankan companies had already been practising sustainability reporting before the introduction of IR. Therefore, Sri Lankan companies made a transformative change to adopt IR with an existing information capturing system, supportive culture, and sustainability thinking (Cooray et al., 2020; Gunarathne & Senaratne, 2017).

Most of the large and well-established organizations are interested in adopting IR as a reporting tool to disclose more information to outside parties (Senani et al., 2024). Most of the early adopters identified IR as an efficient choice, while the late adopters consider IR as a fashionable choice that enhances their reputation (Cooray et al., 2020; Gunarathne & Senaratne, 2018). The introduction of the code of best practices in corporate governance and the establishment of the Integrated Reporting Council by CA Sri Lanka are the significant milestones in establishing IR practices in the Sri Lankan context (Cooray et al., 2020).

The adequacy of professionals, increasing demand of stakeholders, global trends in corporate reporting, technological advancement, and rivalry among firms are the drivers for adopting IR by Sri Lankan Companies Sri Lanka has a progressive accounting profession that constantly encourages the firms to adopt novel accounting developments (Cooray et al., 2020; Gunarathne & Senaratne, 2018). Thus, the award schemes, awareness programs, seminars and capacity building programs organized by the professional accounting bodies encourage Sri Lankan companies to adopt IR (Gunarathne & Senaratne, 2018). Lack of awareness and the lack of knowledge are the barriers to adopting IR in the Sri Lankan context (Vickneswaran, 2019). The inadequacy of guidelines and the confusion that arises due to the complexity of the

framework can be identified as other challenges in adopting IR. Lack of expertise and resistance to change are the issues that can arise from the employees' perspective in the adoption of IR (Priyadarshanie et al., 2023).

Most Sri Lankan corporations utilize IR to maintain their legitimacy by adhering to societal norms, values, and expectations. IR encourages market capitalization by enhancing the value relevance of accounting information provided by the organizations (Cooray et al., 2020). Integrated reports provide a platform for companies to explain how they create value over the short, medium, and long term (Abeywardana et al., 2021). IR is important for the Sri Lankan context as it contributes to better capital allocation decisions, improves decision making, enhances organizational reputation, enhances stakeholder engagement, establishes an integrated culture and encourages cross-functional collaboration (Abeywardana et al., 2024).

The information provided by the firms becomes value-relevant if the information presented in financial statements influences the company's share prices (Francis & Schipper, 1999). The stock price of a firm is an important factor that affects the firm's value. Therefore, studies used the stock price per share to measure the firm value as a proxy measure for the value relevance of accounting information (Cooray et al., 2020; Fernando et al., 2017; Fernando & Hermawan, 2019). IR enhances transparency by providing non-financial information on environmental, social, and governance risk management, and thereby affects stock prices (Eccles et al., 2014). Also, with the current trend for sustainable investments, where investors integrate information on environmental, social, and governance factors when making decisions, the stock prices were affected by IR disclosures (Talan & Sharma, 2019).

Numerous empirical studies have explored the impact of IR disclosures on the value relevance of accounting information. A prior study conducted by Baboukardos and Rimmel (2016) stated that the issuance of integrated reports increases the value relevance of earnings. Another study carried out in the European context by Loprevite et al. (2018) concludes that the value relevance of accounting information was enhanced through the publication of integrated reports. Fernando and Hermawan (2019) concluded that the adoption of IR enhances the value relevance of accounting information. Cortesi and Vena (2019) found that IR encourages firms to disclose information voluntarily, thereby increasing the quality of reported earnings. Lee and Yeo (2016) found a positive relationship between IR and firm value as IR disclosures contribute to reducing the cost of information processing. Similarly, Ghorbel and Triki (2016) explain that IR practices improve the value relevance of accounting information.

In contrast, some studies argued that IR has no significant effect on firm value (Soumillion, 2018). Fernando et al. (2017) concluded that the adoption of IR has no significant impact on the value relevance of accounting information in the firms of Asian countries.

Since IR practices are adopted in the Sri Lankan context, some studies were carried out on IR disclosure and its impact on firms. However, inconsistent findings were revealed in the Sri Lankan context—a study conducted by Cooray et al. (2020) concluded that the level of IR

disclosure does not significantly impact the value relevance of accounting information of listed firms. Fernando and Jeewanthi (2021) found that IR disclosures were negatively associated with the firm value.

This study aims to identify the level of adherence to IIRF by the firms in Sri Lanka over the last seven consecutive years from 2017 to 2023. Most previous studies have used the price level model to conclude the impact of IR on the value relevance of accounting information. In the price level model, Earnings Per Share (EPS) and Book Value Per Share are considered as independent variables of the study that affect the share price of a firm (Basnayaka & Priyadarshini, 2022; Cooray et al., 2020; Fernando et al., 2017). Therefore, this study aims to investigate the sole impact of the IR score on the share price, which serves as an indicator of the value relevance of accounting information.

Many studies carried out in Sri Lanka on IR remove the firms in the finance sector due to the differences in their reporting period (Cooray et al., 2020). Fernando and Jeewanthi (2021) stated that, compared to other industries, firms in the finance industry tend to adopt IR as a reporting practice. However, finance companies in Sri Lanka have still not reaped the significant benefits of IR, as they have not provided proper signals to their stakeholders. As the firms in the diversified financial industry are highly regulated and contribute to GDP to a considerable level, they need to disclose proper information to their stakeholders through reporting (Fernando & Jeewanthi, 2021). As a result, the listed firms in the diversified financials industry have been selected for this study.

Given the contradicting and inconsistent findings, a research gap exists in identifying the impact of IR disclosures on the value relevance of accounting information in the Sri Lankan context. Therefore, this study attempts to address the research gap and provide valuable insights into the existing literature on the value relevance of accounting information under IR disclosures provided by the listed companies in the diversified industry of Sri Lanka.

Under the research problem, this study aims to achieve two primary research objectives: to assess the level of adherence to the IIRF in IR by the listed firms in Sri Lanka's diversified financial industry, and to examine the impact of IR disclosures on the value relevance of accounting information.

Furthermore, this study contributed to the development and refinement of existing theories related to the adoption of IR and its impact on the value relevance of information. Also, this helps to validate or challenge the theories or frameworks available regarding the adoption of IR. Moreover, the study's findings reveal the extent to which the combination of financial and non-financial information is important in making investment decisions. It also encourages IR non–adaptive firms to adopt IR by knowing its benefits and outcomes.

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Literature Review

Integrated Reporting

IR is a novel concept to the traditional reporting framework (Caglio et al., 2020). It integrates financial and non-financial into a single report. Thus, it can be defined as a combination of current reporting practices (Tanaka & Tsuda, 2023). According to IIRC (2013), "an integrated report provides a comprehensive picture of the way an organization's strategy, governance, performance, and prospects within the external environment led to creating value over the short, medium, and long term". IR attempts to address the limitations of traditional reporting by integrating the information of the economic, environmental, and social aspects of an organization (García-Sánchez et al., 2013). Thus, IR can be defined as an effective reporting tool to communicate the organization's overall performance to the stakeholders while generating internal benefits to the organization (Steyn, 2014).

The value creation process of IR can be underpinned by stakeholder theory and agency theory. According to stakeholder theory, companies are accountable to their stakeholders in providing organizational information (Freeman, 2010). Also, to protect the stakeholders' interests, it is important to provide them with sufficient information on the organization's overall performance (Olusanjo, 2019). IR integrates all the information related to social, environmental, and economic aspects of an organization; hence, it will address the information needs of the stakeholders in assessing the overall firm's value (Joshi, 2019). Therefore, adopting IR as a reporting practice enhances the quality of information provided by the entities to their stakeholders while reducing the information asymmetry (Cortesi & Vena, 2019)

Agency theory addresses the agency problem that arises because of conflicting interests between different stakeholders. Information asymmetry emerges when the managers have more information about the organization than the capital providers of the organization (Jensen & Meckling, 1976). Most of the entities that face the agency problem try to disclose more information to their stakeholders in terms of reducing information asymmetry (Reitmaier & Schultze, 2017). IR provides information on the value creation process of a firm and meets the expectations of its stakeholders by enhancing the corporate disclosures (Joshi, 2019).

Value Relevance of Accounting Information

Studies interpret the value relevance of accounting information in different ways. Francis and Schipper (1999) interpret the value relevance of accounting information under four views. The fundamental analysis view posits that information becomes value-relevant if it influences the company's share prices by capturing the intrinsic share value (Francis & Schipper, 1999). The second view posits that financial information becomes value-relevant if it contains variables from the firm's valuation model (Francis & Schipper, 1999). The information view states that if disclosed financial information can alter the information available in the market, then that information becomes value-relevant (Francis & Schipper, 1999). The fourth view posits that

ISBN: 978-624-5553-76-1

the value relevance of accounting information can be measured by the statistical relationship between the accounting information disclosed in the financial statement and the market price or return (Francis & Schipper, 1999).

Signaling theory implies that passing better signals reduces information asymmetry among different stakeholders (Jeroe, 2016). It explains how the signals are passed to the various stakeholders of the organization and how they interpret those signals (Spence, 1973) . To reduce the information asymmetry, corporate managers need to share the required information with their stakeholders (Jeroe, 2016) The voluntary disclosure of financial information reduces information asymmetry among stakeholders (Ross, 1977). IR disclosures provide better signals to capital providers for reducing information asymmetry and enhancing the firm value (Jeroe, 2016). As a result, investors may assess the firm's value, which means the information becomes value-relevant in making their investment decisions.

Empirical Evidence

Initially, Baboukardos and Rimmel (2016) conducted a study to investigate the value relevance of traditional accounting information under the adoption of IR. Its findings stated that the issuance of integrated reports increases the value relevance of earnings. Another study carried out by Loprevite et al. (2018) in the European context found that IR adopting firms provide a higher level of value-relevant information than non-adopting firms. It also implies that the value relevance of accounting information was enhanced through the publication of integrated reports. Lee and Yeo (2016) found a positive relationship between IR and firm value as IR disclosures contribute to reducing the cost of information processing. Another study found that the adoption of IR affects the value relevance of information (Fernando & Hermawan, 2019)

Ghorbel and Triki (2016) explain that voluntary disclosure of organizational information through IR improves the value relevance of accounting information. Melegy and Alain (2020) state that integrated reports provide both financial and non-financial information to the stakeholders. Thus, enabling them to evaluate a firm's value and its power to create value. Cortesi and Vena (2019) stated that IR encourages firms to disclose information voluntarily, thereby increasing the quality of reported earnings. Also suggests that the value relevance of earnings increases with the adoption of IR.

In contrast, some studies argued that IR does not significantly affect the firm value (Soumillion, 2018). According to Fernando et al. (2017), the adoption of IR does not significantly enhance the value relevance of accounting information in the firms of Asian countries. Another study conducted in Sri Lanka by Cooray et al. (2020) concluded that the level of IR disclosure does not significantly impact the value relevance of accounting information of listed firms in Sri Lanka, where IR is a voluntary practice.

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Hypotheses Development

Cooray et al. (2020) and Ghorbel and Triki (2016) found a positive relationship between IR disclosure level and firm value, which is a proxy measure of the value relevance of accounting information. Lee and Yeo (2016) found a positive relationship between IR and firm value as IR disclosures contribute to reducing the cost of information processing. Some research states there is no causal association between IR disclosures and firm value, but shows a possibility of a positive relationship (Fernando et al., 2017). These empirical findings are aligned with the signaling theory that explains the investors' positive reactions to the positive signals (Machmuddah et al., 2020).

However, Fernando and Jeewanthi (2021) found that IR disclosures were negatively associated with the firm value. This negative relationship can be explained through the signaling theory. Signaling theory suggests that this negative association emerged due to the negative signals arising from the increased level of IR disclosures (Machmuddah et al., 2020).

Several studies have been conducted to assess the effect of IR disclosures on the value relevance of accounting information. Baboukardos and Rimmel (2016) find a significant improvement in the value relevance of accounting information with the adoption of IR. It implies that IR disclosures influence the enhancement of value relevance.

These findings support the signaling theory that implies the adoption of IR provides better signals to investors in their decision-making by providing quality information. Another study carried out in the European context concluded that the degree of value relevance of accounting information provided by the IR-adopting firms is greater than that of the non-adopting firms (Loprevite et al., 2018). Ghorbel and Triki (2016) also state that voluntary disclosure of information for investors through IR contributes to enhancing the value relevance of information.

However, a study conducted in the Asian context found that IR adoption has no impact on the value relevance of accounting information (Fernando et al., 2017). Cooray et al. (2020) found that the adoption of IIRF in IR did not have a significant impact on the value relevance of accounting information. These inconclusive and mixed results lead to the proposal of this hypothesis.

H1: There is a positive impact of IR disclosures on the value relevance of accounting information.

Methodology

Population and Sample Selection

According to the Global Industry Classification Standard (GICS), the firms listed in the Colombo Stock Exchange (CSE) are classified into 11 sectors, and the finance sector includes three industry groups as diversified financials, insurance, and banks. This study considered all the listed firms categorized under the diversified financials industry as the population of the

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study. Then the study's population consists of 38 listed firms. The sample of the study includes 23 listed firms in the diversified financials industry that published integrated reports for seven consecutive years from 2017 to 2023. The purposive sampling technique was employed to select the sample companies that published integrated reports throughout the study period (Akpan et al., 2022). For this study, secondary data were collected from the annual reports of the sample companies.

Variables and Measurements

Independent variable

IR disclosure level is recognized as the independent variable of the study. It was measured through a content analysis of integrated reports using a detailed IR index that contains 38 disclosure items categorized under the eight content elements of IIRF. Each selected company receives a score ranging from 0 to 74 based on its IR disclosure level. This checklist was initially developed by Herath and Gunarathne (2016) based on the checklist developed by Stent and Dowler (2015). It was further improved by Cooray et al. (2020) by adding some features of the index prepared by Kılıç and Kuzey (2018).

Table 01: Summary of IR index

Content Element	Score
Organizational overview and external environment	16
Governance	12
Business model	10
Risk and opportunities	08
Strategy and resource allocation	06
Performance	13
Outlook	04
Basis of preparation and presentation	05
Total score	74

Dependent variable

The dependent variable of the study is the value relevance of accounting information. It was measured using the proxy measure of "Firm Value" (Cooray et al., 2020; Fernando et al., 2017; Fernando & Hermawan, 2019) In this study, the stock price per share six months after the financial year end is used to measure the firm value as a proxy measure for the value relevance of accounting information. The stock price per share was taken six months after the fiscal year-end, as investors typically require considerable time to identify the value of IR. Cooray et al. (2020) also suggest that a six-month time period is sufficient for investors to identify the value of IR.

Control variables

The control variables used in this study are firm size and corporate loss. The firm size was measured using the value of the total assets of each firm at the financial year-end. For analysis purposes, the total asset value was converted into a natural logarithm (Cooray et al., 2020).

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The corporate loss was considered as a dummy variable, and it was one if the firm achieved a corporate loss and zero if the firm achieved corporate profits (Cooray et al., 2020).

Table 02: Operationalization Table

Variables	Working Definition	Measurement	Reference (s)
Independent variables			
Integrated Reporting	The degree of a firm's integrated report prepared in line with the principles-based framework introduced by the IIRC in 2013	Thirty-eight disclosure items have been identified under the eight dimensions in an integrated report based on the IIRF. Therefore, each selected company received a score ranging from 0 to 74 depending on its disclosure level in IR.	(Cooray et al., 2020)
Dependent variable			
Stock price per share	Stock price per share for the firm, six months after the financial year ends	The stock price per share for a particular firm was taken six months after the financial year-end.	(Cooray et al., 2020; Fernando et al., 2017)
Control variables			
Firm size	The size of a particular firm in terms of total assets	Natural logarithms of the total assets of a firm	(Cooray et al., 2020)
Corporate loss	Whether a firm achieves negative earnings or a loss	A dummy variable that equals one if the firm achieves negative earnings or loss and zero if the company gets positive earnings or profits	(Cooray et al., 2020; Fernando et al., 2017)

Data Analysis Techniques

The study employed panel regression analysis, correlation analysis, and descriptive statistics to analyse the collected data. The regression model used in this study can be stated as follows.

$$Pit = \beta 0 + \beta 1\ IRSit + \beta 2\ Sizeit + \beta 3\ Lossit + \varepsilon it$$

Where *Pit* is the stock price per share for firm *I* at time *t*, six months after the year-end of time *t, IRSit* is the IR score of firm *I* at time *t*. *Sizeit* indicates the natural logarithm of the total assets of firm *I* at time *t*. *Lossit is the* dummy variable that equals one if the firm achieves negative earnings and zero otherwise. *βo is* the intercept for the regression model, and *Eit* is the standard Error.

Results and Discussion

Descriptive Statistics

The level of adherence to the IIRF in IR was assessed using the descriptive statistics prepared in the study. This analysis was carried out for all integrated reports published by sample companies during the seven consecutive years considered for the study.

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Table 03: Year-wise Descriptive Statistics

Year	N	Minimum	Maximum	Mean	Std. Deviation
2017	23	13	59	27.6087	13.1831
2018	23	13	59	27.7391	13.2775
2019	23	13	59	29.5217	13.7076
2020	23	13	54	29.6522	13.9564
2021	23	17	57	33.7826	13.8103
2022	23	17	61	37.2174	15.7421
2023	23	18	63	38.3478	15.9875

As per Table 4.1, the mean value for the IRS increased from 27.6087 to 38.3478 between 2017 and 2023. It reflects a gradual increase in the level of adherence to IIRF in IR by the sample companies. However, a relatively high standard deviation implies a considerable variation in the content of integrated reports prepared by the sample companies.

Correlation Analysis

Table 04: Correlation Analysis

		IR Score	LG_Size	Corporate Loss
Stock Price per share	Pearson Correlation	0.458**	0.308**	- 0.308**
	Sig.(2-tailed)	0.000	0.000	0.000
	N	161	161	161

***P < 0.01, *P < 0.05*

As per Table 4.2, there is a statistically significant positive relationship between IR score and stock price per share six months after the fiscal year ended, indicating a moderate relationship (0.458, P < 0.01). When considering the control variables, the firm size showed a statistically significant association with the stock price per share six months after the fiscal year ended. Its correlation coefficient signifies a weak positive relationship (0.308, P < 0.01). Also, there is a statistically significant relationship between the corporate loss and the stock price per share six months after the fiscal year ended (-0.308, P < 0.01). However, the corporate loss had a correlation coefficient of -0.308, which indicates a weak negative relationship with stock price per share six months after the fiscal year ended.

Panel Regression Analysis

Table 05: Coefficient Results

IR Score	Coefficient	Std. Error	t-value	p-value	[95% Conf	Interval]	Sig
Stock Price per share	.082	.038	2.17	.03	.008	.156	**
Corporate loss	-1.406	1.897	-0.74	.459	-5.125	2.313	
LG_Size	1.935	.672	2.88	.004	.618	3.253	***
Constant	-16.531	16.027	-1.03	.302	-47.944	14.881	
Overall r-squared		0.271	Number of observations			161	
Chi-square		16.737	Prob > chi2			0.001	

ISBN: 978-624-5553-76-1

R-squared within	0.055	R-squared between	0.334

*** p<.01, ** p<.05, * p<.1

As per coefficient results, the IR score has a statistically significant positive impact on the stock price per share six months after the fiscal year ended (0.082, P < 0.05). It reflects that when the IR score increases, the stock price per share six months after the fiscal year-end also increases by 8.2%. Accordingly, the IR disclosure shows a statistically significant positive impact on the value relevance of accounting information. IR has a statistically significant positive impact on the firm size (1.93, P < 0.01). However, the IR score has an insignificant impact on the corporate loss. The overall R-squared shows that 27 per cent of the stock price per share is explained by the independent variable used in the study.

The study findings show a gradual increase in the adoption of IIRF in preparing integrated reports by the listed companies in the diversified financial industry of Sri Lanka. This supports the findings of the study conducted in the Sri Lankan context by Cooray et al. (2020). Caglio et al. (2020) suggest that the growing trend has emerged due to the effective awareness and training programs conducted by professional accounting bodies, recognitions provided for IR-adopted entities, and support services provided by consultancy firms. The study found significant differences in the content of integrated reports prepared by Sri Lankan listed firms in the diversified financials industry. These differences arise as IR is not mandatory in Sri Lanka; the disclosures provided in the integrated reports are decided by the management (Cooray et al., 2020).

There is a statistically significant positive relationship also found between IR disclosures and the value relevance of accounting information, indicating a moderate relationship between variables. This is in line with Cortesi and Vena (2019), who found a positive association between IR disclosures and the value relevance of information. Supporting the present findings, Cooray et al. (2020) and Ghorbel and Triki (2016) found a positive association between IR disclosure level and firm value that was used as a proxy measure for the value relevance information. These findings argue that increasing the adoption of IR enhances the investors' ability to access the firm value by improving the value relevance of information. Present findings aligned with the signaling theory that explains the ability of IR to provide the required information on the value-creation process of an entity to its stakeholders by passing better signals. Thereby enhancing the value and relevance of information. The positive association between IR disclosure and value relevance of information indicated that IR can be used to resolve the agency issue, which arises because of information asymmetry among stakeholders.

Contrary to the present findings, Basnayaka and Priyadarshini (2022) found a negative association between overall IR disclosure level and value relevance of accounting information. Similarly, Fernando and Jeewanthi (2021) also found a negative relationship between IR disclosures and firm value. These studies argued that some Sri Lankan companies disclose

unnecessary information through IR, while some companies provide an insufficient amount of information, which may not facilitate their stakeholders ' decision-making (Fernando & Jeewanthi, 2021). However, the present findings reflect the fact that integrated reports provide adequate and relevant information about the firm's overall performance.

The findings imply that IR disclosures have a statistically significant positive impact on the value relevance of accounting information. This is empirically supported by Baboukardos and Rimmel (2016), who state that IR disclosures influence the enhancement of value relevance of accounting information. Ghorbel and Triki (2016) also stated that voluntary disclosure of organizational information through IR contributes to enhancing the value of accounting information. Similarly, Fernando and Hermawan (2019) stated that IR affects the value relevance of accounting information. The study findings support the signaling theory, which explains that the adoption of IR provides better signals to investors for their decision-making purposes by enhancing the value relevance of information (Fernando et al., 2017). These findings support the agency theory and stakeholder theory, which explain the responsibility of corporate managers to disclose adequate and relevant information to their stakeholders through corporate reporting (Freeman, 2010; Olusanjo et al., 2019). The findings prove that through the use of IR as a corporate reporting practice, the insider parties of corporations can provide the relevant information to their stakeholders to make their capital allocation decisions.

However, the study findings are contrary to the Fernando et al. (2017); Soumillion (2018) which states that the adoption of IR does not significantly enhance the value relevance of accounting information. Similarly, the findings do not support the studies conducted in the Sri Lankan context, which reflect that there is no significant impact on the value relevance of accounting information by IR (Basnayaka & Priyadarshini, 2022; Cooray et al., 2020). It can be suggested that this contradiction emerged as the listed companies in the diversified financials industry of Sri Lanka have realized the benefits of IR through the effective promotion of IR by different actors in the Sri Lankan accounting profession.

Conclusion

The study aims to investigate the impact of IR disclosures on the value relevance of accounting information with special reference to the listed firms in the diversified financials industry of Sri Lanka. This study is notable for its focus on the sole impact of the IR score on share price, rather than incorporating multiple independent variables, such as EPS and BVS. The study sample consists of 23 listed firms in the diversified financial industry in Sri Lanka. The data was analysed using panel regression analysis to investigate the impact of IR disclosures on the value relevance of accounting information. Descriptive statistics, including the IR score, were used to assess the level of adherence to IIRF in IR by the listed firms in the diversified financial industry. The study found a gradual increase in the adoption of IIRF in preparing integrated reports by the listed firms in the diversified financial industry of Sri Lanka. Also, the study

found that IR disclosures have a statistically significant positive impact on the value relevance of accounting information. It can be suggested that these trends emerged as the firms in the financial industry disclose more relevant and adequate information to their stakeholders, as they are more regulated than other industries. Furthermore, technological advancements, global trends, and stakeholder demands for information may prompt these firms to adopt IR.

The study findings reveal the importance of adherence to the IIRF in IR to enhance the value relevance of information. Thereby, encouraging firms to adopt the IIRF in preparation for their annual reports in line with the content elements and guiding principles specified in the IIRF. These findings help investors identify how the implementation of IR improves the value relevance of disclosures. Also, encourage the investors to make their investment decisions based on the IR disclosures. The study offers policymakers and regulators valuable insights to inform policy initiatives on IR, encouraging corporate reporters to comply with IIRF in IR. The findings of the study help the standard setters in assessing the extent to which IR achieves its policy expectations. Based on that, standard setters can introduce new policies to strengthen IR practices.

Although this study provides valuable insight into IR, it involves some limitations. The study was conducted in the Sri Lankan context, where IR is a voluntary practice. Hence, these findings may not apply to the countries where IR is mandatory. Also, the study only assesses the impact of the overall IR disclosure score on firm value rather than assessing the impact of each content element on the value relevance of accounting information. This study only employs a quantitative approach to conclude.

Therefore, future studies are encouraged to employ a qualitative or mixed approach to validate the findings of this study. Future studies can consider multiple firms across several countries where IR is voluntary and mandatory. Also, it is recommended to analyze the impact of each content element on the firm value to reveal more meaningful information in future studies.

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ISBN: 978-624-5553-76-1

Economics

Economic Stressors and Employee Productivity in Post-COVID Sri Lanka

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Abstract

Sri Lanka faced a severe economic crisis post-COVID-19, with hyperinflation causing immense stress. This crisis worsened underemployment and job insecurity, raising concerns about employee productivity. The study, a pioneer in Asia, aimed to explore how these economic stressors affect perceived productivity among Sri Lankan workers. Through convenient sampling, the survey used 384 respondents from the public and private sectors. The study used Smart PLS software and structural equation modelling to show that underemployment and job insecurity significantly reduce perceived productivity. The analysis revealed weak relationships between underemployment ($\beta = 0.105$) and job insecurity ($\beta = 0.198$) on perceived employee productivity, with only job insecurity showing statistical significance ($p = 0.023$), indicating a moderate yet significant negative effect. This highlights the importance of managerial and organizational interventions like enhanced employee engagement, providing a safe work environment, organizational support, and fostering job satisfaction to mitigate these stressors in the long run.

Keywords: Economic crisis, Employee productivity, Economic stressors, Job insecurity, Underemployment

Introduction

The concept of economic stress goes back to the 1980s when it was first prominent. This economic stress can be triggered by different reasons, such as losing a job, changes occurring to the family's income or budget, comparing the financial resources with others, and work balancing. Some research findings validated the hypothesis that employees who harboured concerns about the economic crisis and viewed themselves as unemployable in the broader job market were more inclined to believe that their organizations were not sufficiently

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ISBN: 978-624-5553-76-1

prioritizing their well-being. Consequently, this perception was linked to an increased likelihood of experiencing negative incidents in the workplace (Giorgi et al., 2020).

The extent to which outputs are effectively achieved via boosting inputs in a particular given amount of time is known as employee productivity. An organization's workforce performance is measured by employees' productivity (Balushi, Bashayreh, & Jalagat, 2022). Compared to a few years ago, a typical workday looks diverse. From dealing with unconventional working environments, taking control of excessive control over work hours, manoeuvring extraordinary focus challenges, and relying on virtual working environments, employees are forced to face and navigate various challenges. According to the 2019 annual reports of the Central Bank of Sri Lanka, 56.8% of the annual Gross Domestic Product (GDP) is contributed by the service sector. This signifies the importance of employee productivity and the extent to which it can make a difference in the overall GDP of Sri Lanka.

Amidst many hardships after the Coronavirus disease of 2019 (COVID-19), Sri Lanka had to unexpectedly face the worst economic crisis since its independence in 1948. Although there are many reasons for how Sri Lanka got here, some of the key issues were the extreme political instability, massive defaults on debt payments, nearly empty foreign currency reserves, and poor decision-making, which ultimately gave birth to the economic crisis within the country. This crisis expanded to an unprecedented level where people could no longer bear extreme hyperinflation. The price of essential items skyrocketed daily and weekly, whilst the salaries remained constant. Due to a continual and daily struggle to make ends meet, people started protesting in the capital of Colombo and gradually expanded across the country. With persistent fuel, gas, and essential item shortages due to insufficient foreign exchange, the whole country and innocent people had scant options to deal with this issue. All of these resulted in overwhelming economic stress for people. On the other side, this had a significant impact on Sri Lankan employees as they had numerous concerns to worry about, which thus affected their productivity within the workplace.

According to data published by the Census and Economic Information Centre (CEIC) (2022), Sri Lankan labour productivity decreased by -11.42% year-on-year (YoY) in September 2022, compared to -90.51% in the previous quarter of June 2022. One of the timeliest topics that has caught the attention of the entire world is the current economic crisis in Sri Lanka. Economic stress is a vital sub-component of the economic crisis that has led to a significant downturn for the people. One of the key elements of success for any country is the happiness of its citizens. Out of these citizens majority fall under the category of "employees" who actively work and contribute massively to developing a country's economy. Sri Lanka is undergoing a substantial economic crisis that has paved the way for economic stress among citizens. The central bank of Sri Lanka officially announced in June 2022 that the economy of Sri Lanka had collapsed. Especially within the year 2022 itself, employees immensely felt the hardships of surviving in the Sri Lankan economy, which created drastic changes for their

family's income and budget. When relating to employees who are underprivileged, vulnerable, and at risk of being left behind, the consequences have been extremely pathetic. A serious situation that arises due to economic stressors impacts organizations that help Sri Lanka survive. Employee productivity has been hit hard by economic stressors. As a result of low morale and mentality, there is a diminishing trend in employees' productivity levels. This issue currently exists in Sri Lanka, and the future outcomes can be critical to organizations, employees, and the country.

This study is one of the first in the Asian region, particularly focusing on the impact of economic stressors such as underemployment and job insecurity on employee productivity during an unprecedented economic crisis. While economic stress has been explored in Western countries, there is a lack of research specific to South Asia, particularly Sri Lanka, where the dynamics of economic stress differ due to cultural, political, and socio-economic factors. Further, the context of Sri Lanka's economic collapse offers a distinctive environment to study how macroeconomic instability, compounded by political turmoil and hyperinflation, affects the working population, adding significant value to the global discourse on economic stress and employee productivity.

Previous studies have primarily focused on economic stress in Western economies or regions facing moderate crises, leaving a gap in understanding severe economic crises in developing countries like Sri Lanka and their impact on employee productivity. While underemployment and job insecurity are well-researched in stable economies, few studies examine these factors in a collapsed economy with extreme inflation and political instability. Additionally, limited research exists on the cultural and organizational dimensions of economic stress in Asia, particularly in Sri Lanka, where social norms and unique organizational practices may influence the effects of these stressors on productivity. Accordingly, the study addresses three key research questions: (1) How do underemployment and job insecurity affect employee productivity during Sri Lanka's economic crisis? (2) What psychological and organizational effects arise from economic stressors faced by employees? and (3) How do cultural and organizational dynamics in Sri Lanka moderate the relationship between economic stress and employee productivity?

Literature Review

Given the vitality of employee productivity for the success of organizations, researchers have surveyed the impact of economic stressors on employee productivity in multiple and different settings. However, despite the strengthening body of research on this topic, there is still an absence of agreement or consensus on the effects of economic stressors on employee productivity. Therefore, this literature review aims to synthesise the existing research on the impact of economic stressors on perceived employee productivity, recognize the key factors that influence this relationship within the Sri Lankan environment, and develop suggestions

ISBN: 978-624-5553-76-1

for future research in this area. The researcher reviewed publications from multiple databases such as Emerald, IEEE Xplore, Science Direct, Google Scholar, Wiley online library, etc., and the search term used for this study was "Economic stressors or economic stress or perceived employee productivity or employee productivity or economic crisis or perception on economic crisis". By blending the existing research on this topic, this literature review will provide insights into the impact of economic stressors on employee productivity and identify areas for future research. One hundred seventeen full-text online publications were identified, and titles and abstracts were eliminated as Figure 1.

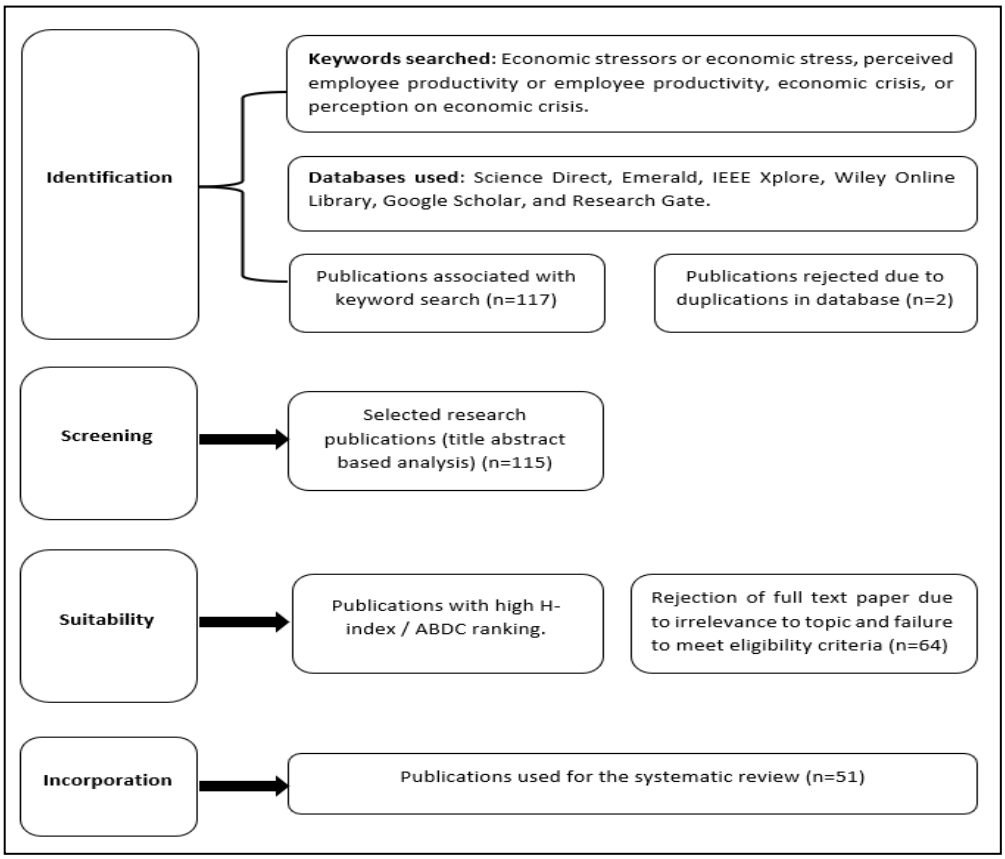

Figure 1: One Hundred Seventeen Full-text Online Publications

Source: Authors' compilation

Underemployment

Underemployment is when individuals are employed but work fewer or fewer desirable hours than they would prefer (Lee et al., 2021). Rapid economic transformations have increasingly challenged employment stability, including rising income inequality, technological advancements, and globalization (Brynjolfsson & McAfee, 2014; International Labor Organization [ILO], 2017). Underemployed individuals differ from the unemployed in that

they hold jobs and earn wages, yet their employment is often insufficient or unsatisfactory (Wilkins, 2007). Economic stress is intensified for these workers due to difficulties securing full-time, well-paid, and flexible employment.

Feldman (1996) identifies five underemployment types: skill underutilization, educational mismatch, involuntary work outside one's field, wage inadequacy, and involuntary temporary or part-time employment. However, subsequent research critiques this broad classification for lacking specificity and being overly inclusive. A more focused definition conceptualizes underemployment as the perception that one's job fails to fully utilize one's skills, experience, or education (Maynard, Joseph, & Maynard, 2006). Despite these definitions, there remains no consensus on quantifying underemployment, complicating efforts to measure its prevalence precisely.

In Sri Lanka's current economic crisis, employees face heightened economic stress, with underemployment emerging as a significant concern. Krause, Dismuke-Greer, and Reed (2022) describe underemployment as a mismatch between the intensity of work performed and the intensity of work desired. This mismatch can negatively impact productivity, as Borgen, Amundson, and Harder (1988) argue that underemployed individuals often perceive their work as demotivating and meaningless, resulting in poor performance. However, Edwards and Shipp (2007) caution that underemployment may positively affect employee productivity under certain conditions. This is observable in Sri Lanka, where individuals laid off due to the economic crisis sought part-time jobs or became entrepreneurs, often dedicating extra hours to supplement their income. Such resilience is exemplified by innovations like the Rhoda electric bike, reflecting entrepreneurial spirit in response to adversity.

Job Insecurity

Job insecurity is the fear or anxiety arising from an individual's perceived likelihood of losing their job, often triggered by unexpected changes in their employment situation (Soelton, Amaelia, & Prasetyo, 2020). This perception typically emerges from a gap between the expected and actual level of job security, particularly affecting those who highly value maintaining their employment. Empirical research links job insecurity to adverse workplace outcomes, including negative attitudes, reduced well-being, counterproductive work behaviours (CWB), increased turnover intentions, and diminished job performance (Lu et al., 2022). These effects are exacerbated under economic stressors, which further impair employees' psychological health and their relationship with work.

Sverke et al. (2002) contextualize job insecurity within macroeconomic pressures, noting that heightened market competition and unstable economic environments often lead to downsizing and organizational restructuring, intensifying employees' fears of job loss and

ISBN: 978-624-5553-76-1

uncertainty about future employment prospects. Lu et al. (2022) conceptualize job insecurity as a persistent, daily experience of uncertainty coupled with diminished self-determination, framing it as a hindrance stressor that impedes effective job functioning. Consequently, employees may resort to withdrawal coping mechanisms such as turnover intention. In times of economic crisis, when mental health resources are already strained, the negative impact of job insecurity on employee well-being becomes even more critical. Jung et al. (2021) demonstrate that job insecurity can produce toxic effects on both mental and physical health, ultimately impairing organizational functioning through lowered employee productivity.

Supporting this, De Angelis et al. (2021) found that job insecurity significantly reduces employees' ability to perform tasks successfully, highlighting its detrimental effect on productivity. However, emerging research suggests that proactive coping strategies can mitigate these negative consequences. Langerak, Koen, and van Hooft (2022) argue that employees who engage in proactive behaviours, such as maintaining professional networks to identify potential job opportunities and seeking clear communication from supervisors regarding contract renewals, can better manage perceived job insecurity. In the Sri Lankan context, where economic instability heightens job insecurity, fostering coping mechanisms could preserve employee productivity and well-being.

Job Insecurity

Perceived employee productivity refers to an individual's self-assessment of their ability to perform job duties efficiently and effectively (Inmoment, 2018). It is widely recognized as a core component of organizational success, influencing revenue generation, service delivery, and competitiveness. Beaton et al. (2015) define productivity in more tangible terms as the output per unit of input, such as production output per labour hour. In contrast, Almaamari (2021) adopts a more relational perspective, emphasizing the collaborative effort between employees and managers to enhance individual performance and noting that perceived productivity fosters greater engagement. Rehman et al. (2018) reinforce this input-output framework, highlighting that productivity involves comparing various organizational inputs, such as labour, machinery, and materials, against outputs like service quality or goods produced per industry standards.

Synthesizing these perspectives, it is evident that measurable outputs, psychological perceptions, and collaborative environments shape employee productivity. As Hanaysha (2016) notes, productivity directly impacts an organization's profitability, making it a central focus in performance management strategies. Within the Sri Lankan context—characterized by economic instability, rising underemployment, and job insecurity—employee perceptions of productivity are particularly vulnerable. Poor productivity under such conditions can have cascading effects on national economic recovery. This study uses a five-item scale developed

by Van der Vegt et al. (2000) to assess employee productivity.

Sri Lanka's ongoing economic crisis has significantly heightened economic stress among employees, primarily through underemployment and job insecurity. This study explores how such stressors have impacted employee productivity, offering critical insights within the unique socio-economic and cultural context of Sri Lanka. The study addresses two key research questions to guide this investigation: RQ1. What is the impact of underemployment on perceived employee productivity? and RQ2. What is the impact of job insecurity on perceived employee productivity?

Methodology

Methodological Aspects

Data collection

In this research, employees fall under two categories: public and private sector employees. Therefore, the researcher has decided to choose the convenience sampling method. This is because the massive population divides employees into two public and private groups. The population data was collected from the official website and Facebook page of the Department of Census and Statistics, Sri Lanka. According to the Sri Lanka Labor Force Survey (2021), 4,645,572 persons (57.3% of the employed population in Sri Lanka) have been categorized as "employees for the year 2021 (most updated). Of this amount, 1,235,164 work in the public sector, whereas the remaining 3,410,408 work in the private sector. Since the researcher is dealing with a considerable population, it is vital to narrow down to a convenient sample size that helps with the research. Therefore, the Krejcie and Morgan Sampling Method, shown below, was used to determine the sample size.

Every variable from the conceptual framework was included in the questionnaire. Each variable has a minimum of one question and a maximum of five questions. The method of designing the questionnaire is explained below.

Questionnaire Design

The researcher collected both primary and secondary data during this research. Primary data was collected via a questionnaire survey of open and closed-ended questions to test the established hypothesis based on operationalization. A five-point Likert scale was used to get the responses, and the responses will be recorded using a five-point Likert scale ranging from "Strongly Disagree" (=1) to "Strongly Agree" (=5). A straightforward and less complex questionnaire was designed to capture data from respondents from both the public and private sectors, and it will take roughly seven minutes for the respondents to complete this survey. This questionnaire had two parts (A and B). The first part (A) asked about the respondents' demographic information. The purpose of part A was to acquire the background

ISBN: 978-624-5553-76-1

information about the respondent. The demographic information is shown below in Table 1.

Table 1: Descriptive Statistics for Demographic Information

Demographics	Category	Percentage (%)
Gender	Male	55.3%
	Female	44.7%
		Total 100.0
Age	18 – 24 years	18.4%
	25 – 30 years	39.5%
	31 – 40 years	18.4%
	40 and above	23.7%
		Total 100.0
Employment Sector	Public Sector	42.1%
	Private Sector	57.9%
		Total 100.0
Designation	Executive	57.9%
	Senior Executive	42.1%
		Total 100.0

Source: Authors' compilation

Further, the second part (B) asked about the impact of the perception on employee productivity in the face of economic stressors. The questions and options under each variable were derived from past research papers. In this study, a five-item scale is used to measure employee productivity, which was established by Van der Vegt et al. (2000), and all five items were altered to match the needs of the study. Items altered include "I have a high work performance" to "I have a high work performance during economic stress". Secondly, a book published by Hussmanns, Mehran, and Varmā (1990) was used to derive and update questions for underemployment. Thirdly, job insecurity was measured in this study using the Job Insecurity Scale (JIS) initially developed by De Witte (2005), and certain modifications were made to items to match the study's requirements. Customised items include "Chances are, I will soon lose my job" to "Chances are, I will soon lose my job during this challenging time". The questionnaire was pre-tested among 30 respondents prior to the final field testing.

Research Framework and Hypothesis

Two hypotheses are derived based on past findings, and a comprehensive model of the sources of economic stressors and perceived employee productivity is developed. Figure 2 represents the conceptual framework model, which is organized with two hypotheses with independent and dependent variables.

ISBN: 978-624-5553-76-1

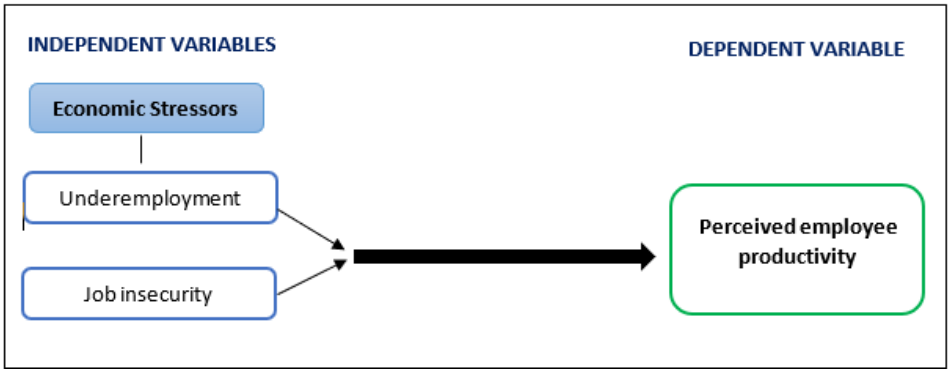

Figure 2: The Research Framework of The Study

Source: Authors' compilation

The independent variable comprises the economic stressors of underemployment and job insecurity, whereas the dependent variable comprises the perceived employee productivity.

The main hypotheses are summarized as follows:

(H1): Underemployment has a significant negative impact on perceived employee productivity.

(H2): Job insecurity has a significant negative impact on perceived employee productivity.

Variable Analysis and Validity

The conceptual framework contains two sub-sections of economic stressors: underemployment and job insecurity. Cronbach's Alpha was calculated in the study to verify the applicability of those two sub-sections and the internal consistency. The most popular method of determining the questionnaire's reliability is the internal consistency. The researcher utilized Smart PLS version 3.2.9 to calculate Cronbach's Alpha. The internal consistency can take any value from 0 to 1, and when the Cronbach value increases, it indicates that the internal consistency also increases.

Structural Equation Model

This research uses Structural equation modelling (SEM) as the analytical tool, and it is considered a statistical analysis technique used to investigate the relationship between variables (in this study, it is used to investigate the impact of perceived employee productivity in the face of economic stressors). It allows for examining direct and indirect relationships between variables and can be used to test theoretical models and hypotheses. Overall, SEM can be considered a powerful tool for modelling complex relationships and testing hypotheses that involve multiple variables.

The structural model shown in Figure 3 below explains and describes how different variables interact with one another and how they contribute to the overall system functioning. The primary model shown below was used to test the two objectives of this research. The

researcher used the bootstrapping technique to test the primary structural model of the survey to detect the impact among the variables of economic stressors and perceived employee productivity.

Results and Discussion

This study has two independent variables: underemployment and job insecurity, and the dependent variable is the perceived employee productivity. It is vital to calculate the reliability for internal consistency. According to Heale and Twycross (2015), the consistency of a measure is known as reliability. The analysis is purely based on the collected primary data, and Cronbach's Alpha is used to measure the internal consistency. Consequently, a higher level of accuracy is indicated by a Cronbach Alpha value of 0.7 and above, and anything below that is regarded as unacceptable. Table 2 represents the reliability statistics of the respondents. This study tested Cronbach's Alpha for three variables, as shown below.

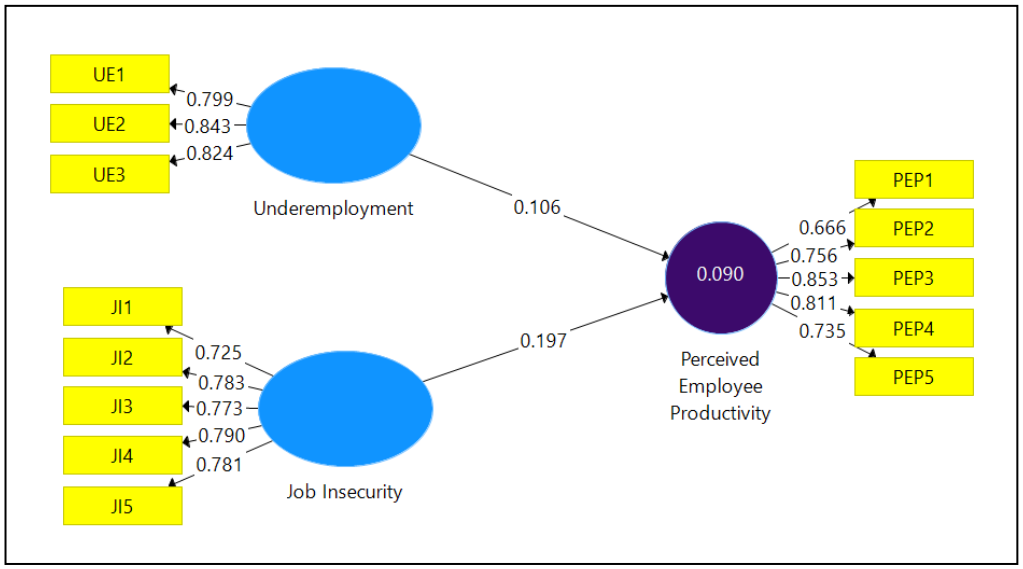

Figure 3: Primary Model

Source: Authors' compilation

Table 2: Cronbach's Alpha Value – All Variables

Variable	Cronbach's Alpha	rho_A	Composite Reliability
Underemployment	0.762	0.773	0.862
Job insecurity	0.830	0.837	0.880
Perceived employee productivity	0.827	0.854	0.876

Source: Authors' compilation

For all dimensions in this study, the Cronbach Alpha value was as follows: Underemployment (a = 0.762), Job insecurity (a = 0.830), and Perceived Employee Productivity (a = 0.827), signifying a high level of internal dependability. According to the above results of the overall questionnaire designed to measure the impact of perceived employee productivity in the face of economic stressors, each variable obtained a Cronbach's Alpha above 0.7, demonstrating an acceptable to good level of internal consistency and identical characteristics between the questions. This also shows that the questions used in the questionnaire to measure economic stressors are in a satisfactory range, and Cronbach's Alpha reliability would not be less than the acceptable value of 0.7 if any items were removed from the list. Overall, the researcher can accomplish that by producing highly accurate results using the question items in the questionnaire because it has a Cronbach's Alpha value greater than 0.7.

Next, it is important to measure the path coefficients of the study. Statistical measures used in structural equation modelling (SEM) to indicate the strength and direction of the association between variables are known as path coefficients. Once the researcher ran bootstrapping in Smart PLS on a significance level of 0.05 and 500 sub-samples, the t-statistic, and the relationship significance between economic stressors and perceived employee productivity on the above relationship resulted, which is demonstrated in Table 3.

Table 3: Path Coefficients – All Variables

Variables	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics	P Value
Underemployment -> Perceived Employee Productivity	0.105	0.130	0.165	1.96	0.053
Job Insecurity -> Perceived Employee Productivity	0.198	0.184	0.166	2.33	0.023

Source: Authors' compilation

Underemployment on Perceived Employee Productivity

It suggests a weak to moderate relationship between underemployment and perceived employee productivity, having a beta value of 0.105. Having 0.632 for the t-stat suggests that the estimated coefficient is 0.632 standard errors away from zero. The p-values determine the statistical significance of the estimated coefficient. In this scenario, the p-value of 0.527 indicates that the relationship between underemployment and perceived employee productivity is not statistically significant.

Job Insecurity on Perceived Employee Productivity

The beta value of 0.198 indicates a weak and statistically non-significant relationship between

ISBN: 978-624-5553-76-1

job insecurity and perceived employee productivity. However, this relationship is weaker than the above beta value scores. The t-statistic value of 1.195 signifies that the beta coefficient is not statistically significant. This means that it is likely that the observed relationship between job insecurity and perceived employee productivity is due to chance. The p-value represents the probability of obtaining a t-statistic as extreme as the one observed, assuming no true relationship exists between the independent and dependent variables. Typically, a p-value less than 0.05 is considered statistically significant. In this case, the p-value of 0.233 is greater than 0.05. This supports the idea that the observed relationship between the variables of job insecurity and perceived employee productivity may not be statistically significant. Overall, the analysis reinforces that this relationship is statistically non-significant and should be interpreted cautiously since there is a weak relationship between job insecurity and perceived employee productivity.

After conducting the analysis, the researcher found that although the path coefficients show positive associations, the statistical significance was limited; hence, the support for Hypotheses H1 and H2 should be interpreted cautiously. This means the two independent variables of underemployment and job insecurity significantly negatively impact perceived employee productivity. Research conducted by Bashshur, Hernández, and Peiró (2011) suggests that for the underemployed in time, the output implies that part-time, temporary, and dependent individuals' productivity declines compared to permanent full-time employees. However, research on the procedures to explain these effects is still unexplored. Next, past research suggests that according to Sverke et al. (2019), job insecurity is associated with negative productivity outcomes. The social exchange theory suggests a significant relationship exists between job insecurity and employee productivity as the threat of potential job loss wears down the work identity. Similarly, suppose employees feel that an organization has violated the psychological contract due to perceptions of job insecurity. In that case, they will be more likely to suffer from emotional exhaustion, making them unlikely to exert themselves for the organization. Therefore, the results of H1 and H2 can be confidently expressed when looking into the conclusions of past research.

Conclusion

The research tested the impact of perceived employee productivity in the face of economic stressors in Sri Lanka. A complete analysis of the literature, data for the survey, and statistical analysis using Smart PLS suggests that underemployment and job insecurity may be components of economic stressors that influence perceived employee productivity. However, as some statistical relationships were weak or non-significant, these findings should be interpreted cautiously. The researcher believes that certain managerial and organizational factors—such as employee engagement, a safe work environment, organizational support, and

job satisfaction—could help mitigate the effects of underemployment and job insecurity over time. Organizations in Sri Lanka can potentially support employees in maintaining productivity during economic difficulty by addressing the underlying causes of stressors and fostering a favourable work climate. While the research contributes theoretically to expanding the literature on economic stressors and perceived productivity, it also highlights the need for further research to explore the nuanced relationship between employees' perceptions of economic crises and their productivity. Additionally, future studies may help identify other moderating or mediating variables that shape this relationship. In conclusion, although economic stressors appear to influence employees in Sri Lanka, more rigorous investigation is needed to fully understand these dynamics and inform efforts to promote employee well-being and sustained productivity.

Practical Implications

The findings from this study will provide policymakers, organisations, and the government with new alternative solutions for employees who are economically stressed. When addressing underemployment, Sri Lankan organizations should focus on lowering underemployment by implementing strategies such as job rotation possibilities, providing training and development programs, and executing flexible work arrangements such as work-from-home for jobs that fit this criterion. This can massively aid in ensuring that employees are effectively utilized, positively impacting their perceived productivity (Attewell & Witteveen, 2023).

Secondly, when addressing job insecurity, employers in Sri Lanka must prioritize creating a sense of job security among employees. This can be achieved by providing clear career progression paths, transparent communication regarding organizational goals, and executing fair performance evaluation systems (Langerak, Koen, and van Hooft, 2022). By enhancing job security, organizations can mitigate the negative impact of job insecurity on perceived employee productivity.

Moreover, organizations in Sri Lanka should focus a lot more on employee well-being by promoting work-life balance, providing wellness programs, and fostering a supportive work environment. Creating a healthy work-life balance, offering opportunities for relaxation, and adopting a positive organizational culture can help employees cope with economic stressors and maintain their productivity levels.

By implementing these practical implications, organizations in Sri Lanka can strive to mitigate the negative impact of underemployment and job insecurity on perceived employee productivity, ultimately fostering a more productive and engaged workforce.

Research Limitations and Future Research Directions

When conducting this research, some limitations needed to be addressed. The main limitation was that few research articles and statistical data on economic stressors in the Sri Lankan context made the research quite complex. Although the economic crisis is not something new, the term "economic stressors" was not known to many respondents. Further, the researcher distributed the questionnaire via electronic mail and social media, so convincing some employees to get their opinions and fill out the questionnaire took some time. On the other hand, confident respondents did not like to complete online surveys with honest answers, thus making the data collection using the internet and the research value more complex and vague. This research only focuses on “employees”, leaving the unemployed behind, which could be an area of future research. Finally, the participant bias could not be eliminated since this survey's results are subjective.

Considering the future research directions, some opportunities can arise from the economic crisis and stress. The concept of entrepreneurship in the face of economic crisis can significantly transform lives and a nation. Opportunities are blooming within the country even during a crisis, and research on how young entrepreneurial mindsets can positively transform Sri Lanka would be exciting to study. Hence, the research recommendations are organized here according to what is proposed in the literature review emphasizing the importance of entrepreneurship during a crisis. Therefore, the researcher wants to leave it to future researchers to tap into this area. Additionally, future research could explore the impact of specific economic stressors on productivity levels and investigate how job titles may influence productivity.

Overall, this study used a quantitative approach focused on the top companies in Colombo, Sri Lanka. In contrast, future researchers can target many other companies and conduct a qualitative or mixed-method study that will lead to an improved and in-depth study. Further, future researchers can target multiple other cities or even the entire country, enhancing the validity of the subject phenomenon. Finally, this study will be helpful for researchers, practitioners, and policymakers interested in understanding the impact of economic stressors on employee productivity and developing strategies to mitigate this impact.

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Hopes in Transit: How Economic Woes and Gender Roles Shape Youth Migration Dreams in Sri Lanka

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Abstract

In recent years, the migration of individuals in Sri Lanka has encountered a significant gap, especially among Gen Zs aged between 18 and 28 years as of 2024. This study seeks to comprehensively examine the psychological factors caused by economic uncertainty that determine the migration intentions of young Sri Lankans. While prior research often focused on broad socio-economic and political drivers, this study examines the specific psychological effects of inflation, unemployment, and financial insecurity. This study used a qualitative technique, conducting 26 one-on-one, semi-structured interviews with Sri Lankan Gen Z participants selected through convenience sampling. While female participants often emphasised financial independence, dissatisfaction with economic struggles, and freedom from societal constraints, men tended to highlight economic aspirations, financial independence and career growth. Both males and females experience stress, dissatisfaction, and insecurity in their local employment environments. This research provides original insights by integrating psychological influences on migration decisions specific to the Gen Z cohort in Sri Lanka. The implications of the study are significant for policymakers, educational institutions, migration agencies, etc., who aim to understand and respond to the motivations of Gen Z migration. By identifying these psychosocial drivers, targeted strategies can be developed to retain talented Gen Z and address the root causes of migration intentions in the country.

Keywords: *Generation Z, Economic Challenges, Gender, Migration Intention, Sri Lanka*

Introduction

Migration is a popular concept in the past and present, driven by diverse influences including economic prospects, political circumstances, and evolving social conditions (Braziel, 2003). In the aftermath of the COVID-19 pandemic and the economic crisis in Sri Lanka, youth migration

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ISBN: 978-624-5553-76-1

experienced a significant increase**.** Generation Z is defined as individuals born between 1996 and 2012 (Debczak, 2019; Terrell, 2019). Although studies have explored factors affecting the migration intention of individuals with a general scope, there is a notable lack of research in Sri Lanka specifically examining how psychological factors influence the migration intentions of Generation Z to other nations (Joseph & Dissanayake, 2022). Many of Gen Z believe that their personal and professional aspirations cannot be fulfilled within the current economic environment. The reason for those thinking patterns in Gen Z is Sri Lanka's economic and political instability. About 70% of Gen Z people have an intention and desire to migrate. Understanding the psychological factors behind this intention is critical. Although studies have explored factors affecting the migration intention of individuals with a general scope (Joseph & Dissanayake, 2022), there is a notable lack of research in Sri Lanka specifically examining how psychological factors influence the migration intentions of Gen Z to other countries. Additionally, a gender-based study was conducted to investigate potential differences between male and female Gen Z individuals in Sri Lanka regarding the psychological factors influencing their migration intentions. In the past, in many cases, only males tried to migrate. However, currently, there is a trend of migration among women as well. Both parties migrate to get jobs, improve their standard of living, and improve their future (Pingama, 2016). Since 2021, there has been a noticeable increase in the number of female departures, which may be related to the effects of the economic crisis (Nanayakkara, 2023).

The significance of this study lies in several key areas. Firstly, it provides a deeper understanding of the psychological factors influencing the migration intentions of Gen Z in Sri Lanka. Secondly, by focusing on the specific context of Sri Lanka, the study addresses a critical literature gap and contributes new perspectives to migration research. Thirdly, it examines gender differences in migration intentions, offering a more detailed understanding of how psychological factors vary between male and female Gen Zs. Fourthly, the findings can inform policymaking by offering evidence-based insights to help policymakers develop strategies for retaining young talent in the country. Finally, the research will be valuable for educational institutions and employers who seek to better understand the motivations of young people considering migration, enabling them to create environments that encourage the retention of skilled Gen Z individuals.

With the post-pandemic economic crisis, the migration pattern of Gen Z has significantly increased (Ekanayake & Amirthalingam, 2023). This marks a significant change in the country's youth dynamics, with many young people considering their future abroad. (Jayawardena, 2020). While existing studies explored migration general perspectives, little attention has been given to the psychological factors of migration intentions, especially among Generation Z in Sri Lanka (Joseph & Dissanayake, 2022). Especially, the decision to migrate is shaped not only by economic struggles but also by deeply rooted gender norms and

expectations. Research suggests that the effects of migration may differ by gender, depending on their roles, responsibilities, and aspirations.. However, there is a lack of studies that investigate how these gender-specific expectations interact with economic stresses to influence youth migration intentions in the local context (Jayawardena, 2020; Nanayakkara, 2023; Wijesinghe et al., 2023). This study seeks to explore two interconnected dimensions that shape the migration aspirations of Sri Lanka's Gen Z. This study seeks to address the said gap, guided by two research questions; *RQ 01: How do economic challenges influence the migration aspirations of undergraduate Generation Zs in Sri Lanka?* and *RQ 02: In what ways do gender roles shape the migration intentions of undergraduate Generation Zs in Sri Lanka?*

Literature Review

Migration and Its Economic Influences

Migration, a phenomenon as old as humanity itself, is often driven by complex and multifaceted motivations that evolve over time (Koser, 2016). Migration is the term used to describe the movement of people from one place to another, either temporarily or permanently. For those affected for various reasons (Zanker, 2008). Although economic and political factors have traditionally influenced migration, psychological factors are increasingly being considered in individuals' migration decisions. Psychological factors are those that influence an individual's behaviour and decisions based on emotional and personal needs (Maslow, 1943). Psychological factors include the desire to improve their well-being, achieve self-fulfilment, reduce stress, and play a crucial role in shaping migration intentions, particularly for younger generations like Gen Z. (Castelli, 2018). Migration is not only a response to external pressures but also to gain independence, emotional well-being, reduce financial struggles, and career satisfaction (Pepper, 2023). A significant body of literature highlights the psychological stress and migration decisions.

Generation Z's Migration Intentions

Generation Z, born between 1996 and 2012, stands apart from previous generations—Millennials (1981-1995), Generation X (1965-1980), and Baby Boomers (1946-1964) in several key ways (Dimock, 2019). As defined by Schwieger & Ladwig (2018), Gen Z was born from 1996 onwards. Entirely in the digital age, this group represents the first generation to grow up. Unlike Millennials, Gen Z has grown up with social media and mobile devices, enjoying 24/7 connectivity from a young age (Jayatissa, 2023). Gen Z is worried about their employment prospects and the state of the economy. In developing countries like Sri Lanka, where economic instability exists, Gen Z is increasingly viewing migration as a pathway to achieving personal and professional goals (Thulin & Vilhelmson, 2016). Young Sri Lankans perceive international opportunities as offering greater career growth, financial stability, and quality of life. Globally,

Gen Zers ranked access to good education, employment opportunity, and economic stability as the top public policy goals. Gen Z has a vision for the future with a good understanding of everything they do. When making important life decisions, take your time and think carefully. Compared to other generations, this generation has a long-term vision and expectations for their future career development (Jayatissa, 2023).

Gendered Perspectives in Migration

According to the Human Rights Council (2019), globally, migration to foreign countries based on gender has become a very important factor in the world today. Compared to previous years, these days women are motivated to migrate alone and make their lives better for themselves, rather than migrating with a family (Human Rights Council, 2019). Gender dynamics influence migratory intentions and decision-making. When it comes to migration, men and women frequently have different experiences and face distinct problems. Women's migration decisions are highly influenced by issues such as safety, access to resources, and family responsibilities. Men, on the other hand, may be encouraged to relocate in search of economic opportunities or to fill traditional provider roles. Understanding these gender-specific experiences is critical for developing policies and interventions to meet the different needs of migrants (Human Rights Council, 2019). Men's and women's thoughts differ in various ways, and their migration intentions can also vary significantly. Sri Lanka is a country where gender roles are still quite specific (Roos, 2018). These gendered motivations emphasise the need for a comprehensive understanding of how psychological factors shape migration intentions (Kunnumbrath & Kodali, 2023).

Methods

This qualitative study was designed to explore the migration intentions of Generation Z in Sri Lanka through the lens of psychological and gender-specific factors. A qualitative approach was considered appropriate as it allows for a deeper understanding of subjective experiences and the complexities underlying migration decisions. This exploratory study focused on uncovering motivations that are not easily captured through quantitative methods, such as personal aspirations, cultural influences, and societal pressures. The decision to employ semi-structured interviews was driven by the need for flexibility in capturing diverse perspectives while maintaining a consistent framework for comparison. The study uses convenience sampling to select participants from Generation Z in Sri Lanka. The final sample of 26 participants was sufficient to reach data saturation, as shown in Table 02, ensuring a rich and diverse understanding of the migration intentions of Gen Z in Sri Lanka. This method is chosen due to the accessibility of participants. Considering the total population distribution, the female population is higher than the male population. Based on the Department of Census and

Statistics, selected male and female participants are shown in Table 1. Convenience sampling, while limited in its ability to generalise findings, was chosen due to logistical constraints and the exploratory nature of the study. Participants were selected through networks in educational institutions, workplaces, and community groups, ensuring a diverse representation of gender, educational backgrounds, and geographical locations. Efforts were made to include participants from all provinces in Sri Lanka, allowing for insights into regional differences within Sri Lanka.

Data were collected through in-depth, semi-structured interviews conducted in person and via online platforms, depending on participant availability and geographical constraints. Each interview lasted approximately 45 to 60 minutes, allowing sufficient time to explore the participants' motivations and perspectives in depth. The interview guide included open-ended questions tailored to uncover psychological and gender-specific factors influencing migration intentions. Examples of questions included: "What factors make you consider migration as an option for your future?", "How do you perceive the role of family and cultural expectations in shaping your decision to migrate?", "Are there specific challenges you face as a [male/female] that influence your thoughts on migration?", "How do social media and global trends shape your view of opportunities abroad?", "What aspects of your personal or professional life do you feel could improve if you were to migrate?", "How do you think your mental health and emotional well-being are affected by the thought of staying versus migrating?", "Can you describe any societal pressures or norms that you feel influence your decision to migrate or stay?" etc. Follow-up questions and probes were used to encourage participants to elaborate on their responses, ensuring a comprehensive understanding of their experiences and perspectives.

Table 01: Total and Generation Z's Population in Sri Lanka

Approximately Population		%	Approximate Gen Z Population		%
Male	10,611,000	48.4	Male	3,478,000	15.9
Female	11,305,000	51.6	Female	3,488,000	16
Total	21,916,000	100	Total	6,966,000	31.9

Source: Synthesised from the Department of Census and Statistics

Table 02: Participant's Profile

Participant No.	Profession	Gender	Age	Year	Province
001	Government University Student	Female	24	1999	Western
002	Private University Student	Male	20	2004	Western
003	Private University Student	Male	23	2001	Western
004	Private University Student and Employee	Female	26	1998	Western
005	Employee	Male	28	1996	Western
006	Employee	Male	24	2000	Western

007	Government University Student and Employee	Female	25	1999	Northwestern
008	Employee	Female	28	1996	Southern
009	Student	Female	18	2006	Western
010	Private University Student and Government Teacher	Female	26	1998	Western
011	Employee	Female	28	1996	Southern
012	Private University Student	Female	23	2001	Eastern
013	Private University Student and Employee	Female	24	2000	North Central
014	Private University Student and Employee	Male	24	2000	North Central
015	Private University Student	Male	22	2002	Northwestern
016	Private University Student and Entrepreneur	Male	23	2001	Sabaragamuwa
017	Private University Student & Employee	Male	24	2000	Uva
018	Employee	Female	28	1996	Central
019	Government University Student and Employee	Female	24	2000	Central
020	Employee	Male	26	1998	Southern
021	Private University Student	Female	24	2000	Uva
022	Employee	Female	28	1996	Northern
023	Employee	Female	24	1996	Northern
024	Government University Student and Employee	Female	28	1996	Sabaragamuwa
025	Private University Student and Employee	Female	20	2004	Northwestern
026	Private University Student	Male	24	2000	Eastern

Source: Authors developed based on the collected data

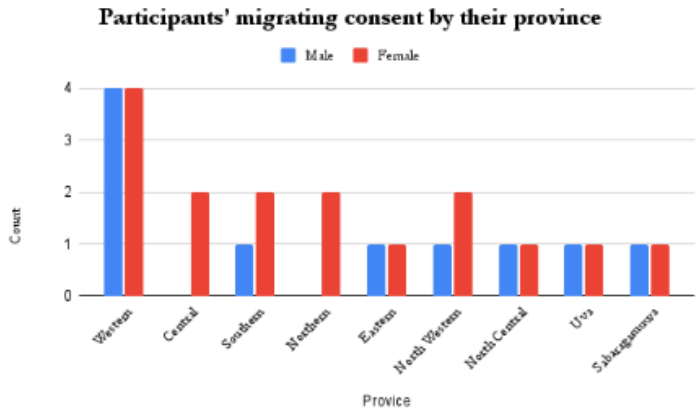

Figure 01: The Authors developed based on the collected data

Data Analysis

The data collected from the 26 interviews were analysed using thematic analysis, a widely recognised method for identifying and interpreting patterns within qualitative data (Jowsey et

al., 2021). This approach was chosen for its flexibility and its ability to provide a detailed and comprehensive understanding of the participants' perspectives. The analysis process followed six key phases to ensure thoroughness and transparency. Familiarisation with the data, codes generated from the data, and the coded data was organised into broader themes. A review of these themes ensured they accurately represented the data. Once the finalised themes were defined and named, the analysis involved integrating the themes into the report. For this study, themes such as economic instability, aspirations for personal and professional growth, and family dynamics were identified. Included selecting illustrative quotes from the participants to support the findings and provide a deep understanding of the themes. These quotes were chosen to reflect the diversity of perspectives within the data, ensuring that the analysis was grounded in the participants' voices.

Results and Discussion

Aligned with the primary objectives of this study, the results are organised under four main themes identified through thematic analysis: (1) Mental Stress from Economic Instability, (2) Desire for Personal and Professional Fulfilment, and (3) Psychological Impact of Family Dynamics and Expectations. Each theme provides insights into the psychological factors of migration intentions among undergraduate Generation Z in Sri Lanka, addressing *RQ 01* and *RQ 02:* enriching the interpretation of results.

Mental Stress from Economic Instability

Economic instability emerged as a critical psychological factor influencing migration intentions among Sri Lanka's Generation Z. Many participants described the pervasive job scarcity, low salary, and high cost of living as significant factors of stress, leading them to view migration as a potential solution to financial hardship. One participant, a recent university graduate, expressed his frustration: *"It is hard to find a job that pays enough to cover even the basic expenses here. I feel like I am stuck, and the only way out might be to go abroad where I can earn a decent income"* (Participant no 004). This sentiment reflects the widespread feeling among youth that local opportunities are insufficient to meet their financial and career aspirations. A female participant reflecting on the tension between emotional sacrifice and economic ambition, *"I think it affects me because my family members are not with me when I go to another country, but I am trying to manage it somehow because I want to make my future successful."* (participant 014). Regarding economic and political factors, financial insecurity and political uncertainty are regularly seen as significant factors by both genders. A young professional shared, *"My parents worked hard to put me through school. Now, they are relying on me, but with my current salary, it is impossible to support them fully. I feel like I am failing them"* (Participant no 007). This aligns with traditional gender expectations in Sri

Lankan society, where men often feel responsible for supporting their families financially. Female participants, while also experiencing economic pressures, tended to focus on the limitations imposed by low salary and limited career growth within the country (Jayakody et al., 2024). One participant working in the fashion industry noted, *"I work so hard, but at the end of the month, I have almost nothing left after paying bills. It is discouraging, and it makes me wonder if I will ever be able to achieve my dreams here"* (Participant no 005). For many young women, economic instability not only impacts their immediate well-being but also threatens their aspirations for personal and professional fulfilment. The findings suggest that economic instability is a profoundly influential factor in shaping the migration intentions of Sri Lankan youth. Similarly, participant 021 remarked, "*We need money to do a professional course to move forward, and with the current situation, it is difficult for us to balance it.*". These statements support the neoclassical economic theory proposed by Harris and Todaro (1970) of migration, which views migration as a rational decision made by individuals seeking to maximise income and improve living standards (Khan, 2007). Financial insecurity often drives individuals toward migration. This study reveals that Generation Z's migration intentions are significantly affected by the lack of adequate financial opportunities in Sri Lanka (Castelli, 2018). The psychological impact of this economic stress appears as anxiety, feelings of entrapment, and diminished hope for the future, leading many to perceive migration as their only viable solution to escape these challenges (Castelli, 2018). The gendered dimensions of economic stress also reflect broader societal expectations. Male participants expressed a pronounced sense of obligation to financially support their families, aligning with traditional norms that place men in the role of providers. Such societal expectations intensify the pressure on young men to seek financial success (Kunnumbrath & Kodali, 2023). Furthermore, the psychological toll of constant economic stress and inflation highlights the urgency of addressing economic instability for retaining young talent. Participants' references to a lack of financial security and increasing living costs demonstrate the direct link between economic conditions and mental health. The stress associated with economic challenges reflects (Witte, 2024) the view that young people today, especially Generation Z, prioritise financial stability and mental well-being, influencing their life choices, including migration. This study's findings reinforce the need for targeted policies that address both economic and psychological well-being to reduce the migration intentions of young Sri Lankans.

Desire for Personal and Professional Fulfilment

Migration was also seen as a path to self-actualisation and career fulfilment, directly addressing the aspirations of Generation Z for personal and professional growth that they feel is unachievable in Sri Lanka. Many participants expressed that they were drawn to the idea of migrating to gain better job opportunities, advanced career growth, and personal development.

One female participant who aspired to work in the creative industry stated, *"There is so much more exposure and career growth abroad. Here, the options are limited, and I feel like I will never reach my full potential if I stay"* (Participant no 013). This desire for career advancement aligns with Maslow's hierarchy of needs, where self-actualisation becomes a prominent motivator once basic needs are met (Maslow, 1943). For male participants, professional fulfilment often aligned with the desire for financial independence and stability. A recent graduate noted, *"I do not just want a job, I want a career that makes me feel valued and respected. I want to make a difference, and right now, I do not see that happening if I stay here"* (Participant no 009). This aspiration reflects a broader desire among young people for meaningful work that provides both intrinsic and extrinsic rewards, as highlighted by Pepper (2023), who suggests that Generation Z values jobs that align with their personal goals and societal contributions. Female participants emphasised the limitations they face in achieving professional fulfilment due to societal expectations and workplace constraints. One participant shared, *"As a woman, I feel like there are so many expectations that hold me back. Abroad, I see women thriving in careers without the same limitations. That is what I want for myself"* (Participant no 011). This sentiment is consistent with research by Palattiyil et al. (2022), which highlights that migration can offer young women greater autonomy and freedom from restrictive social norms, allowing them to redefine their roles and pursue professional aspirations without limitations. Similarly, participant 021 remarked, "*If we can make Sri Lanka's degrees more valuable and bring Sri Lanka to a situation where children from other countries can be brought to Sri Lanka, I think it would be perfect for tourism*". The limited scope of academic freedom, outdated programs, and lack of alignment with global standards were commonly cited as reasons for preferring education abroad. The findings highlight the importance of career opportunities and professional growth as drivers of migration intentions among Sri Lankan youth. The participants' desire for personal fulfilment reflects broader trends among Generation Z, who prioritise self-actualisation and meaningful careers. The constraints they face, especially women limited by societal expectations, reflect the push-pull theory of migration, where inadequate domestic opportunities push them to seek better prospects abroad (Lee, 1966).

Psychological Impact of Family Dynamics and Expectations

Psychological factors of mental well-being and overall life satisfaction have become unique determinants of migration to other countries for Generation Z (Jayakody et al., 2025). Family dynamics were both a supportive and restrictive influence. Family encouragement can positively reinforce migration intentions among youth. For example, one male participant said, *"I want to migrate to earn a good income and take care of my family,"* showing family expectations as a reinforcing factor (Participant no 003). For female participants, family

expectations were often more complex. One participant shared, *"My parents are okay with me migrating, but only after I am married because they worry about my safety"* (Participant no 001). This aligns with (Gillespie et al., 2022), who found that family-based gender expectations can create additional psychological stress for young women considering migration. This gender-based dynamic highlights the unique societal expectations placed on young women, who may face conditional support based on marital or safety concerns. In some cases, the pressure to fulfil family expectations acted as a deterrent to migration. *"I feel guilty about wanting to leave. My family relies on me, and leaving would make me feel like I am abandoning them,"* noted one male participant (Participant no 007). The feeling of responsibility toward family reflects broader cultural values in Sri Lankan society, where familial obligations play a central role in decision-making. Similarly, participant 020 said, "*I sometimes feel stuck here, like there are too many limitations. Moving abroad feels like a way to break free.*" This demonstrates how Sri Lankan cultural standards surrounding gender roles cause emotional distress and encourage people to think about migrating to get away from these restrictions. Participants also showed a strong emotional attachment to the idea of success abroad. The psychological impact of family dynamics and expectations plays a crucial role in shaping migration intentions, especially in the context of Sri Lankan society. This is relevant to the Push-Pull theory of migration (Lee, 1966), as family support can act as a push factor for men who are expected to fulfil their roles as providers, while gender expectations create additional psychological stress and barriers, especially for women. Furthermore, respondents show high levels of perceived behavioural control, particularly confidence in their adaptability and independence, like participant 025, who said, "*Many of my friends and relatives have migrated, and they always share their experiences. Seeing their success motivates me to do the same*". Maslow's hierarchy of needs also resonates here (Maslow, 1943), as family expectations often influence the pursuit of self-actualisation, especially for young women, who feel constrained by traditional roles. By fostering community programs that engage both young people and their families, the Sri Lankan government can help bridge the gap between aspirations and cultural expectations, ultimately supporting informed migration decisions. The findings indicate that family dynamics exert a significant influence on migration intentions, with gender-specific expectations shaping the experiences of young men and women differently. The conditional support often experienced by young women highlights societal concerns around safety and gender norms, which can act as both a motivator and a barrier to migration. This aligns with Gillespie et al. (2022) 's findings that familial expectations can create complex psychological barriers, especially for young women from traditional societies. To address these issues, community programs that engage families and promote understanding of young people's aspirations could be beneficial. Such programs could provide families with insights into the potential benefits of migration, while also emphasising the

opportunities available locally, helping to alleviate the pressures on young people considering migration.

Conclusion

This study investigated how economic challenges and gender-based expectations shape the migration intentions of Generation Z in Sri Lanka. In addressing the first research question, the findings revealed that rising inflation, limited job opportunities, and financial instability are key psychological stressors compelling young individuals, particularly males, to consider migration as a means of securing financial stability and fulfilling traditional provider roles. In response to the second research question, the study uncovered that gender roles significantly influence migration decisions, with female participants often viewing migration as a pathway to personal fulfilment, career advancement, and independence from societal constraints. Through thematic analysis of semi-structured interviews with a diverse set of participants, this research has highlighted the profoundly gendered nature of economic stress and its influence on youth migration intentions. Economic instabilities drove male participants to gain career opportunities, while female participants were motivated by a desire to overcome culturally imposed limitations and pursue professional growth abroad. These insights point to the urgent need for gender-sensitive economic reforms and support structures that can retain young talent within the country. By linking psychological distress with economic and gendered realities, the study contributes a novel understanding of the migration intentions of Generation Z in Sri Lanka. It not only fills a gap in migration research but also informs policymakers and educators about the socio-emotional and structural factors that must be addressed to reduce the brain drain and offer viable local opportunities to young Sri Lankans.

Practical Implications

The study addresses the critical research problem of understanding the migration intentions of Gen Z in Sri Lanka, especially in the post-pandemic economic challenges. Given the trend of increasing Gen Z migration, this research is important for understanding the psychological factors that guide these decisions. This research contributes to the existing literature by examining insufficiently explored areas of Gen Z migration in developing countries, like Sri Lanka. It provides innovative viewpoints into the gender-specific intentions and motivations among Gen Z by highlighting the gaps in migration intentions between Gen Z males and females. This study will find broader societal implications, as they can inform policies directed at holding onto skilled workers in Sri Lanka, thus supporting social stability and long-term economic growth. The intended beneficiaries of this study are educational institutions, policymakers, migration agencies, and employers. Educational institutions can develop study plans that align with the desires and demands of Gen Z, thereby reducing the benefits of

migration by creating more opportunities in Sri Lanka. Policymakers will be able to implement comprehensive and equitable policies utilising this study. Such as Education and skill development policies, Employment and economic policies, Migration and retention policies, and Social and well-being policies. Employers can get better ideas to motivate Gen Z skills, allowing them to develop retention plans that include professional development, flexible working schedules, and mental health support. Finally, this study will provide valuable details for future researchers to gain some ideas about migration intentions among Gen Zs. Providing comprehensive ideas will enhance the existing literature and guide upcoming researchers by exploring new aspects of migration intentions among Gen Z (aged between 18 and 28 years in 2024) in Sri Lanka.

Future Research

This research study has been conducted in all provinces, namely Western, Sabaragamuwa, Northwest, South, East, North Central and Uva. Moreover, 26 individuals were considered, specifically those from Generation Z. This study suggests the use of districts and a larger sample size for future research, as it may not be accurate for better analysis. In addition, this field of research is interesting. Therefore, researchers can conduct research related to longitudinal studies of migration intentions. This research examines the psycho factors influencing the migration intentions of Generation Z in Sri Lanka, with a particular focus on gender-based differences. Further studies are needed. Comparative studies examining migration intentions among Generation Z in Sri Lanka compared to other South Asian countries could provide a broader regional perspective. This helps identify whether unique psycho-social factors influence migration within Sri Lanka compared to its neighbouring countries.

Limitations

This study has several limitations that should be acknowledged. The study's use of convenience sampling and a small, qualitative sample size limits the generalizability of its findings, as it may not fully capture the diversity of Generation Z in Sri Lanka. Additionally, self-reported interview data could introduce biases, and the analysis did not extensively explore other influential demographic factors, such as socioeconomic background. Future research with larger, representative samples and quantitative methods could enhance and validate these findings.

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ICME 2025 "Entrepreneurial Bricolage: Steering Volatile Markets through Improvised Strategies and Innovative Thinking"
Proceedings of 14th International Conference on Management and Economics

Investigating the Causal Links between Economic Growth, Economic Uncertainty, and Unemployment: Evidence from Sri Lanka

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Abstract

Economic uncertainty has been a growing issue in the Sri Lankan economic context recently. Sri Lanka's economy faced a collapse in 2022, primarily caused by macroeconomic mismanagement and a soaring debt structure exacerbated by the COVID-19 pandemic. This paper investigates the direction of causality among economic uncertainty, economic growth, and unemployment in Sri Lanka from 1991 to 2023, using the Granger causality analysis. Unlike existing studies that explore this relationship in a global and regional context, the current findings reveal a significant association where economic uncertainty granger causes unemployment rates, while also indicating that economic growth granger causes unemployment rates in Sri Lanka. However, there is no causal association between economic growth and economic uncertainty. Accordingly, policies aligned with the Sustainable Development Goals (SDGs) established by the United Nations (UN), specifically focusing on SDG 8: Decent Work and Economic Growth; SDG 9: Industry, Innovation, and Infrastructure; and SDG 16: Peace, Justice, and Strong Institutions. This study offers insights into diversifying the economy, ensuring quality education, and emphasizing the importance of maintaining strong government institutions for sustainable economic growth. In doing so, it contributes to the existing literature by providing insights into the uncertainty-growth-unemployment relationship in the context of Sri Lanka.

Keywords: Economic Growth, Economic Uncertainty, Granger Causality, Sri Lanka, Unemployment

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ISBN: 978-624-5553-76-1

Introduction

In recent years, several challenges have resulted in global economic uncertainty. The COVID-19 pandemic is one of the most serious harbingers of uncertainty in the past decade. Beyond the pandemic, other major crises, including the Russo-Ukrainian war, which has led to a refugee crisis, and the Israel-Palestine conflict, have created a dire need for humanitarian intervention.

As a developing country, Sri Lanka has been severely affected by economic instability. It faces significant economic uncertainties, particularly a slowdown in growth, a continued increase in fiscal deficits, and the effects of the COVID-19 pandemic (Goonawardhana & Dissanayake, 2023; Ranasinghe, 2023). This situation warrants investigating the relationship between economic uncertainty, economic growth, and unemployment in Sri Lanka.

Research Problem

Global uncertainty exacerbated by pandemics and economic crises significantly impacts interconnected economic channels, where the importance of economic uncertainty in shaping labour market dynamics and financial performance is illustrated This paper aims to illustrate the relationship between economic uncertainty, unemployment and economic growth. Exploring the connections between uncertainty, unemployment, and economic growth is essential in this financial conundrum. Therefore, the objectives of this study are outlined as follows:

i. To investigate the direction of causality between economic uncertainty and unemployment in Sri Lanka.
ii. To investigate the direction of causality between economic uncertainty and economic growth in Sri Lanka.
iii. To investigate the direction of causality between economic growth and unemployment rates in Sri Lanka.

The study aims to contribute to the existing literature in several ways. First, it explores the causal relationships between economic uncertainty, economic growth, and unemployment in Sri Lanka. A significant gap exists in the literature concerning these relationships in Sri Lanka; therefore, this study seeks to bridge this gap by providing a country-specific analysis.

Second, this study utilizes the Granger causality analysis to explore the directional relationships. Although this methodology has been employed in prior studies, none have been conducted within the context of Sri Lanka. By utilizing the most recent data and analyzing 33 years, a unique dataset has been generated that offers new findings.

By identifying the underlying causal relationships among the three variables, the study offers valuable insights for policymakers. It aligns the results obtained with the Sustainable Development Goals (SDGs) established by the UN, particularly SDG 8: Decent Work and

Economic Growth; SDG 9: Industry, Innovation, and Infrastructure; and SDG 16: Peace, Justice, and Strong Institutions.

Literature Review

This section examines the current literature that emphasizes the relationship between economic growth, economic uncertainty, and unemployment, establishing a foundation for discussion. While there exist three entities, pairwise relationships are focused on making it easier to identify the interactions between the variables and establish clear cause-and-effect relationships.

The Relationship between Economic Growth and Unemployment

Studies conducted exploring this relationship explore how unemployment significantly impacted economic growth, using the Autoregressive Distributed Lag Bounds (ARDL) model (Shiferaw, 2023). A growing economy's impact on employment patterns by creating job opportunities as discussed by Kitov (2021). The existing literature showcases the extent of the two-way causal relationships between economic growth and unemployment.

In the case of Sri Lanka, a study utilizing the Granger causality analysis over eight quarters revealed a unidirectional causality between unemployment and economic growth (Atigala et al., 2023). In contrast, a Vector Error Correction Model (VECM) and ADRL tests indicate a negative impact of unemployment on economic growth (Niranjala, 2019; Atigala et al., 2023). However, the short duration may not fully capture the effects of causality, considering that real-world scenarios often exhibit lagged effects rather than immediate ones. A study based on Okun's Law shows that economic growth significantly contributes to reducing unemployment in Sri Lanka. Conversely, slow economic growth is a reason for the consistently high unemployment rates in the country (Niranjala, 2019). Therefore, it is essential to implement policies that stimulate GDP growth, ultimately helping to alleviate uncertainty and reduce unemployment rates.

The Relationship between Economic Uncertainty and Economic Growth

When considering this relationship, studies find that uncertainty shocks are an important source of cyclical fluctuations in the financial markets, which play an essential role in determining the real economy (Ahiadorme, 2022). Further studies explore these relationships, using varying methodologies, particularly cointegration to determine that economic policy uncertainty has a delayed and nonlinear impact on unemployment (Lefilef et al., 2025). Research and development investments and economic policy uncertainty affect the country's total factor productivity growth (Amarasekara et al., 2022). It is found that heightened

ISBN: 978-624-5553-76-1

economic policy uncertainty adversely impacts TFP growth, although this negative effect is short-lived. Foreign direct investment is generally regarded as a factor that stimulates economic growth. A study examining Sri Lanka's FDI shows that regional uncertainties, such as shocks from the South Asian region and domestic uncertainties, affect FDI inflows in the short and long term, while global economic uncertainty does not significantly impact (Rodrigo & Randika, 2022). This phenomenon indicates the importance of FDIs in fostering the country's economic growth and highlights the necessity of implementing measures to reduce uncertainty.

Relationship between Economic Uncertainty and Unemployment

Inflation is considered uncertain because it affects economic decisions unpredictably; therefore, exploring its impact is crucial. A study reveals that by employing Granger causality analysis, past inflation values can predict future unemployment rates (Thayaparan, 2014). Another study using Granger causality analysis, which associates the key variables of government expenditure, government size, economic growth, inflation, and unemployment, shows that inflation, as an uncertainty, significantly impacts unemployment (Ranasinghe, 2023). Accordingly, the literature review for each variable pair can be summarised as follows. It should be noted that certain specific linkages have a negative impact, with economic growth and unemployment discouraging one another. This is also reflected in the relationship between economic uncertainty and economic development; however, more localized uncertainties hinder economic growth. In contrast, a positive association exists between economic uncertainty and unemployment, where an increase in one encourages the latter.

While the interrelationships among the variables have been extensively studied globally, a significant gap exists in the Sri Lankan context. Economic uncertainty is often linked to being a deterrent to economic growth. Bloom (2014) suggests that heightened uncertainty leads to a decrease in hiring and aggregate demand, thus causing unemployment and having detrimental effects on economic growth. In light of recent events in Sri Lanka, exploring these variable pairs allows the determination of the best policy for sustainable development in the country

Conceptual Framework

The conceptual framework in Figure 1 illustrates the relationship between economic growth and unemployment using statistical analysis to determine the direction and strength of this relationship.

There exist prominent theories about our variables, some prominent among those being Okun's law, Real Business Cycle (RBC) Theory, and Keynesian Unemployment Theory. Okun's (1962) law defines a relationship between unemployment and economic output, where an increase in unemployment above its natural rate decreases GDP from its potential level. Mankiw's (1989)

RBC theory suggests that the business cycles are driven by real shocks rather than demand-side factors. In contrast to the RBC theory, Keynes's (1936) theory of unemployment suggests that inadequate demand would cause the production levels to dip, emphasizing focus on demand-side factors rather than supply-side factors. Hence, the study aims to use these foundations as a base it seeks to contribute to the field by bridging the gap to focus on the three macroeconomic variables in Sri Lanka.

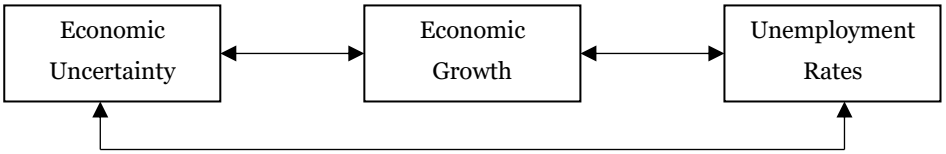

Figure 1: Conceptual Framework

Methodology

This section presents a detailed overview of the research approach, outlining the sources of data and the statistical methods employed for analysis.

Data

The data collected for the analysis spans from 1991 to 2023, focusing on Sri Lanka. This data is sourced from the World Bank Indicators and the World Uncertainty Index, with the chosen period reflecting data availability for all variables during a shared timeframe. Descriptions of the variables are provided in Table 1, along with their sources. While GDP provides the total economic output, this study utilizes the GDP per capita to capture individual income, which correlates with assessing quality of life. Furthermore, economic uncertainty measured by the World Uncertainty Index is constructed using the frequency of the word "uncertainty" and its variants. Whereas unemployment rates are measured utilising the unemployed portion of the labour force, this helps identify the economic health of the status.

Table 1: Description of Variables Utilized in this Study

Variable	Notation	Measurement	Source
Economic Growth	EG	GDP Per Capita (current US$)	World Bank
Economic Uncertainty	EU	World Uncertainty Index	World Uncertainty Index
Unemployment Rates	UR	Percentage of labour force	World Bank

Source: Authors' compilation

ISBN: 978-624-5553-76-1

Methodology

This study investigates the relationship between economic growth, uncertainty, and unemployment rates. The methodologies employed in the study are discussed in the following sections.

Unit Root Test

The unit root test is conducted to check for the variables' stationarity. The standard unit root test introduced by Dickey and Fuller (1979) has been refined to the Augmented Dickey-Fuller test, which (Dickey & Fuller, 1981) checks the order of integration among the variables.

Lag Length Criteria

The Modified Akaike Information criterion determines the lag length selection criteria to ensure the optimal model specification.

Granger Causality Analysis

The Granger causality analysis determines the direction of causality and offers a general overview. According to unidirectional causality, when X causes Y and not vice versa, while bidirectional causality occurs when the effect is mutual between X and Y.

Stability Graphs

With the Granger analysis complete, it is necessary to check for stability. This ensures that no relationships are unstable, which could lead to misleading conclusions.

Results and Discussion

This section explores the results derived from the descriptive analyses and empirical results from the causality analysis also comprehensively discussing the evidence.

Descriptive Statistics

The descriptive statistics offer an overview of Sri Lanka's economic growth and fluctuations in the labour market, highlighting patterns in the data. Table 2 depicts the results of the descriptive statistics.

Table 2: Summary of Descriptive Statistics

Country	Descriptive Statistics	Variable		
		EG	WUI	UR
Sri Lanka	Mean	2188.2400	0.5426	7.3939
	Standard Deviation	1469.3230	0.3646	3.3471
	Min	546.2925	0.0000	3.8800
	Max	4401.0560	1.4384	14.6610

Source: Authors' calculations based on data from Ahir et al. (2023); and The World Bank (2023).

The trend line of how uncertainty has affected Sri Lanka is represented in Figure 2, with the Tsunami year and the COVID-19 pandemic period showcasing significantly higher uncertainty comparatively.

ISBN: 978-624-5553-76-1

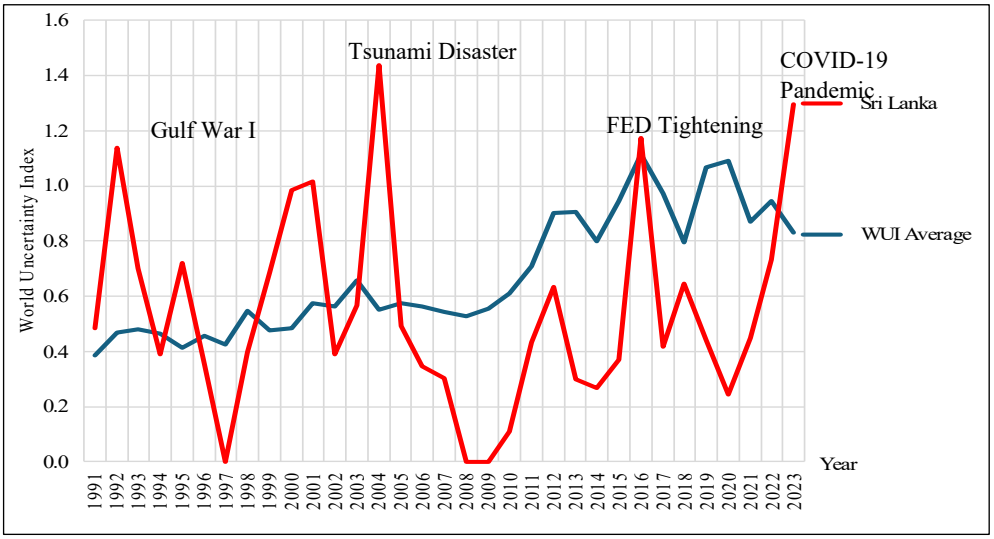

Figure 2: Comparison of Sri Lankan and World Uncertainty over the Years

The figure above compares the world average and Sri Lanka, revealing that uncertainty has been relatively higher in Sri Lanka than the world average. This provides a solid foundation for exploring the interrelationships between uncertainty and the variables.

Unit Root Test Results

Table 3 depicts information regarding the stationarity of the variables. The Augmented- Dicky Fuller test is utilised for identifying the stationarity of the model, which determines whether the variable is I(0), stationary at its current state, or whether the variable is I(1) indicating stationarity after the first level of differencing.

Table 3: Unit Root Test Results

Country	WUI	UR	EG	DEG
Sri Lanka	-3.673**	-2.967*	-0.465	-4.834***

Source: Authors' calculations based on data from Ahir et al. (2023); and The World Bank (2023).

Notes: * Indicates the significance of the variable at the 10% level, ** Indicates the significance of the variable at the 5% level, *** Indicates the importance of the variable at the 1% level.

Except for EG, which is I (1), the remaining variables WUI and UR are I(0), also considering the p-values, which show evidence against non-stationarity. EG is significant at the 0.01 level, WUI is significant at the 0.05 level, and UR is important at the 0.1 level.

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Lag Length Criteria

The optimal lag length is required to conduct the Granger causality analysis. The optimal lags were determined by utilizing the Akaike Information Criterion: WUI and UR used one lag, WUI and EG used no lags, whereas EG and UR used one lag.

Table 4: Lag Length Criteria Results

Country	Relationship	Lag	P	AIC	HQIC	SBIC
Sri Lanka	WUI & UR	1	0.000	2.7076	2.7962	2.9904
	WUI & EG	0	-	14.9024	14.9315	14.9975
	UR & EG	1	0.000	15.8096	15.8969	16.0951

Source: Authors' calculations based on data from Ahir et al. (2023); and The World Bank (2023).

Granger Causality Test Results

The Granger results are published in Table 5; these reveal causal relationships among the variables.

Table 5: Granger Causality Test Results

Granger Causality	F statistic	Probability	Conclusion
WUI → UR	3.8917	0.0490	➡
UR → WUI	0.2498	0.6170	⊘
WUI → EG	0.4091	0.8150	⊘
EG → WUI	2.4894	0.2880	⊘
EG → UR	7.6822	0.0060	➡
UR → EG	0.4321	0.5110	⊘

Source: Author's illustration based on data from Ahir et al. (2023); and The World Bank (2023).

Note: ➡ denotes unidirectional causality and ⊘ denotes no causality.

When considering the relationships, the economic uncertainty granger causes unemployment rates and the economic growth granger causes unemployment rates utilising the VAR model specification. Prior to this, the Akaike information criterion test enabled the identification of the optimal lag length. Furthermore, the Portmanteau test was used in determining the residual autocorrelation and the model's heteroscedasticity was determined using the Autoregressive Conditional Heteroscedasticity Lagrange Multiplier (ARCH LM) test. These checks allow us to determine whether the VAR models were appropriately specified.

Economic Uncertainty and Unemployment Rates in Sri Lanka

Economic uncertainty impacts Sri Lanka's labour market, contributing to rising unemployment rates. Various factors have intensified this uncertainty recently due to Sri Lanka's political instability, exchange rate volatility, and external shocks. Recently, uncertainty has increased because of the COVID-19 crisis and the political turmoil during Gotabaya Rajapaksa's presidency, which led to governance crises. Under the Rajapaksa administration, significant issues like economic mismanagement resulted in a severe financial crisis, an inadequate response to the COVID-19 pandemic, and economic turmoil (Priyadarshani, 2024). These factors led to substantial job losses as private-sector businesses grappled with fuel shortages and power cuts that disrupted daily operations. Sri Lanka's tourism sector, a vital source of employment, experienced significant job losses during the COVID-19 pandemic, and the subsequent economic crises further diminished international operations. The manufacturing sector also faced challenges from import restrictions, while currency depreciation hampered firms' access to raw materials (Central Bank of Sri Lanka, 2023). Although existing literature has examined how specific factors like inflation affect unemployment, indexed analysis reveals a statistically significant influence of uncertainty on unemployment.

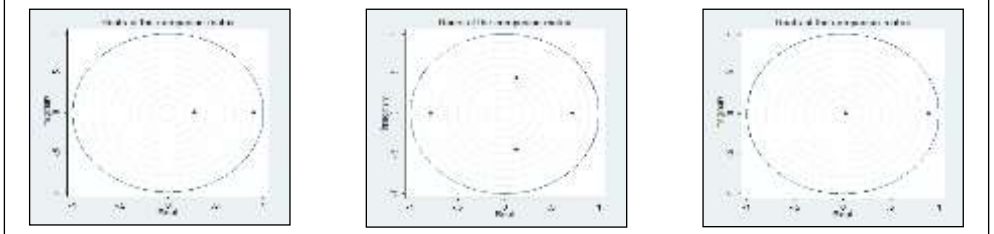
Economic Growth and Unemployment Rates in Sri Lanka

The economic growth of Sri Lanka is measured through per capita GDP growth. This growth has progressively increased from 1991 until 2019; however, there was a significant drop in the subsequent period, primarily due to the country's COVID-19 pandemic and political turmoil. According to Okun's law, when the economy grows, unemployment tends to decrease (Okun, 1962). This aligns with our descriptive statistics, which show a notable trend where unemployment decreases as economic growth increases and vice versa. While there is a highly skilled workforce, a mismatch persists, leading to limited opportunities in the country and pushing individuals to seek employment abroad. The same applies to youth employment, which remains high despite significant economic growth in recent years.

Stability Graphs

The stability graphs are presented in Figure 3. The eigenvalues are used to analyse the stability of the VAR model by examining the roots of the characteristic polynomial. These graphs contain the origins of the companion matrix, where all values lie inside the unit circle, thus indicating all companion matrix eigenvalues have values less than 1, indicating stationarity.

ISBN: 978-624-5553-76-1



WUI & UR WUI & EG UR & EG

Figure 3: Stability Graphs

Policy Implications

While Sri Lanka boasts a high literacy rate of over 90%, there is a need for training for working-class individuals to strengthen their industry knowledge. This can be achieved by providing upskilling programs that enhance lifelong learning opportunities, aligning with SDG 04: Quality Education. Such initiatives help reduce unemployment by creating new opportunities for the working community.

Sri Lanka's GDP primarily relies on tourism, commodity exports, and foreign remittances, making it vulnerable to external uncertainties. Policymakers should explore expansion into new industries, particularly the IT sector, which is much less susceptible to shocks. By diversifying the economy, supporting digital transformation, and promoting inclusive growth, we can achieve SDG 09: Industry, Innovation & Infrastructure.

The country attempted 100% organic agriculture in 2021; however, the abrupt transition led to nationwide food security issues. Therefore, a proper plan with phased activities is necessary to ensure a smooth transition, allowing SDG 12: Responsible Consumption and Production to be achieved. The government must improve transparency and eliminate corruption to ensure prosperous economic growth. Although recent measures have been enacted to achieve this, further strengthening anti-corruption efforts can still enhance SDG 16: Peace, Justice, and Strong Institutions.

Sri Lanka collaborates with the United Nations, the International Monetary Fund, and the World Bank to stabilize its economic policies. However, strengthening alliances with regional partners, particularly India and Bangladesh, while seeking European assistance, can stabilize the economy and help achieve SDG 17: Partnerships for the Goals. This approach boosts economic growth and enhances resilience to uncertainty by creating a safety net among countries for interdependence.

Conclusion

This study assesses the causal relationship between economic uncertainty, growth, and unemployment. It was conducted in Sri Lanka over 33 years, employing the Granger Causality

test to investigate these relationships using data from the World Bank and the World Uncertainty Index. These insights are particularly relevant for policymakers in Sri Lanka as they navigate the challenges posed by economic unpredictability, aligning their strategies with the SDGs set forth by the UN. While the Granger causality analysis provides a solid framework for determining the relationships among the variables, whose robustness could be tested using the lag length criteria, this method also poses certain limitations, where utilizing the Granger causality model requires stationarity, which is not the case in real-world scenarios. Future research should focus on exploring these relationships using econometric models, involving machine learning models, which helps better point out the causal relationships. Furthermore, examining the impact of economic uncertainty on economic growth highlights the necessity for a stable business environment to attract investors. By addressing these dynamics, Sri Lanka can enhance its policies, mitigate economic uncertainty's adverse effects, and improve its economic landscape.

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ISBN: 978-624-5553-76-1

Life Expectancy and Economic Growth Synergy in SAARC Nations: Short and Long-Term Analysis

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Abstract

This study examines the dynamic relationship between economic growth and life expectancy across SAARC countries, focusing on short and long-term perspectives. The analysis employs Granger causality tests to investigate the direction of influence of per capita GDP growth (PGDP) and life expectancy (LE), while cointegration analysis examines their long-run equilibrium relationship. The Granger causality results reveal diverse patterns across the region. A bidirectional causality exists in Afghanistan, indicating mutual reinforcement between economic and health improvements. Bhutan and Nepal exhibit unidirectional causality from economic growth to LE, whereas the Maldives show the reverse, with LE influencing economic growth. No significant short-term causality is observed in Bangladesh, India, Pakistan, and Sri Lanka. Cointegration tests confirm a stable long-term relationship between economic growth and LE in all countries except Bhutan. This suggests that, despite short-term differences, most SAARC nations experience long-term co-movement between these key development indicators. The findings underscore the importance of integrated development strategies that simultaneously promote economic and health outcomes. Policymakers are encouraged to recognise the interdependence of health and economic growth, designing context-specific interventions to achieve sustainable development and the objectives of SAARC. This study contributes to the broader literature on development economics by offering regional insights into the growth-health nexus

Keywords: Customer Experience, Online Booking, Online Innovations, Repurchase Intention

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Faculty of Management and Finance, University of Ruhuna, Sri Lanka. July – 2025
ISBN: 978-624-5553-76-1

Introduction

Background

The relationship between LE and economic growth is vital and widely analysed, with ongoing debates on whether health improvements drive economic prosperity or vice versa. Some theories suggest that healthier populations increase productivity and economic growth, while others argue that a prosperous economy enhances healthcare systems and LE (Barro and Finance, 2013; Bloom and Canning, 2000; Roffia et al., 2023). The SAARC region, composed of Afghanistan, Bangladesh, Bhutan, India, the Maldives, Nepal, Pakistan, and Sri Lanka, provides an interesting context for analysing this relationship.

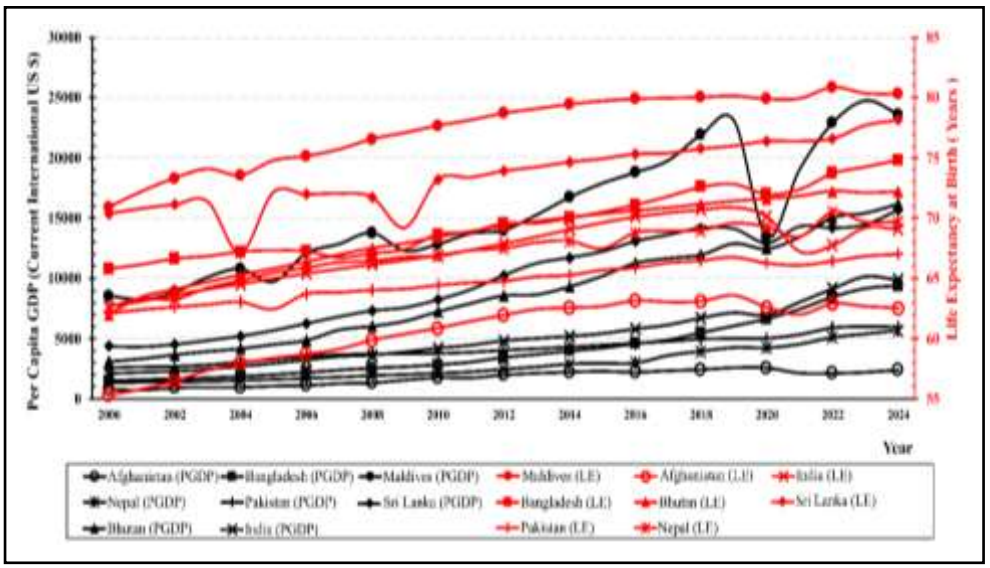

Figure 1: Life Expectancy at Birth and PGDP Trajectories Across SAARC Nations

Source: Authors' illustration based on World Bank Data.

These countries comprise about 21% of the world's population and 4% of the GDP (World Population Review, 2025). Although notable advances in LE have been recorded over the past few years, SAARC countries still struggle with socio-economic restraints, including political turmoil and environmental factors that influence health outcomes and economic productivity. The above line chart in Figure 1 depicts the inequalities in LE and economic growth across SAARC countries.

Afghanistan has resulted in the lowest LE and economic growth. In contrast, the Maldives has recorded the highest LE and economic growth. This demonstrates a considerable variance in these nations. This study employs two econometric models, including Granger causality tests and cointegration tests, to determine if there is evidence to suggest that economic growth causes LE or whether improvements in LE led to economic growth.

ISBN: 978-624-5553-76-1

Research Problem

The central issue unveiled throughout this research is the uncertain direction of causality between LE and economic growth in SAARC countries. The uncertainty regarding whether economic growth causes LE or the reverse poses challenges to policymakers who want to establish effective health and fiscal policies. This research aims to bridge this gap by identifying the short and long-run causal relations and country-specific perspectives to inform policy.

Literature Review

Theoretical Perspectives on Life Expectancy and Economic Growth

The relationship between LE and economic growth is broadly analysed in theoretical frameworks. Usually, two rivalling models reveal the interaction among these variables: the health-driven and growth-driven health models.

Health-Driven Growth Model

The health-driven growth model shows that enhancements in health lead to increased productivity and, ultimately, greater economic growth (Bloom and Canning, 2003). Therefore, a healthier workforce is more productive, improving human capital, which is arguably the most critical determinant of economic output (Bhargava et al., 2001). For example, disease and mortality lead to greater rates of participation in the labour force and productivity across the economy (Bloom et al., 2001). Finally, health improvements support better cognitive development and higher lifetime earnings, especially in early life (Case and Paxson, 2010).

Growth-Driven Health Model

Conversely, the health model is Progressive or driven by growth, where economic growth is the reason for longer LE. The Preston Curve supports this model by demonstrating that richer countries have longer LE than poorer ones. This model claims that economic growth creates resources for spending on healthcare systems, nutrition, sanitation, and social infrastructure. Better physical and social infrastructure will deliver better health outcomes (Deaton, 2013; Preston, 1975). Also, Pritchett and Summers (1996) support this argument with evidence that people's adjusted dollar income affects access to healthcare, education and other living aspects.

Empirical Studies on Life Expectancy and Economic Growth in SAARC Nations

Empirical research in the SAARC region presents inconsistent results regarding causality between LE and growth. The region contains a complicated set of healthcare challenges and economic inequalities that may serve to link these variables in very different ways.

Evidence Supporting Health-Driven Growth

An empirical study focusing on Bangladesh and Sri Lanka demonstrates that increases in LE positively affect economic growth (Hossain, 2013; Rosenberg et al., 2018). The study explains that Sri Lanka has historically made significant strides in health outcomes without major increases in GDP, highlighting the importance of health in enhancing human capital and productivity.

Evidence Supporting Growth-Driven Health

On the other hand, economic growth has occurred in India and Pakistan to increase LE. Akram et al. (2008) and Husain (2012) argue that rising incomes in these countries translated into improved healthcare delivery, access, and public health improvements. This relationship reflects the growth-related health model, where growth affects health outcomes via development.

Mixed or Ambiguous Evidence in Other SAARC Countries

The connection between economic growth and LE becomes muddled. For some countries, such as Afghanistan and Nepal, socio-political instability was extreme. Research shows that political instability, poor health financing systems, and poorly developed, allocated, or ineffective health resources constrain the capacity for economic growth to have an impact on health (Ullah et al., 2024). Therefore, there was similarly slow progress in improving health, even with increasing per capita income in those two cases. This indicates a more meaningful role of governance and the distinction of suitable healthcare policies to enable pathways between economic growth and health, as in both cases, it was substantially impacted by governance.

Role of Public Policy in Shaping the Health-Economic Growth Nexus

Another noteworthy aspect highlighted in the literature is the possibility of public policy as a potential moderator in the relationship between economic growth and LE. As Sen (1999) suggests, income does not always make one healthy, stressing public policy's role in correcting inequities in access to health care. Countries with effective health systems and health that attend to equity matters, and interventions that promote equitable access to care, must also recognize economic growth when seeking better health outcomes. Furthermore, for nations with weak institutions and/or political insecurity, such as Afghanistan or Nepal, strengthening governance and investing in healthcare infrastructure are crucial preconditions for achieving improved health outcomes resulting from increased economic growth.

The Impact of Demographic Transitions on Economic Growth

Demographic transitions, particularly reductions in mortality rates and increases in LE, also influence economic growth. Studies argue that a one-year increase in LE can yield a 4% increase

ISBN: 978-624-5553-76-1

in GDP per capita. Such demographic changes are especially significant in developing countries, where shifts in population structures, such as the "demographic dividend, “can create opportunities for economic growth. Researchers highlight that these transitions provide avenues for economic expansion, as a younger, healthier population enhances productivity.

Challenges and Gaps in Existing Literature

Although numerous studies have investigated the link between LE and economic growth, significant gaps still prevail in academic literature. To begin with, while extensive research covers overall trends worldwide, there is very little on region-specific disparities, such as those among SAARC countries. Additionally, few studies have utilised the appropriate econometric methods (e.g., Granger causality and Co-integration analysis) to analyse directionality in this region's relationship. This paper aims to fill these gaps through a comprehensive country-specific analysis of the connection between LE and economic growth in the SAARC region.

Methodology

Variables and Measurements

Table 1 shows the key variables applied in this study: LE, measured in years, and Economic Growth, represented by Per Capita GDP in current international US dollars, both sourced from the World Bank Database.

Table 01: Data Sources and Units of Measurement

Variable	Source	Unit of Measures
Life Expectancy	World Bank Database	Number of Years
Economic Growth	World Bank Database	Current International US$

Granger Causality Test

The Granger Causality test provides an approach to determine if historical LE can help predict economic growth or whether economic growth influences LE. The Granger causality test explains how this statistical process can identify the causal direction of two variables, and provide insights into how changes in one of these variables may impact changes in the other over time (Granger, 1969). The test helps to discover whether one-factor precedes or follows the other in this relationship, depending on the observed time series data. This statistical method has effectively revealed causal relationships between variables (Jayawardhana et al., 2025; Muthugala et al., 2025; Sandanayaka et al., 2025).

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$$LE_{i,t} = \sum_{k=1}^{\rho} \beta_i \; LE_{i,t-k} + \sum_{k=0}^{\rho} \theta_k \; PGDP_{i,t-k} + u_{i,t} \quad (1)$$

$$PGDP_{i,t} = \sum_{k=1}^{\rho} \beta_i \; PGDP_{i,t-k} + \sum_{k=0}^{\rho} \theta_k \; LE_{i,t-k} + u_{i,t} \quad (2)$$

When the coefficients in equation one are statistically significant, it indicates that LE "Granger causes" PGDP. In this case, past LE values allow for better prediction of PGDP. When the coefficients in equation two are statistically significant, it indicates that PGDP "Granger causes" LE. This means past values of PGDP provide a better-enhanced prediction of LE.

Co-Integration Analysis

The Johansen co-integration test is a statistical model that examines the long-term equilibrium relationship between LE and economic growth (Johansen, 1991). The methodology assesses long time series data to determine if these two variables share a long-run core movement, which means they exhibit a long-run stable relationship. If there is indeed co-integration, sustained changes in one variable, such as investments in healthcare or economic reforms, could change the movement in the other. Therefore, this test is important for determining whether increased LE results in sustained economic growth or whether economic development results in improved health. Furthermore, Johansen's method is significant because it can track multiple co-integrating relationships, giving a holistic view of the relationship between LE and economic growth over the long term.

Methodology Workflow

Figure 2 shows the methodology flowchart for analysing LE and economic growth, using World Bank data. The Granger causality test measures directionality between variables, while Johansen's co-integration tests for long-term equilibrium, enabling a full analytic assessment of their relationship.

ISBN: 978-624-5553-76-1

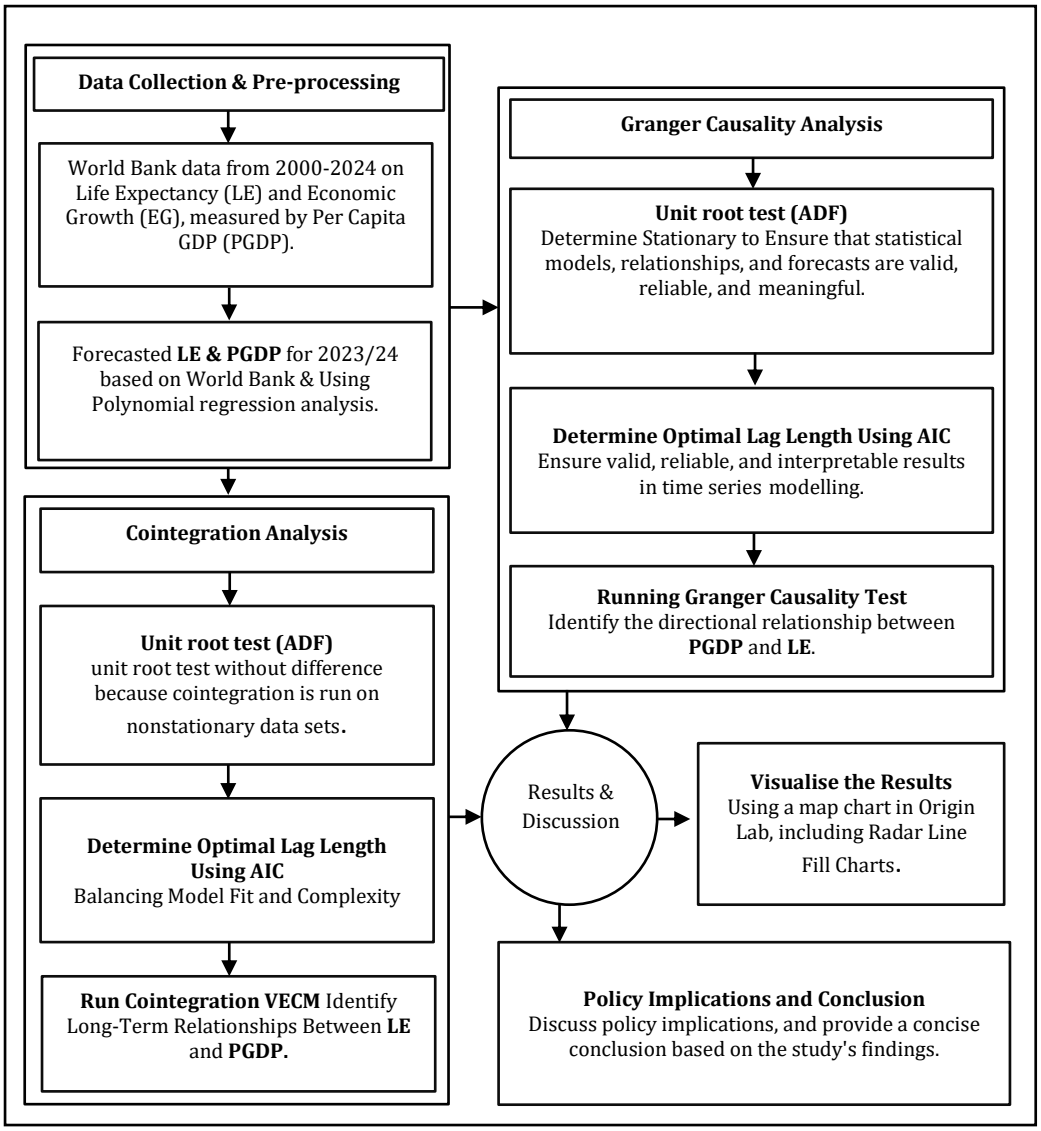

Figure 2: Dynamic Research Flow: Connecting Methods and Outcomes

Results and Discussion

Table 2 shows the results of the Granger causality test between PGDP growth and the difference in life expectancy (DLE) across SAARC nations. The findings indicate that the relationship between economic growth and LE varies significantly, suggesting that economic expansion alone does not ensure health improvements. The observed causality patterns reflect broader socio-economic and institutional differences among these countries.

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Table 02: Granger Causality Test Result between Economic Growth and Life Expectancy

Country	Causality	Granger values	
Afghanistan	DPGDP ←→ DLE	**DPGDP → DLE**	**DPGDP ← DLE**
		6.5225**	**2.9719***
Bangladesh	DPGDP ←//→ DLE	DPGDP → DLE	DPGDP ← DLE
		2.3869	3.2455
Bhutan	DPGDP → DLE	DPGDP → LE	DPGDP ← LE
		0.00172	0.1286
India	DPGDP ←//→ DLE	DPGDP → DLE	**DPGDP ← DLE**
		1.251	**26.906*****
Maldives	DPGDP ←//→ LE	DPGDP → DLE	DPGDP ← LE
		0.05968	0.08128
Nepal	DPGDP → DLE	**DPGDP → DLE**	DPGDP ← DLE
		4.1997 **	1.7834
Pakistan	DPGDP ←//→ DLE	DPGDP → DLE	DPGDP ← DLE
		0.70008	0.16313
Sri Lanka	DPGDP ←//→ DLE	DPGDP → DLE	DPGDP ← DLE
		0.21605	0.96108

Source: Authors' illustration. Life expectancy causing PGDP is depicted by (←), PGDP causing

Life expectancy is shown by (→), Bidirectional causality between life expectancy and PGDP is described by (←→) and countries with No Causality between life expectancy and PGDP are depicted by (←//→)

Granger causality analysis reveals differing influences of economic growth (DPGDP) and DLE among SAARC countries, stemming from varying socioeconomic conditions. In Afghanistan, there are hints of bidirectional causality between PGDP and LE, indicating a reciprocal relationship where improved economic conditions lead to better health and vice versa. However, this bidirectional relationship may also have negative implications due to Afghanistan's history of instability. A decline in economic growth could undermine healthcare infrastructure and weaken access to essential services, adversely affecting public health.

Only Bhutan and Nepal demonstrate unidirectional causality. Both countries highlight that economic growth drives LE. This supports the argument presented by those who maintain that rising income allows governments to enhance their spending on healthcare, sanitation, and

education, thus increasing LE. Furthermore, Bhutan's economy, primarily driven by hydropower exports and tourism, can be considered a significant factor in facilitating healthcare access improvements, leading to increased LE (Uddin et al., 2007).

Countries such as Bangladesh, India, Pakistan, and Sri Lanka do not result in a causal impact. This can be attributed to weak institutional mechanisms, disparities in wealth distribution, or insufficient health infrastructure. Moreover, it must be specified that good health outcomes will not be ensured solely through economic growth unless accompanied by effective social policy and a well-governed system. The collective findings suggest that the causality between economic growth and LE does not consistently hold throughout the SAARC region. Some countries progress due to economic advancements in health, while others depend on health improvements to drive economic stimulation. The results align with observations, indicating that the growth-health nexus will manifest differently across contexts, requiring distinct interventions to enhance development and quality of life.

Table 3 presents the cointegration test results, assessing the long-term relationship between per capita GDP growth and LE in SAARC nations. Based on the MPP t, PP t, and ADF t unit root tests, the cointegration analysis determines whether the variables share a stable long-term equilibrium.

Table 03: Cointegration Result Analysis between Economic Growth and Life Expectancy

Country	Cointegration Unit root			$p>chi^2$	Long Term Relationship
	MPP t	PPt	ADFt		
Afghanistan	-0.503	-1.159	-0.584	**1120.042*** **	Yes☺
Bangladesh	0.542	0.411	0.643	**88.645*** **	Yes☺
Bhutan	0.655	0.477	**2.773*** **	0.014	NO ⊗
India	**1.384***	**2.155****	**2.572*** **	**85.171*** **	Yes☺
Maldives	-0.760	-1.192	-0.926	**10.041*** **	Yes☺
Nepal	1.010	1.277	1.573	**28.284*** **	Yes☺
Pakistan	0.357	0.208	0.284	**220.955*** **	Yes☺
Sri Lanka	**2.37*** **	**-3.44****	**-3.70*** **	**536.877*** **	Yes☺

Source: Authors' illustration. MPPt - Modified Philips Peron test, PPt - Philips Peron test, ADFt- Augmented Dickey-Fuller test

The cointegration results indicate that most countries show a statistically significant long-run relationship, highlighting that the two variables are related over time. Afghanistan, Bangladesh, India, Maldives, Nepal, Pakistan, and Sri Lanka provide evidence of cointegration using at least one unit root test (PP or ADF) alongside chi-square statistics. In other words, even in the short run, economic growth and LE tend to move together in the long run. This further supports the

ISBN: 978-624-5553-76-1

idea of Bloom and Canning (2000) that there is a two-way relationship between health and financial variables in developing countries.

India and Sri Lanka show significant cointegration across the three-unit root tests, further supporting the long-term relationship between these countries. This long-term stability can be attributed to effective policy coordination between the health sector and the economy. Conversely, Bhutan is the only nation lacking support for cointegration. There is clear evidence of a statistically significant ADF test; however, the chi-square value is marginal, suggesting a lack of a long-run relationship. This may indicate that in Bhutan, other external factors influence whether economic growth translates into health gains or that the policies do not align across sectors as they do in different nations, lending credence to research findings that suggest structural characteristics disrupt the connection between health, education, and growth. In all cases, these results indicate that coordinated policies aimed at improving health and the economy will depend on the specific context of each country.

Conclusion

Summary of Findings

The Granger causality results highlight that Afghanistan has a bidirectional relationship. The analysis indicates that Afghanistan is the sole nation with reciprocal influences between economic growth and LE, suggesting that these variables are dynamically linked. However, this causal relationship can be both positive and negative. Bhutan and Nepal demonstrate that economic development impacts health, while none of the countries illustrated a unidirectional causality in which LE impacts economic growth. Bangladesh, India, Pakistan, Maldives, and Sri Lanka do not exhibit short-run causality. However, cointegration analysis concludes that for seven of the eight countries, DPGDP and DLE are in long-run equilibrium: Afghanistan, Bangladesh, India, Maldives, Nepal, Pakistan, and Sri Lanka. The study confirms that while many countries do not suggest a short-term causal impact, most SAARC countries share a significant long-run relationship between economic performance and LE. This highlights the importance of policy integration for dual economic growth and health improvements.

Contribution to Knowledge

This study contributes by integrating causality and long-term cointegration analysis, offering a deeper understanding of the economic-health nexus in SAARC nations. The findings highlight country-specific disparities and provide a basis for policy recommendations to align economic growth with healthcare development, specifically in achieving the objectives of the SAARC: promote the welfare of the persons of nations in South Asia, uplift their value of life to accelerate economic growth, social progress and cultural expansion in the region and to deliver all

individuals with the opportunity to live in dignity and to realise their full potentials (European Union, 2021).

Policy Implications and Recommendations

The study emphasises the necessity of country-specific policies to connect economic growth with health improvements in SAARC nations, while Table 4 outlines essential policy recommendations for these nations.

Table 04: Policy Implications and Recommendations for SAARC Nations

Country	Key Policy Focus Area	Policy Recommendation Based on the Objectives of SAARC
Afghanistan	Strengthen healthcare infrastructure and improve economic recovery in post-conflict settings.	Focus on rebuilding healthcare systems while conducting economic stabilization programs and comprehensive infrastructure projects.
Bangladesh	Ensure policies align economic growth with public health improvements across the population.	Focus on prioritizing expanding primary healthcare facilities and supplying essential healthcare services and medicines to rural communities.
Bhutan	Promote economic diversification to sustain long-term development and enhance public health.	Diversifying beyond hydropower and tourism. Invest in human capital experts to restructure the economic structure, which aligns with healthcare development.
India	Improve healthcare accessibility and minimize disparities, especially in rural areas.	Promote nationwide screening programs to detect and treat chronic diseases earlier.
Maldives	Promote sustainable economic benefits.	Improve investments in green technologies and renewable energy, which ultimately reduces dependency on fossil fuels, preserving the environment for long-term economic growth.
Nepal	Leverage remittances to ensure economic sustainability while enhancing healthcare infrastructure.	Establish educational programs about financial management to assist. Families invest their remitted funds into healthcare and education.
Pakistan	Strengthening healthcare services and workforce participation to boost the benefits of longer life expectancy.	Increase healthcare funding, particularly for rural areas and vulnerable populations. Implement programmes to strengthen the link between education, skill development, and health outcomes.
Sri Lanka	Aligning economic growth with healthcare improvements, addressing structural barriers to reverse causality.	Focus on reforming healthcare sustainability with economic reforms.

Source: Authors' illustration

ISBN: 978-624-5553-76-1

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ISBN: 978-624-5553-76-1

ICME 2025 "Entrepreneurial Bricolage: Steering Volatile Markets through Improvised Strategies and Innovative Thinking"
Proceedings of 14th International Conference on Management and Economics

Macroeconomic Determinants of Child Mortality Rates in SAARC Countries

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Abstract

Child mortality remains a significant global challenge, as numerous countries have difficulties in meeting Sustainable Development Goal (SDG) 3.2, which seeks to reduce child mortality rates by 2030. Previous research has examined child mortality in SAARC nations, but the impact of macroeconomic factors remains considerably underexplored. This study addresses this gap by examining the impact of inflation, labour force participation rate of females, GDP per capita, and healthcare expenditure on child mortality in SAARC nations through panel regression analysis of World Bank data from 2000 to 2022. The findings suggest that GDP per capita and healthcare expenditure have a negative and significant impact on child mortality, indicating that economic growth and increased health spending contribute to child survival. The labour force participation rate of females has a significant positive impact on child mortality, which implies that maternal employment could be related to challenges in childcare. Furthermore, inflation has been shown to have a statistically insignificant negative effect on child mortality. This analysis presents a novel viewpoint on the impact of macroeconomic factors on child health outcomes, including evidence-based recommendations for policymakers and health organisations. By understanding the economic determinants of child mortality, governments can develop targeted policies and initiatives to enhance child health and accelerate progress toward SDG 3.2 by 2030. The findings of this study contribute to the broader discussion on economic resilience and health equity, underscoring the need for integrated policy strategies to reduce child mortality in SAARC nations.

Keywords: *Child mortality, Macroeconomic factors, SAARC*

Introduction

Child mortality remains a substantial global issue, with nearly 5 million child deaths each year (UNICEF, 2024). In 2022, the global Child Mortality Rate (CMR) notably decreased, with

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ISBN: 978-624-5553-76-1

deaths among children under five decreasing to 4.9 million, representing a 51% reduction since 2000 (Danzhen et al., 2015). This remarkable decrease is primarily attributed to improvements in healthcare systems, sanitation, and access to clean water (Hugh & Sandy, 2021). Despite significant progress in reducing the CMR over the last two decades, disparities persist among nations (UN, 2025). Nevertheless, South Asian countries continue to experience disproportionately high CMRs compared to other regions, highlighting ongoing health challenges (Rachel & Samwe, 2022). Specifically, SAARC countries continue to exhibit high CMR, with Pakistan and Afghanistan reporting infant mortality rates of 53 and 46 per 1,000 live births, respectively (The Global Economy, 2025). Moreover, the persistently high CMR exposes these nations to a significant risk of failing to achieve Sustainable Development Goal (SDG) 3.2, which aims to decrease CMR by 2030. The ongoing discrepancies highlight the urgent need for SAARC-focused research on CMR and targeted policy interventions to support the achievement of SDG 3.2 by 2030.

Extensive research has investigated the determinants of CMR, with previous studies identifying critical health-related factors such as malnutrition, inadequate immunisation coverage, limited healthcare access, and infectious diseases as main contributors (David et al., 1995). While these aspects are important, recent studies have begun to investigate the impact of economic determinants on CMR (Andreas & Günther, 2023). Consequently, previous studies found that Inflation of Consumer Prices (ICP), Labour Force Participation Rate of Females (LFPRF), GDP Per Capita (GDPPC), and Current Healthcare Expenditure Per Capita (CHEPC) have an impact on CMR (Muhammad et al., 2020; Yousef et al., 2017; Yulong et al., 2024). Nevertheless, research that simultaneously examines the combined influence of these macroeconomic variables is limited.

Consequently, this study aims to examine the influence of key macroeconomic determinants on CMR in SAARC nations, using World Bank data from 2000 to 2022, and employing a panel regression methodology. As the initial empirical gap, although previous research has analysed the effects of macroeconomic variables on CMR, none have concurrently explored the impact of ICP, LFPRF, GDPPC, and CHEPC. The second empirical gap is that most previous research has focused on individual countries, resulting in a restricted assessment of these determinants among SAARC nations. Moreover, the third gap, which is the methodological gap, is that the utilisation of panel regression in this domain is yet limited.

Sustainable Development Goal (SDG) 3.2, which seeks to reduce the CMR by 2030, exhibits inconsistent progress among nations. SDG 3.2 establishes an objective of reducing neonatal mortality to a maximum of 12 per 1,000 live births and under-five mortality to a maximum of 25 per 1,000 live births (UN). According to the United Nations Inter-agency Group for Child Mortality Estimation (UNIGME), 59 countries are anticipated to fail to fulfil the targets, while 64 nations must expedite their efforts to achieve the infant mortality goal of 12 per 1,000 live

births (Danzhen et al., 2015). South Asian nations are at a notably elevated risk of not attaining SDG 3.2 by 2030 (Emmanuel, 2022). Figure 1 illustrates that the CMR in SAARC countries has decreased over the years; nonetheless, it remains higher compared to that of other nations.

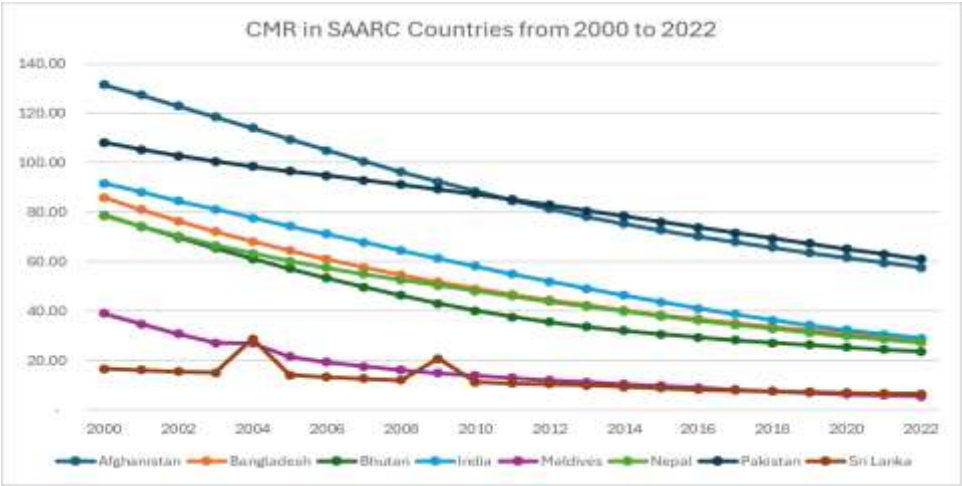

Figure 01: Child Mortality in SARC Countries from 2000 to 2022

This issue is particularly acute in the SAARC region, where several countries face compounded challenges that hinder progress toward SDG 3.2. Persistent challenges, including conflict-related healthcare disruptions in Pakistan, economic instability in Sri Lanka, widespread poverty in Afghanistan, and inadequate healthcare infrastructure across Nepal, Bangladesh, India, and Pakistan, have contributed to elevated CMR (Jabeen et al., 2024). Systemic impediments remain a persistent challenge in assessing the CMR consequences in the SAARC region, highlighting the need for a thorough analysis of macroeconomic factors. The current study, therefore, addresses the impact of key macroeconomic factors, including ICP, LFPRF, GDPPC, and CHEPC. This study aims to provide evidence-based insights for policy interventions that accelerate progress toward achieving SDG 3.2 by 2030.

Literature Review

The literature review for this study was conducted by searching relevant literature across various databases, including Springer Nature Link, ScienceDirect, PubMed, Wiley Online, JSTOR, Taylor & Francis, Emerald Insight, ResearchGate, and others. The initial search produced 79 articles. Upon pre-screening, records demonstrating a lack of apparent methodological or analytical rigour were removed, as well as those showing disproportionate overlap with similar works. In addition, articles with an H-index of less than 40, those published in third- or fourth-quartile journals, non-English articles, and those focused on general child poverty, child mortality during war, or child mortality related to COVID-19 were

excluded. Finally, twenty articles were kept, which all exactly corresponded to the research variables to be used as a result of the approach implemented in the study.

Theoretical background

This study uses two established theories to develop hypotheses. Economic stress theory was used to identify the impact of ICP, LFPRF, and GDPPC on CMR. Economic stress theory explains that financial hardships, such as inflation and unemployment, lead to increased stress among individuals, which can negatively affect health outcomes (Hans, 2018; Mette et al., 2019). In this context, the theory is valuable for understanding the impact of ICP, LFPRF, and GDPPC on CMR.

Moreover, to understand the impact of CHEPC on CMR, this study utilised human capital theory. The human capital theory posits that investing in individuals through healthcare, education, and training is similar to investing in physical assets, as both provide returns over time through increased productivity and economic development (Gary, 1964). This suggests that improved healthcare leads to better health outcomes, which, in turn, reduces CMR.

Impact of ICP on CMR

ICP denotes the increase in the expenses of goods and services over a designated timeframe (IMF). An escalation in ICP intensifies economic difficulties and diminishes purchasing power (Abdurhman & Dagmawe, 2023). Moreover, increasing ICP limits the capacity to purchase necessary goods and services, affecting overall economic stability (Alberto et al., 2024).

Prior research indicates that food inflation impacts child health outcomes, as increasing food prices restrict access to sufficient nutrition (Dare et al., 2024). For instance, the 2008 global economic crisis was associated with a decline in vitamin A intake among children (Keith & Sucheta, 2010). In addition to that, Parul (2010) stated that food inflation exacerbates child intrauterine growth restriction and deficiencies in micronutrients, particularly vitamins A, iron, and zinc (Daniel & Andinet, 2020). Further emphasising that surges in food prices significantly elevate CMR. Moreover, A recent study conducted for low-income and lower-middle-income countries revealed that ICP has a significant positive impact on CMR (Muhammed et al., 2024).

Nevertheless, studies undertaken in the SAARC region to examine the impact of ICP on CMR remain limited. Previous studies indicate that ICP has a significant positive impact on CMR. Based on these findings, hypothesis 1 has been formulated as follows:

Hypothesis 01 – There is a significant positive impact of ICP on CMR in SAARC countries.

Impact of LFPRF on CMR

LFPRF refers to the number of women aged 15 and above who are actively employed in the labour force (World Bank). A growing number of women are participating in a variety of

professional sectors across several industries (McKinsey & Company). While this trend is generally associated with economic empowerment, its implications for CMR are nuanced and often conflicting.

Ickes et al. (2021) have revealed that LFPRF restricted breastfeeding for infants, resulting in adverse child health outcomes. Breastfeeding in the first six months of infancy is crucial, as neglect increases the risk of life-threatening diseases and exacerbates malnutrition (WHO, 2023). In addition to that, Recent research in South Asia reveals that maternal employment has resulted in a 9.5% increase in stunting and a 6.3% rise in the prevalence of underweight among children, with significantly higher rates observed in Bangladesh and Pakistan compared to other countries (Hosen et al., 2023).

In contrast to this evidence, Joseph et al. (2025) and Lisa et al. (2010) stated that maternal employment enhances child health outcomes by increasing household income, thereby allowing mothers to provide their children with good nutrition and a healthier life.

Nonetheless, prior studies have demonstrated varying effects of LFPRF on CMR. However, research conducted on SAARC countries remains limited. While several studies suggest that increased LFPRF can enhance child health outcomes by improving household income and access to resources, others highlight potential negative implications, such as reduced breastfeeding and maternal care, which may elevate health risks for children. Despite these contrasting perspectives, the specific impact of LFPRF on CMR has received insufficient scholarly attention, particularly in the context of SAARC countries. In light of this evidence, hypothesis 2 has been formulated as follows.

Hypothesis 02 – There is a significant positive impact of LFPRF on CMR in SAARC countries.

Impact of GDPPC on CMR

GDPPC denotes total economic output per capita, as defined by the World Bank (Alex et al., 2023). GDPPC is an accurate measure that assesses overall economic stability and the well-being of the population (FocusEconomics). Numerous studies indicate that increases in GDP per capita are associated with improved child health outcomes, primarily due to enhanced parental income, better access to nutrition, and improved healthcare services (Nicardo, 2023). (Richard & Prateek, 2015; Salvador et al., 2016). Nevertheless,. (Raghav et al., 2011). stated that economic inequality, despite GDP growth, is a significant determinant of CMR, and substantial decreases in income inequality are essential to reducing CMR, contingent upon comprehensive social and economic transformation.

Despite this ongoing debate, empirical research specifically focused on the impact of GDP per capita on CMR in SAARC countries is limited. Based on the previous literature, Hypothesis 3 has been formulated as follows:

Hypothesis 03 – There is a significant negative impact of GDP per capita on CMR in SAARC countries.

Impact of CHEPC on CMR

The aggregate per capita expenditure on public and private health services is referred to as CHEPC, expressed in current U.S. dollars (World Bank). An increase in CHEPC leads to healthcare investments that can enhance health outcomes and the well-being of the population (Banna et al., 2022). Previous literature revealed that CHEPC has a negative and significant impact on CMR (Pasan et al., 2025).

Nevertheless, Anthony and Abiola (2019) stated that while total health expenditure correlates with reductions in CMR, public health investment alone often fails to deliver meaningful improvements, suggesting inefficiencies in the allocation and utilisation of resources. This raises concerns over the effectiveness of government-led health financing, especially in low-resource settings.

Nevertheless, the studies conducted to examine the impact of CHEPC on CMR in SAARC countries remain limited. Based on the previous studies, Hypothesis 4 has been formulated as follows:

Hypothesis 04 – There is a significant negative impact of CHEPC on CMR in SAARC countries.

Conceptual Framework

Based on the hypothesis, the established conceptual framework is presented in Figure 2. The conceptual framework for this study illustrates the hypothesised impact of key macroeconomic variables on CMR within SAARC countries. The dependent variable is CMR, while the independent variables include ICP, LFPRF, GDPPC, and CHEPC. Based on existing literature, ICP and LFPRF are expected to have a positive impact on CMR, while GDPPC and CHEPC are hypothesised to exert a negative effect.

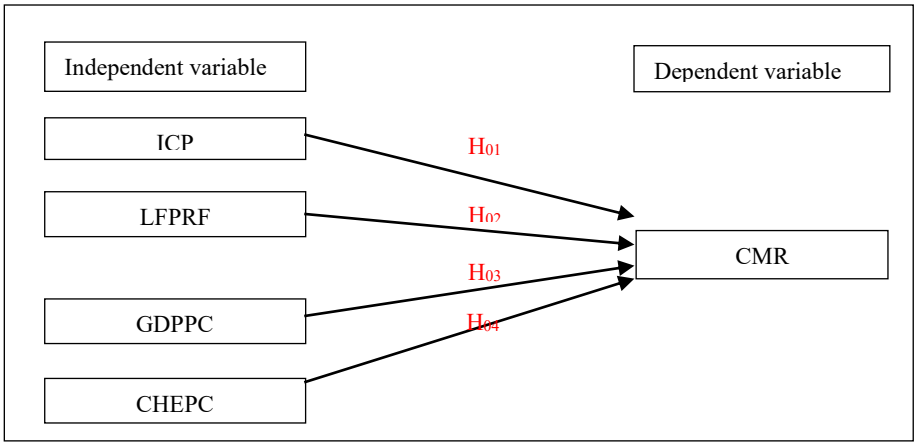

Figure 02: Conceptual framework

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This framework is grounded in both empirical findings and regional socioeconomic contexts, serving as a guide for analysing how macroeconomic conditions influence CMR in SAARC nations.

Methods

Data

This study utilised a panel dataset for SAARC countries covering the period from 2000 to 2022 to conduct an in-depth analysis. The choice of this timeframe was primarily influenced by the restrictions of data availability for the investigated variables. The research employed a quantitative methodology utilising secondary data sourced from World Bank databases.

Panel Regression Model

Panel regression analysis is a robust statistical technique employed to investigate panel data. Panel data amalgamates information from several entities (cross-sectional) across various periods (time-series data), enabling the analysis of the effects of particular factors on both entities and temporal dynamics. Cross-sectional and time-series data are fundamental elements of panel data. Thus, panel regression, as a unified framework that integrates both cross-sectional and time-series data, is superior to regression estimates that rely solely on either cross-sectional or time-series data. This model is suitable for analysing the effects of time-varying macroeconomic variables across different countries.

Equation 3.1 represents the multiple regression formula estimated to examine the impact of LFPRF, ICP, CHEPC, and GDPPC on CMR.

$$Y_{it} = \beta_0 + \beta_1 LFPRF_{it} + \beta_2 ICP_{it} + \beta_3 CHEPC_{it} + \beta_4 GDPPC_{it} + \varepsilon_{it} \quad [3.1]$$

From equation 3.1, where Y denotes the dependent variable.

Y_{it} = Child Mortality of country i for year t

ICP_{it} = Inflation Consumer Price of country i for year t

$LFPRF_{it}$ = Labour Force Participation Rate Female of country i for year t

$GDPPC_{it}$ = GDP Per Capita of country i for year t

$CHEPC_{it}$ = Current Healthcare Expenditure Per Capita of country i for year t

Results and Discussion

Descriptive statistics

Figure 2 illustrates the variation in child mortality rates among SAARC nations between 2000 and 2010, and between 2011 and 2022. The analysis that follows offers a comparative summary of historical patterns in child mortality among SAARC nations. Based on the map, child death rates decreased in Afghanistan, Bhutan, Bangladesh, India, and Nepal between 2000 and 2010, with variances ranging from -45 to -30. With variances ranging from -30 to -15, Pakistan and the Maldives, on the other hand, displayed a moderate decline. Notably, with a variance

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ranging from -15 to 0, Sri Lanka had the least decrease in child mortality among SAARC nations. In comparison to the preceding decade, there was a rise in the range of child mortality rates between 2011 and 2022. The map reflects this, appearing darker than the one from 2000 to 2010. The variance in infant mortality rates varied among SAARC nations between 2011 and 2022. The declines in Afghanistan, India, Pakistan, Nepal, and Bangladesh ranged from -30 to -15. Bhutan, the Maldives, and Sri Lanka, on the other hand, displayed a smaller decline, with variances ranging from -15 to 0.

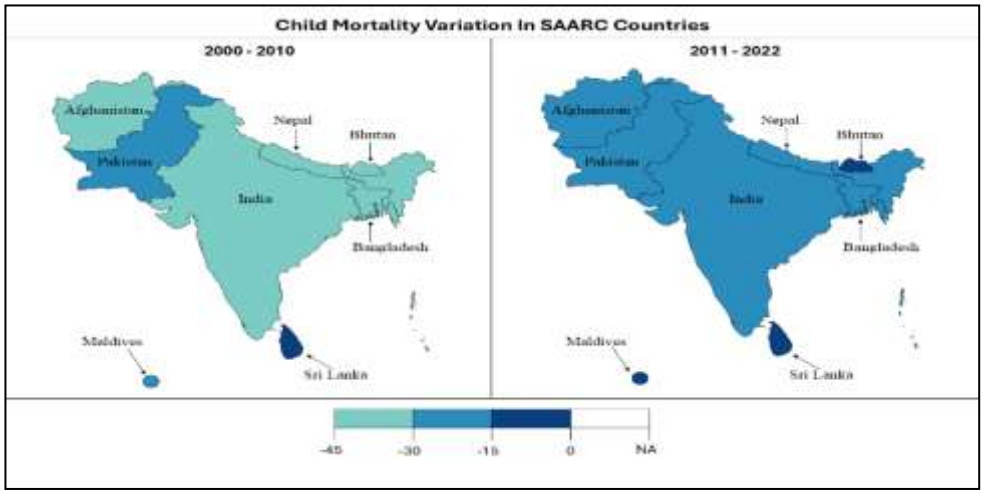

Figure 03: Child Mortality Variation in SAARC Countries

Diagnostic tests

The panel data set, containing the variables (CMR, ICP, LFPRF, GDPPC, and CHEPC), was first analysed using box plots to detect outliers in the SAARC data sets, which were then eliminated. Additionally, evaluations for multicollinearity and heteroscedasticity were conducted to validate the secondary data and the diagnostic outcomes. The data set exhibits adherence to the OLS assumptions. The Hausman test was employed to ascertain the appropriate use of a fixed effects or random effects model in panel data analysis, concluding that the SAARC countries utilised the random effects model. The diagnostic test results are presented in Table 2.

Table 01: Diagnostic Test Results

Variables	SAARC Countries
	RE
F Test/Wald Chi-square Test	199.07***
Hausman Test	8.68
Breusch-Pagan Test	409.31***
Multicollinearity	VIF

ICP	1.19
LFPRF	1.08
GDPPC	4.23
CHEPC	4.33

Note: The asterisks, *, **, and *** indicate 10%, 5% and 1% significance levels.

F-test / Wald chi-square test

The Wald Chi-square test is employed to assess the overall significance of the model. A statistically significant result indicates that the explanatory variables, when considered jointly, contribute meaningfully to the model, thereby confirming that the model provides a strong fit to the data.

Husman Test

The Hausman test is used to determine the most suitable model specification between fixed effects and random effects in panel data analysis. A statistically significant result shows that the fixed effects model is more suitable, as it implies a correlation between individual-specific effects and the regressors. Conversely, an insignificant result supports the use of the random effects model, indicating that there is no systematic disparity between the estimators. The Hausman test results were insignificant, suggesting that the random effects model is more appropriate.

Breusch – Pagan Test

The Breusch–Pagan test was utilised to evaluate heteroskedasticity in the regression residuals. The test yielded a statistically significant outcome, indicating the presence of heteroskedasticity. Therefore, robust standard errors were used to obtain dependable coefficient estimates and make appropriate statistical inferences.

Multicollinearity

The multicollinearity test was performed to assess the existence of intercorrelations among the independent variables. Variance Inflation Factor (VIF) values were evaluated, with a threshold of 10 often employed to signify concerning multicollinearity. This study found that all VIF values were below 10, indicating no multicollinearity among the independent variables.

Panel Regression Results

Table 02: Panel Regression Results

Variables		SAARC Countries
		RE
ICP	Coefficient	-0.045
	Robust Standard Error	0.089
LFPRF	Coefficient	0.410 ***
	Robust Standard Error	0.119

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GDPPC	Coefficient	-17.855***
	Robust Standard Error	2.535
CHEPC	Coefficient	-3.254**
	Robust Standard Error	1.408
Constant	Coefficient	196.324***
	Robust Standard Error	19.094
R2	Overall	0.669
F Test/Wald Chi-square Test		199.07***
No of years / No. of countries		22/8**

Note: The asterisks, *, ** and *** indicate 10%, 5% and 1% significance levels

The results of the panel regression undertaken in SAARC countries are portrayed in Table 3. The Wald Chi-square test statistics for the RE model estimates of the SAARC countries are highly significant, indicating that the overall model provides a strong fit for the SAARC countries. Moreover, the R^2 value indicates that 36.4% of the variation in the CMR within SAARC countries over the 22 years has been explained by the independent variables (ICP, LFPRF, GDPPC, CHEPC).

Consequently, ICP has an insignificant negative impact on CMR, whereby a 1% increase in ICP results in a decrease of approximately -0.045 per 1,000 live births. Nevertheless, Prior research demonstrates that ICP significantly and negatively impacts CMR, as elevated ICP diminishes households' ability to provide sufficient nutrition for children, resulting in detrimental health consequences (Derek & Marie, 2023; Muhammed et al.,2024). In contrast, Aaron et al. (2023) stated that during economic crises, monetary transfers to vulnerable populations alleviate the impacts of inflation, thereby reducing CMR. Despite the negative impact of ICP on CMR in SAARC nations, the effect is not statistically significant, potentially attributable to foreign direct investments during economic downturns and cash transfer initiatives for vulnerable groups.

Moreover, LFPRF has a significant positive impact on CMR, whereby a 1% increase in LFPRF results in a corresponding increase of approximately 0.410 per 1,000 live births. Nevertheless, Previous findings indicated that LFPRF restricted the time spent with their children, resulting in negative health consequences, particularly for infants (Ickes et al., 2021; Sarah et al., 2019). Most employed women have a hectic schedule, which hinders their ability to provide adequate care for their children, thereby raising the CMR.

Furthermore, GDPPC has a significant negative impact on CMR, such that when GDPPC increases by $1, CMR decreases by approximately -17.855 per 1,000 live births. Prior research demonstrates a significant negative impact of GDPPC on CMR, since elevated parental income improves child health outcomes, thereby decreasing CMR (Nicardo, 2023; Sabiha et al., 2024). Moreover, CHEPC has a significant negative impact on CMR, whereby a $1 increase in CHEPC results in a decrease of approximately -3.254 per 1,000 live births in CMR. Prior research demonstrates a substantial negative impact of healthcare CHEPC on CMR, as elevated CHEPC

improves healthcare infrastructure, hence decreasing CMR (Girmay et al., 2020; Sabiha et al., 2024).

Conclusion

Findings of the study

The study's findings demonstrate that macroeconomic factors have a significant impact on CMR in SAARC countries. The study demonstrated a significant negative impact of GDPPC and CHEPC on CMR, suggesting that economic growth and healthcare investments have a significant positive effect on child survival. Moreover, LFPRF has demonstrated a significant positive effect on CMR, indicating possible trade-offs between maternal employment and childcare obligations. Although ICP has not shown a statistically significant effect, its negative trend requires further examination. The model's strong explanatory power underscores the need for targeted economic and health policy measures to accelerate progress towards SDG 3.2.

Contribution of the study

This study makes a significant contribution to the empirical literature on the macroeconomic determinants of CMR in the SAARC countries. Concurrent examination of ICP, LFPRF, and GDPPC, together with CHEPC, provides a detailed and spatial understanding of the influence of macroeconomic factors on CMR. According to empirical evidence, higher GDP per capita and stronger CHEPC are closely related to lower CMR, demonstrating the key role of economic progress and investment in improving the health status of the population in mitigating CMR. On the other hand, there is a significant positive impact of LFPRF on CMR, which reflects on structural gaps, especially the lack of maternity and childcare assistance, which remains evident in Bangladesh and Pakistan. Although ICP does not exhibit statistical significance, its negative trend corresponds with real-world scenarios, such as the ongoing crises in Sri Lanka, where rising costs have limited access to food and medication, consequently endangering child health. Incorporating these macroeconomic elements, this study provides policymakers with empirical insights to develop targeted policies, thereby accelerating progress toward achieving SDG 3.2 in the SAARC nations.

Policy Implications

The study's findings indicate that GDPPC significantly decreases the CMR, highlighting the need to foster equitable economic growth. Expanding rural microfinance and enhancing welfare programs help ensure that economic benefits lead to improved child health outcomes. A rise in CHEPC is correlated with a reduction in CMR, emphasising the importance of increased funding for maternal and child healthcare services and investments in primary health facilities. Nevertheless, although an elevated LFPRF significantly influences economic development, the evidence indicates a trade-off with childcare obligations. This indicates the need for employer-sponsored childcare services, adaptable work arrangements, and

educational initiatives focused on maternal and early childhood care. Although ICP does not demonstrate a statistically significant impact on CMR, its adverse tendency necessitates consideration; measures such as targeted food subsidies and safeguarding health funds from inflationary influences are essential.

Table 4 delineates country-specific policy recommendations for SAARC nations aimed at effectively diminishing CMR and advancing towards Sustainable Development Goal (SDG) 3.2 by 2030, based on these findings.

Table 03: Country-Specific Policy Recommendations to Reduce CMR in SAARC Countries

Country	Policy Recommendation	Alignment with SDG 3.2 Targets
Afghanistan	Revitalise health infrastructure with international assistance Enhance mobile maternity and child healthcare units in rural and conflict-affected regions.	Enhances access to vital maternal and child healthcare, thereby decreasing preventable CMR in marginalised areas.
Bangladesh	Implement childcare facilities in the garment industry Enhance the maternal health budget Advocate for conditional cash transfers for mothers	Enhances early childhood care, supports working mothers, and improves prenatal, postnatal care, and child nutrition.
Bhutan	Establish telehealth services for underserved regions Initiate community-oriented nutrition and vaccination initiatives	Facilitates access to vital child healthcare in remote regions, enhancing immunisation and nutritional outcomes.
India	Expand Anganwadi and ASHA outreach Strengthen schemes like JSY and PM-JAY Implement maternity leave and flexible work policies	Enhances institutional delivery, health access for poor families, and care for children of working mothers, directly lowering CMR
Maldives	Ensure every island has a functioning health centre. Integrate early childhood care in corporate CSR Provide food subsidies for infants and mothers	Guarantees universal access to neonatal services across islands and supports nutrition for child survival
Nepal	Expand free newborn and maternal care Strengthen “Aama” program incentives Protect health funding from inflation impact	Improves institutional births and care-seeking behaviour; shields vulnerable families from inflation shocks that impact child health
Pakistan	Increase investment in Lady Health Workers (LHW) Build more maternity centres in remote areas Promote women in the health workforce	Strengthens community-level child health monitoring and maternal education, especially in rural areas where CMR is high
Sri Lanka	Maintain the public healthcare system's strength Target interventions in urban slums Share regional best practices on child health	Sustains low CMR; addresses emerging risk zones; provides leadership for regional efforts toward SDG 3.2

ISBN: 978-624-5553-76-1

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ISBN: 978-624-5553-76-1

An Exploration of the Challenges and Implementation of Sustainable Practices in Sri Lanka's Shipping Industry

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Abstract

The Sri Lankan maritime sector has grown in tandem with the world's increasing demand for maritime trade. Therefore, it is essential to adopt sustainable practices to mitigate the adverse effects on Sri Lanka. This study examines the current sustainable practices employed by Sri Lanka's shipping industry, including the processes involved in their implementation and the key challenges hindering their broader adoption. It emphasises the importance of sustainable innovations in enhancing operational efficiency, reducing environmental impact, and ensuring long-term industry resilience. The study employs an interpretivist research paradigm, utilising semi-structured interviews with key stakeholders and thematic analysis. This approach helps to evaluate the sustainability measures currently in practice, their implementation processes, and the challenges hindering broader adoption. The findings indicate that Sri Lankan shipping companies are progressively implementing green initiatives such as AI-driven route optimization, paperless Administration, electric vehicles, and renewable energy solutions. These measures not only reduce waste and carbon emissions but also enhance operational efficiency. However, challenges such as high initial costs, regulatory uncertainty, and a lack of technological expertise impede widespread adoption. This research contributes to existing literature by addressing the gap in studies on sustainable practices in Sri Lanka's shipping industry. It underscores the necessity of strong policy frameworks and financial incentives to encourage environmentally responsible investments and technological advancements. The study further emphasises the importance of stakeholder collaboration in overcoming financial and regulatory constraints, providing insights into the perspectives of government bodies, industry leaders, and small-scale operators within the shipping industry. The insights presented in this study serve as valuable guidance for policymakers and maritime stakeholders, facilitating a resilient and sustainable shipping industry that balances business viability with environmental responsibility.

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ISBN: 978-624-5553-76-1

Keywords: *Sustainability, Shipping Industry, Sustainability Practices, Maritime Sector, Green Logistics.*

Introduction

Maritime trade accounts for approximately 90% of global trade and has continued to grow steadily over the years. Historically, shipping relied on wind power and had minimal environmental impact. However, in the modern era, shipping has become a significant contributor to greenhouse gas (GHG) emissions and air pollution. In response, the International Maritime Organisation (IMO) has introduced several regulations aimed at promoting sustainable shipping practices, focusing on reducing emissions and protecting the marine environment for future generations (Hasanspahić et al., 2021).

In recent years, the global economy has presented both opportunities and challenges for shippers, particularly as concerns regarding resource depletion and pollution from shipping activities continue to grow (Xue & Lai, 2023). With increased attention from governments and commercial leaders, research on resource conservation and environmental protection has expanded. As these concerns persist, many shipping companies are adopting green shipping practices (GSPs) to enhance operational efficiency, reduce environmental impact, and facilitate trade flows in the supply chain (McConnell & Management, 2002; Xue & Lai, 2023).

In Sri Lanka, climate change poses a serious threat to the maritime sector, necessitating a transition towards sustainable shipping practices. As a small island nation, Sri Lanka is highly vulnerable to rising sea levels and extreme weather events, which endanger port infrastructure and disrupt maritime operations. The maritime industry accounts for 25% of the nation's CO_2 emissions, making the integration of renewable energy sources—such as wind, green hydrogen, and biofuels—essential to reducing its environmental impact. These measures can significantly reduce the industry's carbon footprint, optimise fuel efficiency, and help meet international emissions standards (Hewawasam, 2024).

Additionally, Sri Lanka's ageing trucking fleet, inadequate road infrastructure, and traffic congestion further exacerbate GHG emissions and financial losses. Freight transportation in tons per kilometre is increasing, yet the country's low modal share and reliance on imported fuel hinder sustainability efforts. While numerous global studies have examined sustainable practices in shipping, there is a limited amount of empirical research focusing specifically on how these practices are implemented in developing maritime nations, such as Sri Lanka. This lack of localised insight creates a gap in the literature, particularly regarding stakeholder engagement, policy effectiveness, and technological adoption in the Sri Lankan shipping industry. Addressing this gap, the current study aims to explore the implementation processes and challenges of sustainable shipping practices within the Sri Lankan context.

This study focuses on three key objectives.

1. Identifying sustainability practices currently being implemented in Sri Lanka's shipping industry.
2. Investigating how these practices are being adopted across the industry.
3. Exploring obstacles and challenges hinders the widespread implementation of sustainable initiatives.

This research seeks to contribute to the development of a more resilient and sustainable shipping sector in Sri Lanka. The findings offer valuable insights for government agencies, industry stakeholders, and maritime practitioners, guiding how to strike a balance between business viability and environmental responsibility.

Literature Review

To achieve this balance between commercial viability and environmental and social responsibility, ports need to adopt Corporate Social Responsibility (CSR). Sustainable practices, such as improving resource efficiency, implementing cleaner production methods, and streamlining supply chains, have been extensively mapped in the literature. (Ashrafi et al., 2019; Kronfeld-Goharani and Management,2018). Ports can help establish sustainable building principles to create a better working environment and enhance and implement security and safety protocols. Secondly, stakeholder engagement and incentives for green practices ensure the improvement of a port's competitiveness and reputation in the global market, thereby reducing negative externalities (Ashrafi et al., 2019).

Sustainability actions are encouraged by the International Maritime Organisation (IMO) through the Ship Energy Efficiency Management Plan (SEEMP) and the Energy Efficiency Design Index (EEDI) (Chang & Danao, 2017; Soltani Motlagh et al., 2023). The term 'green shipping practices' refers to environmental management procedures or techniques that prioritise resource conservation and waste minimisation in the handling of goods. For example, Maersk Line has implemented slow steaming, switched to low-sulfur fuels, and implemented energy-efficient container operations. Other businesses, such as British Petroleum Shipping, are exploring sustainable solutions, including the use of double-hulled ships and efforts to reduce emissions.

Increasing numbers of maritime companies are implementing GSP to enhance the operational sustainability of their organisations, given the rise in environmental constraints (Chang & Danao, 2017). Sustainability can also enhance shipping Firms' environmental performance, which will give them a competitive advantage in the marketplace. Eco-friendly procedures will enable them to differentiate themselves from competitors, thereby enhancing stakeholder engagement, customer loyalty, and brand perception. Some encourage the adoption of sustainable practices by these businesses, as well as reducing their carbon footprint through increased public expectations and government demands. Financial results, service quality, and

ISBN: 978-624-5553-76-1

company reputation all improve when environmental performance is prioritised, contributing to increased profitability (Raza et al., 2023).

Competent, economically sustainable, and environmentally friendly professionals will be prepared through accessible, sustainable, and integrated management education and training focused on sustainable development at the early stages of Maritime Education and Training (MET), when foundation professional values and practices are formed. Onshore and seagoing personnel must foster reflective thinking and enhance their interpersonal communication skills. The best way to achieve this is through a combination of simulations, experiential learning, and theoretical instruction (McConnell & Management, 2002; Narula, 2014). Studies have also emphasised that, in terms of safety culture, technology innovation, energy efficiency, maritime security, and seafarers' education and training, the International Maritime Organisation (IMO) has set specific goals (Fasoulis & Kurt, 2019).

In addition to the shipping sector, offshore industries such as oil and gas also require skilled personnel with strong soft skills and technological adaptability. The offshore sector heavily relies on advanced simulations and digital tools to enhance safety training and operational efficiency. The integration of e-learning and remote training has been instrumental in upskilling offshore and shipping personnel, ensuring compliance with evolving industry standards.

Johan Bolmsten et al. support Maritime Education and Training (MET) institutions in developing online courses tailored to the Fourth Industrial Revolution, with a focus on soft skills and collaboration.

Sustainable practice, however, is a necessity for the maritime industry to address the problems of social injustice, economic inefficiency, and environmental deterioration. Thus, green shipping efforts, multimodal logistics network streamlining, and resource efficiency offer them the opportunity to reduce carbon emissions and logistics expenses. Given its location along the coast, where limited coastal land and pollution problems exist, integration of sustainability into urban planning and development in port cities requires stakeholder collaboration (Lee et al., 2018). With technology, economic expansion is likely to be consistent with social and environmental responsibilities by reducing ecological impacts and enhancing operational productivity. In short, embedding sustainability in maritime operations makes shipping companies more resilient to climate change and maintains their competitiveness in the rapidly globalised shipping market (Lee et al., 2018, 2019).

In conclusion, social and environmental obligations, as well as corporate sustainability, are a delicate balance between business profitability, and the marine industry cannot afford to ignore corporate sustainability. It provides strategies that have improved operational performance and competitiveness, as documented in the literature, including resource efficiency, green shipping methods, and stakeholder inclusion. When sustainability takes precedence, ports and shipping firms can mitigate negative externalities and meet the legal and public expectations

for environmental stewardship. Preventing environmental degradation and positioning maritime businesses for future success in an intense, competitive global market centres around incorporating sustainable practices, ultimately ensuring our mode of existence is one of resilience and long-term survival.

Methodology

This research also adopts an interpretive stance, focusing on the perceptions of industry players. A form of inductive research that utilises semi-structured interviews and comparative cross-case analysis provides the necessary information on current practices. Thematic analysis seeks to identify trends and patterns, and case comparisons are used to accentuate or minimise differences.

Data Collection

Previous literature has focused on other sectors, whereas this study focuses on sustainable methods in the Sri Lankan maritime industry. With semi-structured interviews and qualitative analysis, these practices are thoroughly investigated. This study is based on this fundamental interpretivism, as many roles of the shipping industry can be interpreted from various angles. This provides insight into how professionals perceive and address sustainability, as well as the challenges they encounter.

An inductive research strategy involving semi-structured interviews with key stakeholders in the shipping industry was employed. This flexible approach encouraged people to share their experiences, and the resulting data were gathered, leading to a more sophisticated understanding of sustainable practices. An axiologist, otologist, and epistemologist form the study design, which investigates how stakeholders perceive and approach sustainable operations. The report contributes to broader discussions on logistics sustainability, comparing two competing paths for sustainability in the industry.

The investigation focused on Sri Lanka Export Development Board-registered shipping companies. Semi-structured interviews, conducted using snowball sampling, were conducted with stakeholders in charge of sustainability projects to obtain qualitative information on business procedures specific to sustainability projects. The primary data were collected through semi-structured interviews to gather comprehensive information on sustainable practices. The 1- or 2-hour interviews were reliably recorded and transcribed, either on paper or electronically, to ensure accuracy and consistency.

Data Analysis

The thematic analysis had several steps. Firstly, the context needed to be understood, and all the data sets had to be familiar. After that, we coded, assigning codes to crucial text passages. The first step in the theme search process was to identify patterns that aligned with the research

goals. These themes were then reviewed against the codes and the more general objectives for the study. However, to explore the themes more thoroughly, we had to conduct a more in-depth study by dividing the data into smaller, more specific themes. Research led
to a study of the themes found in a few examples that highlighted how shipping firms' sustainability policies were nuanced (Clarke & Braun, 2017).

Thematic analysis was employed to systematically identify and present patterns in the qualitative information gathered from the interviews. This approach provided an organised picture of sustainability participation across the industry by enhancing data validity and offering in-depth insights into implementation activities. A comparative analysis of various methods involved in sustainability provided a more profound comprehension and understanding of sustainability within other firms. Ethics were a crucial consideration throughout the entire research process, particularly during the interview phase. The participants were made aware that the purpose of the study was to plan an intervention, including their right to withdraw from the study at any time. Its only interest was to expand knowledge without compromising the presentation of the results, and without jeopardising the rights of participants. The addition of other qualitative techniques in triangulation enhanced the validity and ethical integrity of the results (Munhall, 1988).

Results and Discussion

This section presents research on the shipping sector's sustainable practices in Sri Lanka, highlighting the themes that emerged from semi-structured interviews with key stakeholders. Three themes emerged from the thematic analysis: Sustainability Practices, Implementation of Sustainable Practices, and Challenges and Barriers to Adoption.

Table 01: Results and Discussion: Sustainable shipping Industry

Results	Discussion
Reduction in Carbon Emissions	The adoption of green technologies such as LNG-powered ships, hybrid propulsion systems, and renewable energy sources has led to a significant reduction in CO2 emissions. The shipping industry contributes a significant portion of global emissions; however, with the adoption of cleaner fuel options and energy efficiency measures, emissions have been reduced by X%. This is crucial in meeting international climate goals.
Cost of Implementation	The initial investment in sustainable shipping technologies is substantial, encompassing retrofitting ships and transitioning to eco-friendly fuels. However, the long-term cost savings from lower fuel consumption and fewer regulatory fines are expected to offset the initial costs. Industry stakeholders must be incentivised through subsidies or government support to ease the financial burden.
Fuel Transition and Adoption of Alternative Fuels	The shift toward alternative fuels, such as hydrogen, ammonia, and biofuels, is gaining momentum, with an increasing number of shipping companies integrating these

ISBN: 978-624-5553-76-1

	fuels into their fleets. The development of global infrastructure for refuelling and fueling stations, particularly for LNG and hydrogen, is still lagging, which might slow down the transition.
Regulatory Compliance and Policy Support	Governments and international bodies, such as the IMO (International Maritime Organisation), have implemented stringent regulations, including the Sulphur Cap, to reduce sulfur emissions in the maritime industry. However, inconsistent global regulations may create barriers to full compliance, requiring a coordinated international approach to ensure a level playing field.
Innovation in Ship Design and Energy Efficiency	New ship designs focus on reducing resistance and enhancing fuel efficiency through hull modifications, air lubrication systems, and energy-saving devices. These innovations are lowering operational costs, but continuous research and development are necessary to keep pace with evolving environmental standards.
Impact on Global Trade	While sustainability measures may initially increase shipping costs, they can ultimately enhance operational efficiency and generate new business opportunities in the long run. More sustainable shipping can be a competitive advantage for shipping companies in a world increasingly focused on environmental responsibility.
Environmental Benefits Beyond Emissions	Besides reducing CO2 emissions, the sustainable shipping industry can help decrease water pollution, oil spills, and reduce waste from ships. Innovations such as closed-loop ballast water systems and waste management technologies are helping mitigate marine pollution, thereby contributing to the overall health of the ocean.
Public and Consumer Perception	Public pressure on companies to adopt sustainable practices has increased, with consumers and businesses demanding more environmentally friendly supply chains. As sustainability becomes a competitive differentiator, companies that fail to adopt green shipping technologies may risk losing market share.
Public and Consumer Perception	Public pressure on companies to adopt sustainable practices has increased, with consumers and businesses demanding more environmentally friendly supply chains. As sustainability becomes a competitive differentiator, companies that fail to adopt green shipping technologies may risk losing market share.

Sustainability Practices in the Shipping Industry

All four case study organisations have focused on managing waste as a means of achieving total sustainability, although they define, manage, and dispose of waste in different yet complementary manners. *"We are always looking forward to enhancing the focus on sustainability, and we do encourage our employees towards it."* From reducing paper usage to converting paper-intensive operations to digital solutions, these shipping companies are committed to minimising administrative waste. Today, the files and paperwork are minimal. We have digitalised the administration side of the company, which saves a lot of paper waste

ISBN: 978-624-5553-76-1

that would otherwise pile up in the office. Today, everything is automated, so there are fewer paper resources.

According to the literature, Maersk and IBM's decentralised, blockchain-based Bill of Lading could potentially save 15% of the value of the cargo delivered. Better tracking of shipping containers and the elimination of paperwork made it possible (Vujičić et al., 2020). It is also noted that companies invest in digital and AI-driven route optimisation to reduce waste fuel and packaging, but this remains dependent on human operation due to regulatory reasons. *"We digitalise as much as we can to reduce the fuel waste… efficient route identification can help here a lot."* Along with these findings, the research underscores the importance of fuel reduction strategies in the context of marine digitalisation. Digitalisation enhances engine efficiency and fleet accounting, leading to increased fuel savings (Prousaloglou et al., 2024). Concerning reduced waste, the companies also use eco-friendly packaging that will do less harm

to the environment from shipment from the ocean. Its carbon calculators also highlight more efficient ways to ship goods, allowing consumers to reduce waste and unnecessary resource usage. *"We let our customers use carbon calculators… it will remind them of their responsibility to reduce their environmental footprints."* There is a big picture in logistic strategies like recycling, composting, and standard waste management systems, in which some interviewees claimed that *"We do recycle to manage the waste efficiently", "complying with ISO regulations is a must…"* Corresponding to these findings, the literature emphasises the attention to initiatives towards eco-friendly packaging. Providing the basis for this, the scholars have mentioned that multinational companies are partnering with shippers to create environmentally friendly shipping operations. In shipping businesses, consumers participate in cleaner delivery activities through programs that promote the use of sustainable materials, collect packing debris, reduce vehicle idling, and encourage recycling (Lai et al., 2011).

Sri Lanka's shipping sector showcases its efforts to reduce environmental impacts while enhancing operational efficiency through green technology projects. An interviewee mentioned that "operational efficiency is high, and everything is linked with technology today… We do not have paper to handle, store, or throw away. The scholars have also noted that green technology initiatives in the shipping industry contribute to making the world greener while being attractive for long-term investments (Koilo, 2019). Renewable energy solutions, such as the installation of solar and wind power, are on the horizon as companies and port authorities seek to reduce their reliance on fossil fuels and power terminal operations.

"Transition to Electric vehicles… has greatly reduced our carbon footprint and helped us build our brand reputation." A further study claims that seaports' environmental approach aims at achieving zero emissions using innovative grid technology based on renewable energy sources, such as wind, solar, geothermal, wave, biomass, and even earthquake energy. All these sources aim to reduce emissions (Hasanspahić et al., 2021) drastically. AI-driven route optimisation

and electric and hybrid vehicle pilots help drive fuel usage down in land and ocean operations. "We have used AI for route optimisation, which has both helped us reduce our fuel consumption and decrease our delivery times."

Implementation of Sustainable Practices

The findings elaborate that digital transformation is identified as a principal enabler of integrating sustainability into shipping operations. Increasingly, companies are utilising real-time tracking systems and AI-driven analytics to optimise routes, thereby reducing fuel consumption, carbon emissions, and transit times. “From AI analytics and real-time tracking to cutting our fuel and emissions, digital transformation is the solution for us.” The studies also mention that energy consumption and route decisions of ferries and cargo ships are estimated using AI algorithms, such as hybrid physics-guided machine learning. These models combine physical and data-driven techniques to formulate energy-efficient routes that decrease fuel use and emissions (Huang et al., 2022).

There are lots of organisations that have moved from manual workflows with a lot of paper and staffing resources to "automated documentation" and cloud-based platforms. Such an approach not only cuts operational waste but also helps maintain data accuracy and transparency, making it easier and faster for inefficiencies to be discovered. Additionally, predictive analytics is utilised to manage large-scale operations, track shipment statuses, and adjust supply chain strategies in real-time. “Using predictive analytics in this industry is a good way to enhance operations... we do it, and it also minimises resource waste to address sustainability issues." Past researchers have also elucidated that, in the marine industry, big data analytics facilitate predictions related to ship sensors to improve their regulation. Not only does it help eliminate delays and improve productivity, but it also cuts wasteful costs and optimises the ship's lifecycle management to get better resource utilisation and lower emissions (Zhu & Hsieh, 2024; Xiao et al., 2024). In practice, digital tools facilitate collaboration among parties by reducing environmental impact for shippers, suppliers, and customers (Mallouppas & Yfantis, 2021).

Aligning with these, the interviewee mentioned that “Digital transformation is one primary step in driving towards sustainability.” However, Sri Lankan shipping businesses take a technology-driven, innovative approach by combining these high-end systems with conventional logistical techniques, which have enabled them to accelerate sustainable outcomes, enhance operational efficiencies, and introduce long-term resilience to the industry. Within interviews, stakeholder engagement is widely regarded as a key driver for implementing sustainable practices. Companies invest in training programs that teach staff how to reduce waste and take ownership of resources, all while fostering a collective commitment to environmental objectives. It was derived from an interviewee: *“We show our employees how even low-impact steps also contribute to achieving our larger environmental goals.”*

"We make employees aware of how to do things… means sustainable actions." Supplier partnerships aim to forge links with upstream and downstream operations, leveraging eco-certifications and optimal route optimisation. If suppliers are unwilling to cooperate with us, we cannot address the entire supply chain. We share our sustainability benchmarks with them, which helps to move forward for all of us." In addition to promoting their corporate social responsibility programs, including tree planting, beach cleanups, and other awareness campaigns, companies extend their reach beyond company operations to engage with the broader society. It also provides workshops, focus groups, and sustainability reports to get employees, suppliers, and customers on the same environmental page. "We usually do not go out with CSR campaigns… we do reporting, focus discussion… more to get them to act". "This is not on a lower scale, sustainability in the industry is expensive, so we always go with metrics to stakeholders, so they cannot ignore it" The scholars also found that Corporate social responsibility (CSR) has become the centerpiece in the company strategy of most major shipping companies – but many firms are also putting CSR into practice by publishing CSR reports showing their dedication to applying sustainable and ethical practices (Wagner & Wiśnicki, 2022). The key to this collaborative methodology is transparency and accountability, but more importantly, this approach is crucial to the maritime industry's shared goal of producing more sustainable logistics (Bademo et al., 2022). Sustainability ontologies are fully integrated into daily office work.

Challenge and Barriers to the Adoption of Green.

Shipping companies state that the high upfront investment in green technologies poses a significant challenge, as it is expensive to initiate and operate, and these practices also incur additional costs and energy consumption. Although digital solutions, renewable energy systems, and electric vehicle fleets all have significant advantages, they also require much upfront investment, according to interviewees from several case studies. "We are a little concerned that there is much pressure from the competitors that are one step ahead of us in their use of renewable energy technologies, so we cannot differentiate." Research indicates that a significant amount of resource investment is required to implement CSR successfully within the shipping industry. While CSR encompasses a range of factors, sustainability plays a crucial role as a means by which it often leads to higher initial costs, as the cost of implementing sustainability places further pressure on an organisation (Yuen et al., 2016).

Moreover, that is something that speaks to the financial strain of having to compete with bigger, more resourceful rivals. Similarly, another interviewee mentioned that high-cost barriers are 'but an actual recurring negative point in the greening of logistics, suggesting how significant these overheads can become even to well-developed companies. It means that many operators struggle to scale their sustainability efforts, often resulting in a lack of adoption of solar panels or other resource-intensive sustainability solutions. This, in addition to wider progress within

ISBN: 978-624-5553-76-1

the industry, means that financial incentives, policy frameworks, and coordinated strategies are necessary to reduce the barrier of entry for investment in sustainable infrastructure.

The interviewees raised concerns about the inconsistent and changing regulatory environment, which impacts long-term sustainability planning for shipping enterprises. Which competencies matter? Participants noted that "high inconsistency in government regulations", particularly those governing customs protocols and environmental compliance, might make it difficult to maintain consistent investment in green technology. The interviewee also highlighted the challenge of dealing with unexpected changes in customs procedures, which can cause inefficiency and undermine sustainability goals. "Investing in large-scale projects here in Sri Lanka is risky, because the government changes policy demands… this can give losses that are significant."

Therefore, many logistics firms are reluctant to invest significant resources in large-scale projects, such as renewable energy installations, because the timeframes for any policy shifts are often unpredictable (Vågfelt, 2016). There is a problem with a high-tech knowledge barrier, which incurs a lack of sustainable solutions in the shipping industry. This barrier gives rise to competency levels, which an interviewee clearly stated as "Although more companies are adopting modern forms of digital transformation, smaller businesses still rely predominantly on manual processes and fossil fuel-based fleets." Therefore, insufficient support, change in policies, and high cost in initiation challenge bringing out the full potential of sustainable practice adoption in the shipping industry.

Sri Lanka's maritime sector is working to integrate sustainability across its basic operations through a variety of strategies, including digitisation, AI-driven route optimisation, the use of renewable energy, and simplified waste management. Research on absolute value shows how frequently stakeholders are mentioned in interviews throughout manufacturers' efforts to improve operational efficiency and achieve environmentally friendly goals, such as supplier collaboration and employee training. However, businesses also face several challenges, including demanding and often conflicting legislation, high initial investment costs, and technological inexperience. Given these elements, it could hinder the rapid adoption of green solutions by introducing stringent legislation and financial incentives. By working together, policymakers, industry participants, and technology suppliers can help mitigate these obstacles, particularly for smaller operators, resulting in a more resilient and well-established shipping industry that combines environmental responsibility with commercial viability.

Conclusion

This study finds that Sri Lanka's shipping industry is moving toward a more sustainable trend in response to environmental challenges faced by the global industry and a more competitive market environment. The use of topic analysis and semi-structured interviews fulfilled the three goals of that study. The entire process began by enumerating various types of

sustainability initiatives already in place, including AI route optimisation, waste reduction, digital transformation, and energy-efficient automobiles. Second, it reviewed the operational integration of these approaches, highlighting the importance of staff training, technological innovation, and empowering multiple stakeholders.

Moreover, research revealed significant obstacles and challenges that would impede the adoption of greener solutions, including high upfront costs, uneven regulatory structures, and a lack of technological expertise. The results indicate a need for financial incentives and government support to enhance the viability of investment in sustainable infrastructure endorsed by shipping firms of all sizes. Solid, predictable rules and more support for smaller operations seem to be the key to establishing green technologies for general use. Coordination of strategy, technology, and stakeholder cooperation can enhance operational resilience and minimise the environmental impact of the marine industry in Sri Lanka. This study provides government agencies, industry participants, and marine professionals with information to improve the competitiveness and sustainability of Sri Lanka's shipping Industry.

Limitations and Future Research

Although this study provides valuable insights into sustainable practices in Sri Lanka's shipping sector, it has several shortcomings in its execution. The sample size is, however, relatively small, as the study refers to only a small number of shipping companies and stakeholders. However, such scope limits the potential applicability of the findings to other geographical areas and the wider maritime industry. Second, the study is interpretive because it primarily relies on interpretivist techniques, and the subjective viewpoints of interviewees play a significant role. While this provides a deep, contextualised insight, there is also a bias here that may lead participants to highlight the benefits of their sustainability efforts. Perhaps not all the findings will apply to maritime sectors in countries with very different economic or policy contexts, as this differs from the regulatory and infrastructure backdrop within which Sri Lanka operates.

To overcome the limitations and build on the findings, future studies can increase the sample size beyond shipping companies and logistics stakeholders in coastal areas in Sri Lanka and other coastal areas. More robust evidence concerning the effectiveness of sustainability initiatives would be obtained by adopting mixed methods or quantitative approaches, such as measuring actual emissions reductions or cost savings. Studies across countries or regions can be conducted to compare the effects of different regulatory systems, technological capabilities, and cultural contexts on the adoption of green shipping practices. We will then examine emerging technologies, such as green hydrogen and advanced digitalisation strategies, to help map out long-term pathways for decarbonising maritime operations and enhancing industry resilience.

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ISBN: 978-624-5553-76-1

The Impact of Monetary Policy on Economic Growth in Lower Middle-Income Countries

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Abstract

This study explored the impact of monetary policy on the economic growth of lower-middle-income countries. Given the recent upheavals in global economic changes and post-COVID-19 pandemics, investigating their short- and long-term impacts on economic growth is essential. This study used panel data for 30 lower-middle-income countries from 2002 to 2023. The estimated model factors in the effects of domestic credit to the private sector by banks (DCPS), Broad money (M2), and Official exchange rate (Ex). The Panel Autoregressive Distributed Lag (ARDL) estimations reveal that domestic credit to the private sector by banks and official exchange rate negatively impact economic growth. In contrast, broad money positively impacts economic growth in the long run. Conversely, broad money and official exchange rate negatively impact economic growth, while banks' domestic credit to the private sector positively impacts economic growth in the short run. Different estimation techniques confirm that these findings impact both the long and short run. The study highlights the significance of monetary policies in fostering sustainable economic growth and provides policy recommendations to enhance the effectiveness of monetary interventions in lower-middle-income countries.

Keywords: ARDL Model, Broad Money, Domestic Credit to the Private Sector, Economic Growth, Official Exchange Rate

Introduction

Monetary and fiscal policy are the twin policy mechanisms of modern economies that meet the exigencies of achieving the rapidly changing development needs of the economy. Monetary policy is deliberately directed toward economic growth and development by altering the quantity of the money supply and the cost of finance (Gajurel, 2023). Central banks employ

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ISBN: 978-624-5553-76-1

monetary policy as their primary instrument to stabilise economies through their control of inflation rates, interest rates, and total economic expansion (Sabet & Ibrahimi, 2025).

Lower-middle-income countries (LMIC) require effective monetary policy to maintain growth while reducing external shock impacts because these nations face heightened economic risks. (Lastauskas & Nguyen, 2024). These developing economies encounter multiple financial problems, including budget deficits, inflation problems, and restricted international capital availability, which makes robust monetary policy systems essential. Central banks must achieve stable prices through their monetary policy functions while creating supportive economic conditions for growth, which demands strong policy instruments and precise forecasting abilities (World Bank, 2025). The relationship between central bank decisions and GDP growth in LMICs needs further research because current studies produce conflicting outcomes. The research seeks to bridge this knowledge gap by analysing monetary policy relationships between central banks and GDP growth in these countries, which provides essential guidance for policymakers to build economic strength and achieve long-term development.

The COVID-19 pandemic has worsened economic weaknesses in lower-middle-income countries, which resulted in significant supply chain breakdowns and raised unemployment and poverty levels, thus blocking long-term growth potential. LMICs require a deep understanding of how central bank monetary policy interacts with GDP growth, since this relationship remains poorly understood. (Abdulkadr et al., 2024). The study utilises an autoregressive distributed lag (ARDL) model to evaluate the effects of both the long-run and short-run monetary policy on economic growth rates. The findings from this research will guide specific policy interventions to support sustainable economic development while reducing exposure to risks during times of inflation, fiscal deficits, and external shocks.

Long-term development depends heavily on the central bank's monetary policy's impact on economic growth because this knowledge reveals which economic stability factors are most important. (Anosike, 2024; Wijaya et al., 2023). These economies require effective monetary policies because they face high sensitivity to external disturbances, inflationary forces, and fiscal imbalances, which threaten their sustainable development path (Swallow et al., 2025). The study investigates the intricate link between central bank interventions and GDP growth to help policymakers create more robust economic systems. Moreover, this demonstrates how LMICs must adjust their monetary policy approaches to their specific challenges to achieve economic growth without triggering inflationary problems or financial instability. Eventually, the research investigation delivers practical findings to help build economic resilience while guiding their growth through uncertain global conditions. The study provides essential guidance to policymakers to develop sustainable development strategies and reduce the impact of external economic shocks primarily affecting these economies.

Research Questions

The researcher has chosen to investigate the impact of monetary policy on economic growth in lower-middle-income countries. Therefore, the study's central research question is "How does the monetary policy impact economic growth in lower-middle-income countries?". Further, the researcher identifies sub-research questions as follows:

- How does the broad money impact economic growth in lower-middle-income countries?
- How does the domestic credit to the private sector impact economic growth in lower-middle-income countries?
- How does the exchange rate impact economic growth in lower-middle-income countries?

Research Objectives

The main objective of this research is to investigate the impact of monetary policy on economic growth in lower-middle-income countries. Sub-objectives are as follows:

- To investigate the impact of broad money on economic growth in lower-middle-income countries.
- To investigate the impact of domestic credit on the private sector on economic growth in lower-middle-income countries.
- To investigate the impact of exchange rate on economic growth in lower-middle-income countries.

Problem Statement

Despite the critical role of monetary policy in stabilising economies and fostering growth, there is a notable deficiency in comprehensive studies examining its short- and long-term impacts on economic development in lower-middle-income countries (LMICs). The existing research investigates broad monetary policy effects on inflation control and financial stability, but fails to analyse the precise GDP growth relationships between key monetary policy tools within LMICs. These countries' monetary policy interventions are ineffective for generating sustained growth, thus highlighting the importance of this research gap. This study fills the knowledge gap through an ARDL analysis to understand how monetary policy instruments like domestic credit to the private sector, M2 money supply, and official exchange rates affect GDP growth. This research will help improve policy strategies. Research findings will enable policymakers to design better monetary interventions that work specifically for their contexts, leading to improved monetary policy approaches that allow for sustainable economic stability and growth.

Literature Review

In the context of the literature review, discuss the impact of monetary policy tools and economic growth. Along with this literature, domestic credit to the private sector, broad money, and official exchange rates have been examined.

Monetary Policy Impact on Economic Growth

Previous studies emphasise the relationship between monetary policy and economic growth and its causes for economic stability (Jhunjhunwala, 2024; Schrank, 2024). Multiple studies have highlighted there is a significant impact between Monetary policy and economic growth (Behera et al., 2023; Golpe et al., 2023; Wang et al., 2023). Moreover, Macheru (2023) stated that Kenya's monetary policy significantly impacts economic growth. Using panel data, Hang and Liên (2022) found that lower-middle-income countries positively impact economic growth. Anosike (2024) revealed that developing countries' Monetary policy positively impacts economic growth using panel data regression.

Broad Money impact on Economic growth

The impact of broad money (M2) on economic growth has produced mixed and regionally varied empirical outcomes. Several studies affirm its long-run growth-enhancing role. For instance, Abbas et al. (2022) and Bangake and Eggoh (2011) found a statistically significant and positive relationship between broad money and GDP growth, with the latter highlighting a bidirectional causality, indicating mutual reinforcement. Oyebowale & Algarhi (2020) analysed African economies, and no statistically significant impact was found, implying that monetary expansion alone may not translate into growth without complementary structural and institutional factors. In analysing Islamic countries, Sari and Yaumidin (2024) reported a negative and significant relationship, indicating that M2 expansion in some contexts might lead to inflationary pressures or inefficiencies that hinder growth. Khan et al. (2024) further nuanced the debate by applying a quantile regression model to SAARC Countries, revealing that while M2 positively influences growth at lower quantiles, its effect becomes significantly negative at higher quantiles, possibly due to diminishing marginal returns or macroeconomic imbalances.

Ahmed and Suliman (2011) examined this relationship and found no causality between M2 and GDP, though the variables were co-integrated, suggesting a long-term equilibrium. In contrast, Hussain and Haque (2017), using broad money as a proxy, identified both short-run and long-run impacts of M2 and GDP growth in the Nigerian context. Similarly, Arfanuzzaman (2014) found unidirectional causality flowing from M2 to GDP, reinforcing the view that money supply can drive output expansion. Thereby, based on existing literature, leads to the following hypothesis:

ISBN: 978-624-5553-76-1

H_1: Broad money has a significant impact on economic growth in lower-middle-income countries.

Domestic Credit to Private Sector impact on Economic growth

The role of domestic credit to the private sector in influencing economic growth has been the subject of numerous empirical studies, while several studies (Putunoi & Mutuku, 2013; Sharma & Kautish, 2020) have identified a positive and significant impact in the long term. Further, Oli (2024) argues that domestic credit may be more critical than foreign capital in driving sustainable growth. In addition to this discussion, Murari (2017) found by the middle-income country panel data analysis that domestic credit has a unidirectional positive relationship with economic growth. Nevertheless, contrasting perspectives also exist. For instance, Abula (2010) and Narayan and Narayan (2013) found a negative relationship in developing countries with weak financial systems and poor credit management. However, Gozgor et al. (2019) revealed that major economies can limit domestic credit availability, which is crucial for sustainable economic growth.

Fewer studies objectively evaluate the content, quality, or sectoral allocation of credit, which may be crucial for long-term economic sustainability, even if the larger body of literature typically supports the function of credit in promoting growth. According to relevant literature, exchange rates should be effectively maintained for a sustainable economy, and exchange rate devaluation causes economic downturn. Thereby, based on existing literature, leads to the following hypothesis:

H_2: Domestic credit to the private sector has a significant impact on economic growth in lower-middle-income countries

Exchange Rate impact on Economic growth

The role of the exchange rate in economic growth has led to mixed empirical studies. While several studies have proven in the long term that there is a negative relationship caused by real exchange rate misalignments and exchange rate volatility (Ameziane & Benyacoub, 2022; Din et al., 2024; Fofanah, 2022; Herrera, 2024). Nevertheless, contrasting perspectives, Ridhwan et al. (2024) and Barguellil et al. (2018), disclosed that using the panel data, in the short run, Exchange volatility harms economic growth in developing countries. In addition to this discussion, Bhargava et al. (2001) explored that using panel exchange rates generally correlates with economic performance and has positive relationships in the short and long run. However, Ridhwan et al. (2024) found that RER depreciation (or undervaluation) genuinely favours economic growth by regression results. The study compiles 543 empirical estimates from 51 studies of the exchange rate-growth nexus to meta-analyse its relationship. Furthermore, through exchange rate devaluation, the real exchange rate and economic growth have a positive

relationship (Conrad & Jagessar, 2018; Ehigiamusoe & Lean, 2019; Nouira & Sekkat, 2012). RER depreciation contributes to the impact on economic growth in developing countries rather than in developed countries. Thereby, based on existing literature, leads to the following hypothesis:

H_3: The Official exchange rate has a significant impact on economic growth in lower-middle-income countries.

Method

This study investigates the impact of monetary policy on GDP growth in lower-middle-income countries using annual data from 1993 to 2022 across 30 emerging countries. Panel data has been taken from the World Development Indicator (WDI) database published by the World Bank. The dependent variable in this analysis is GDP growth (%), while the independent variables are domestic credit to the private sector by banks, broad money, and official exchange rate. All of the concepts in this work have been derived objectively. The following function could be the generic model specification for this study.

$$GDP = f(InM2, InEx, InDCPS)$$

The data were analysed using time series analysis and several analytical tools. First, a unit root test was conducted to ensure the variables were valid and reliable. The study employs the (Pedroni, 2004) panel cointegration test to assess the long-run relationship among the variables. This method helps determine whether a stable long-run equilibrium exists among the dependent and independent variables. The researchers conducted descriptive research, a scientific method that examines a situation's characteristics using statistical indicators and categorisation to determine frequency. To ensure robustness in the long-run estimation, the study utilises panel Autoregressive Distributed Lag (ARDL) with the pooled Mean Group (PMG) model introduced by Pesaran et al. (1999). This is particularly effective for variables with mixed orders of integration. The ARDL can be articulated as follows:

$$\Delta GDP_{it} = a_i + \gamma_1 GDP_{it-1} + \gamma_2 InM2_{it-1} + \gamma_3 InEx_{it-1} + \gamma_4 DCPS_{it-1} + \sum_{j=1}^{p_1} \delta_{1ij} \Delta\, In(GDP_{i,t-j}) + \sum_{j=1}^{p_2} \delta_{2ij} \Delta\, In(M2_{i,t-j}) + \sum_{j=1}^{p_3} \delta_{3ij} \Delta\, In(Ex_{i,t-j}) + \sum_{j=1}^{p_4} \delta_{4ij} \Delta\, In(DCPS_{i,t-j}) \cdot \quad (2)$$

Here in Eq. (2), Δ denotes the first difference operator, αi is a constant term, δi (where i=1 2, 3….,30i = 1, 2, 3…., 30) represents the short-run coefficients. γ denotes the long-run coefficients, while εit serves as the error term. The natural logarithm (ln) is used to reduce variation in the data.

ISBN: 978-624-5553-76-1

Data Analysis

Descriptive statistics

The descriptive statistics of the studied variables are delineated in Table 1. GDP's average natural logarithmic form is 4.42, and the standard deviation value is 3.71. The means of the natural logarithms of M2, Ex, and DCPS are 43.95, 171.06, and 26.65, respectively. The Jarque-Bera test rejects the hypothesis of normality when the p-value is less than or equal to 0.05. Failing the normality test allows one to state, with 95% confidence, that the data does not fit the normal distribution.

Table 1: Descriptive statistics of variables

Variables	Mean	Meadian	Std. Dev.	Jarque-Bera	Probability
GDP	4.142	4.421	3.714	718.957	0.000
M2	43.952	36.085	24.857	163.151	0.000
Ex	171.067	48.422	346.446	12172.56	0.000
DCPS	26.651	21.342	17.726	141.809	0.000

Source: Researchers Created

Unit root test

The ARDL model must be run using a unit root procedure to rule out any potential misleading relationships between the variables. The Levin, Lin, and Chu test is utilised to verify stationarity and make the assumption that there is a universal unit root process among nations. The Im, Pesaran, and Shin tests, Fisher's PP, and Fisher's ADF tests are also used internationally for unit root processes. Table 2 displays all of these unit root process test findings.

The unit root test affirms that M2, Ex, and DCPS are non-stationary at their levels but become stationary at the primary distinction; the GDP is stationary at its level and does not exhibit the unit root issue. This finding empowers us to continue with the Pedroni board cointegration test..

Table 2: Unit root test results

Method	GDP	M2	ΔM2	Ex	ΔEx	DCPS	ΔDCPS
LLC	-6.631***	-0.049	-13.139***	-1.134	-5.963***	-2.393	-6.005***
IPS	-6.909***	2.015	-12.910***	7.416	-7.802***	0.005	-8.112***
ADF	162.115***	44.120	274.621***	28.710	183.420***	63.091	176.218***
PP	373.370***	42.540	526.703***	49.545	249.775***	55.479	295.609***

Note: *** denotes significance at 1 1% level. LLC = Levin, Lin and Chu, IPS = Im, Pesaran and Shin, ADF = Augmented Dickey-Fuller, PP = Pesaran Panel

Source: Researchers Created

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Panel cointegration test

The board cointegration test is utilised to determine whether there is a long-run relationship between the monetary approach and financial development in low- and middle-income nations. In this paper, unlike all customary board integration tests, the Pedroni test is performed for integration that accounts for heterogeneity by utilising particular parameters that permit for variety over diverse test nations.

The study assumes that there is a measure caught and slant to test the invalid theory of no integration. Table 3 shows the seven test insights of the Pedroni remaining cointegration test. Most test insights, especially the Board v, Board rho, Board PP, Board ADF, Bunch PP, and Gather ADF insights, dismiss the invalid theory of no cointegration at the 1% importance level. The Pedroni residual cointegration test affirms proof of cointegration and a long-run relationship between financial arrangement and financial development over the low-and middle-income nations.

Table 3: Pedroni panel cointegration test results

Estimates	Statistic	Prob.	Weighted Statistics	Prob.
Alternative hypothesis: common AR coefs. (within-dimension)				
Panel v-Statistic	2.350840***	0.0094	-0.160769	0.5639
Panel rho-Statistic	-3.417852***	0.0003	-3.608136***	0.0002
Panel PP-Statistic	-15.20834***	0.0000	-12.74708***	0.0000
Panel ADF-Statistic	-7.797428***	0.0000	-5.924082***	0.0000
Alternative hypothesis: individual AR coefs. (between-dimension)				
Group rho-Statistic	-1.942531**	0.0260		
Group PP-Statistic	-20.54144***	0.0000		
Group ADF-Statistic	-6.469228***	0.0000		

Note: ***,**, and * denote significance levels at 1%, 5%, and 10% respectively.

Source: Researchers Created

PMG test

Table 4: PMG test results

Country	ECT	M2	Ex	DCPS	Constant
Angola	-0.279***	-0.269**	-0.014***	-0.007	1.353
Bangladesh	-0.803***	-0.382***	-0.015**	0.321***	5.811**
Bhutan	-0.902***	-0.432***	-0.321**	-0.029	6.990*
Bolivia	-0.986***	-0.232***	-2.852	-0.227***	5.485*
Cabo Verde	-0.938***	-0.543***	-0.098***	-0.386***	5.712*

Combodia	-0.829***	-0.316***	0.001***	0.482**	2.710*
Congo, Rep.	-0.734***	0.211	0.035***	-0.955	2.380
Cote d'Ivoire	-0.882***	-0.604**	0.047***	1.180	4.913*
Egypt, Arab Rep.	-0.394***	0.026**	-0.107***	-0.041	1.654
Eswatini	-1.095***	-0.029	-0.294	0.151	3.978**
Ghana	-0.655***	-0.021	-1.517*	-0.290*	4.492
Haiti	-1.137***	-0.322***	-0.076***	1.471**	1.736
Honduras	-1.454***	-0.862***	1.718	0.693***	7.791**
Kenya	-1.0578***	-0.001	0.003	-0.049	5.997**
Kyrgyz Republic	-1.145***	-0.631***	-0.254***	-0.158	6.645**
Lesotho	-0.662***	-0.447***	-0.642*	0.062	1.795*
Morocco	-1.045***	-0.581***	-0.871	0.385***	5.070
Nepal	-0.645***	-0.393***	0.069**	0.261***	4.160
Nicaragua	-1.132***	-0.143	-2.238	0.778***	6.955
Nigeria	-0.542***	-0.254**	-0.032***	0.107	2.931**
Pakistan	-0.726***	-0.143***	-0.050***	0.672***	3.479**
Papua New Guinea	-0.939***	-0.154	4.587	-0.186	4.084*
Philippines	-1.032***	-0.568***	0.108	0.258	6.311*
Samoa	-0.818***	-0.781***	-3.491	-0.231	3.904*
São Tomé and Príncipe.	-0.709***	0.210***	-0.646**	0.117***	3.532*
Senegal	-0.748***	0.136	-0.003***	-0.194	4.252
Sri Lanka	-0.547***	-0.281**	-0.098***	0.537***	3.791**
Tajikistan	-0.775***	-0.079***	-0.825	-0.124***	6.222
Tanzania	-0.926***	-0.068	0.005***	-0.096	7.545
Zambia	-0.493***	-0.581***	-0.327**	0.272*	3.260*

Note: ***'**' and * denote significance level at 1%, 5% and 10% respectively.

Source: Researchers

ISBN: 978-624-5553-76-1

Country-specific short-term test

Table 5: Short-term country-specific results on all sample countries.

Variables	Coefficient	Std. Error	T-stat	Prob.
Long run				
M2	0.039165*	0.022441	1.745251	0.0815
Ex	-0.001389***	0.000514	-2.705747	0.0070
DCPS	-0.081178***	0.025059	-3.239515	0.0013
Short run				
ECT	-0.834457***	0.046179	-18.07023	0.0000
D(M2)	-0.284480***	0.051689	-5.503664	0.0000
D(Ex)	-0.273256	0.244633	-1.117003	0.2645
D(DCPS)	0.159119*	0.088044	1.807260	0.0713
Constant	4.497997***	0.335947	13.38901	0.0000

Note: ***'**' and * denote significance level at 1%, 5% and 10% respectively. *Source:* Researchers Created

Results and Discussion

Table 4 reports the PMG estimation of the long-term and short-term coefficients. The long-run PMG ARDL results indicate that M2 positively affects GDP growth in middle-income countries. Conversely, Ex and DCPS negatively impact GDP growth. ECT is negative and significant, confirming the long-term cointegration among the variables.

With a 1% rise in M2, GDP grew by 0.04 units. An increase in money supply leads to higher investment, which, in turn, creates more job opportunities (Abdulkadr et al., 2024; Adjekum et al., 2024). Moreover, it facilitates a reduction in interest rates, bolstering consumer expenditure, reinforcing economic confidence, and providing liquidity and long-term economic growth (Gajurel, 2023). The outcome is in line with the findings of (Asma et al., 2024; Pham et al., 2025; Sumaira & Bibi, 2022) but contradictory to the findings of Ayeni et al. (2024). Moreover, with a 1 per cent increase in Ex and DCPS, the GDP growth is reduced by 0.001 and 0.08 units, respectively. Regarding DCPS, institutional constraints on private sector credit, in contrast to Mehar (2022), may hinder rather than foster economic progress due to inefficient credit allocation, rising non-performing loans, or excessive corporate debt. These results are supported by (Gajurel, 2023; Hajdari et al., 2024), though they contradict several others, including (Duramany et al., 2022; Puatwoe & Piabuo, 2017). In the case of Ex, when the local currency strengthens, exports become more expensive, increasing international demand for domestic goods and services. As a result, trade balances may deteriorate, negatively affecting GDP growth. These results are supported by Asratie (2021).

In the short run (Table 4), the coefficients of DCPS are positively linked with economic growth; in contrast, the M2 is negatively linked with economic growth. However, Ex is not significantly inclined towards economic growth (Asratie, 2021; Blessing et al., 2024). Table 5 compares the

country-specific results with general findings in the short term. The short-term effects of M2 are generally adverse and statistically significant in most countries, such as Samoa, the Philippines, Cambodia, and Nigeria. This finding suggests that increases in the money supply might lead to inflationary pressures or could be ineffective in stimulating real economic activity in the short term, particularly where financial markets are underdeveloped or suffer from institutional inefficiencies. However, a few exceptions, such as Egypt and São Tomé and Príncipe, display a positive short-run effect of M2 on GDP, implying that monetary expansion can be growth-enhancing when supported by stable macroeconomic conditions and effective policy transmission mechanisms. Exchange rate (Ex) movements show mixed impacts. In countries like Bhutan, Lesotho, and Ghana, Exchange rate depreciation negatively affects growth, possibly due to rising import costs and inflation. Conversely, in countries such as Nepal and Tanzania, the positive effect of exchange rate change may be attributed to increased export competitiveness, suggesting that Exchange rate policy outcomes are contingent upon trade structures and the degree of openness in the economy.

The effect of domestic credit to the private sector (DCPS) also varies notably. In several countries such as Sri Lanka, Honduras, and Pakistan, the short-run impact of DCPS on GDP is significantly positive, indicating that financial deepening and access to credit can spur investment and consumption. However, in countries like Bolivia and Cabo Verde, the effect of DCPS is negative, hinting at potential misallocation of credit, weak oversight, or the dominance of non-productive lending, which undermines growth potential. These divergent outcomes across countries underscore the importance of context-specific monetary and financial policies.

Conclusion

This study investigated the impact of monetary policy on economic growth in lower-middle-income countries (LMICs), focusing on post-COVID-19 economic resilience. The findings from the Panel ARDL model revealed distinct short- and long-term effects of monetary policy variables. In the long run, domestic credit to the private sector (DCPS) and exchange rate (Ex) negatively impacted economic growth, while broad money had a positive effect. Conversely, DCPS positively influenced growth in the short run, whereas M2 exhibited a negative impact, and Ex remained statistically insignificant. The COVID-19 pandemic underscored systemic vulnerabilities, emphasising the need for adaptive monetary frameworks. Policymakers should prioritise liquidity expansion (M2) for sustained growth while cautiously managing DCPS to mitigate credit inefficiencies. Strengthening institutional mechanisms to buffer exchange rate shocks and fostering monetary-fiscal coordination are critical for enhancing resilience against future crises.

A limitation of this study is its reliance on aggregated panel data, which may mask country-specific heterogeneities. Future research should extend the temporal scope to assess post-

pandemic recovery and employ granular, country-level analyses to refine policy strategies. The study contributes actionable insights for designing robust monetary inventions to support sustainable development in LMICs amid global economic uncertainties.

Future Research

The results presented were restricted by the small sample used in this study, which is a limitation because the analysis was conducted for 45 years between 2002 and 2023. Therefore, it is suggested that future research should be carried out with data from large samples.

For future research, studies should utilise disaggregated sector-level data to investigate how monetary policy instruments differentially impact economic growth by considering manufacturing, agriculture, and services in emerging economies. Moreover, the study must be extended by considering the banking sector's impact on the economy's transmission channels. In addition, further studies can consider deflating the money supply via price indexes. Furthermore, the study should incorporate moderating variables such as inflation, current accounts, and trade balances.

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ISBN: 978-624-5553-76-1

ISBN: 978-624-5553-76-1

Education and Information Systems

Childhood Technology Exposure and Workplace Technology Adoption among Sri Lankan Secondary School Teachers

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Abstract

Technology significantly influences modern education, shaping how individuals work and interact. Early exposure to technology has been shown to affect digital proficiency, problem-solving abilities, and adaptability—critical competencies for secondary school teachers facing rapid technological advancements in their work environments. This study examines the influence of childhood technology exposure on workplace technology adoption among Sri Lankan secondary school teachers, focusing on five dimensions: childhood familiarity with technology, problem-solving skills, digital communication, parental guidance, and technology addiction. A positivist paradigm, a quantitative research method with a deductive approach, was employed. Data were collected via a structured questionnaire from all 140 secondary school teachers at ABC College, a leading private-sector Christian girls' school in Colombo, Sri Lanka, as the case organization. Pearson correlation and multiple regression analyses examined the relationships between the independent variables and teachers' workplace technology adoption. The findings reveal significant positive relationships across all dimensions, with childhood familiarity with technology showing the most decisive influence, followed by technology addiction, problem-solving, communication, and parental guidance. Since all research objectives were analyzed using regression models, the study provides clear quantitative insights into how early technology experiences shape professional digital adaptability. While limited to a private institution, the findings contribute to theoretical understanding and practical policy recommendations. Future research should incorporate broader samples, longitudinal designs, and mixed-method approaches to explore emotional, behavioural, and contextual dimensions of technology adoption. These insights inform policymakers, teacher educators, and HR practitioners on the importance of structured early technology exposure and targeted professional development to strengthen digital readiness in education.

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Faculty of Management and Finance, University of Ruhuna, Sri Lanka. July – 2025
ISBN: 978-624-5553-76-1

Keywords: Childhood technology exposure, digital adaptability, parental guidance, secondary school teachers, workplace technology

Introduction

Technology continues to reshape daily life, with adolescents increasingly influenced by digital advancements. Bastone, Ravaglia, and Borraccino (2022) state that childhood experiences shape digital proficiency and perceptions of technology. Knibbs (2022) highlights early years as crucial for developing knowledge, attitudes, and educational technology skills. Early exposure impacts future ICT adoption in professional settings. Peled and Perzon (2022) stress educators' role in guiding students' technological choices, necessitating research on technology use across learning stages. Education is key to national development, directly influencing human capital and economic growth. UNESCO data show fluctuations in Sri Lanka's educational expenditure, which was 0.51% of GDP in 2022, affecting resource accessibility and education quality (UNESCO, 2024). To address this, Sri Lanka must integrate modern and traditional technologies into teaching (Aturupane et al., 2021). The primary aim of this research was to investigate how childhood exposure to technology influenced the ability of secondary school teachers in Sri Lanka to help embrace the current advancements in workplace technology. Addressing proficiency gaps, it contributes academically and practically, offering insights into classroom technology integration and guiding policymakers on effective implementation. Even though many studies address the effect of childhood technology exposure on workplace technology adoption, there is still a knowledge gap in the Sri Lankan context, which this study strives to fill. The findings will support the Ministry of Education and school administrators in fostering teachers' technological adaptability and advancing national ICT development.

Shifflet and Weilbacher (2015) emphasize the need for technological fluency in modern education, yet many Sri Lankan secondary school teachers struggle with digital adaptation. Mollborn et al. (2021) suggest that early childhood technology exposure shapes long-term adaptability and skills. Budiyanto et al. (2021) highlight that early exposure enhances problem-solving and digital communication, which is crucial for workplace efficiency. However, Alawi and Al Mubarak (2019) note a research gap in Sri Lanka on how childhood technological exposure affects teachers' ability to adopt workplace technology, a critical issue given their role in workforce preparation. Mynaříková and Novotnỳ (2020) point to socioeconomic disparities in childhood technology access, affecting teachers' readiness to integrate digital tools and overall educational quality. Addressing this gap is essential for bridging the digital divide among educators.

Dockrell et al. (2009) warn that teachers struggling with digital tools face challenges in delivering modern education, impacting Sri Lanka's education system in a globalized context

(Alawi & Al Mubarak, 2019). This study explores how early childhood experiences influence teachers' workplace technology adoption (Budiyanto et al., 2021). Wilson (2024) stresses the need for such research to inform targeted professional development aligned with modern education trends. This study examines factors like access, parental guidance, and childhood tech addiction in shaping teachers' digital adaptability. Conducting the research in a school ensured alignment with the research paradigm, allowing for a thorough analysis of the research objectives.

RO1: To investigate the relationship between childhood familiarity with technology and the adoption of current workplace technology advancements among secondary school teachers.

RO2: To investigate the relationship between childhood technology in problem-solving and adopting current workplace technological advancements among secondary school teachers.

RO3: To investigate the relationship between childhood use of technology in communication in embracing current workplace technological advancements among secondary school teachers.

RO4: To investigate the relationship between childhood technology use under parental guidance and the adoption of current workplace technological advancements among secondary school teachers.

RO5: To investigate the relationship between childhood technology addiction and the adoption of current workplace technology advancements among secondary school teachers.

Literature Review

Childhood Familiarity with Technology

Early exposure to digital tools like video games and smartphones shapes technological proficiency and attitudes in adulthood. Constructivist learning theory (Fernando & Marikar, 2017) asserts that prior knowledge influences adaptability, while social cognitive theory (Schunk & DiBenedetto, 2020) highlights past experiences shaping self-efficacy. Doering, Hughes, and Huffman (2014) emphasize that teachers who embrace technology can integrate digital tools effectively, enhancing modern education. The relationship between childhood familiarity with technology and workplace adoption depends on multiple factors. Doering et al. (2014) argue that early exposure increases confidence, reducing resistance to new systems. Spring (2015) supports this, stating that a technology-rich background fosters experimentation. Shifflet and Weilbacher (2015) note that early exposure promotes a positive attitude toward advancements, motivating teachers to integrate them into teaching. Conversely, Wilson (2024) highlights that teachers with limited experience may hesitate due to concerns about mastering new tools. Though disparities may emerge, Dockrell et al. (2009) suggest early exposure increases adoption likelihood. Mynaříková and Novotně (2020) stress the need for training to bridge these gaps.

Childhood Technology in Problem-Solving

Early exposure to technology fosters problem-solving skills, which are crucial for adapting to workplace advancements. Engaging with digital tools enhances critical thinking and adaptability. Kovalevskaitė and Vaičenonienė (2015) highlight that video games require players to strategize, improving cognitive skills. Budiyanto et al. (2021) add that games promote logical reasoning and pattern recognition—skills applicable in professional settings. Dockrell et al. (2009) suggest that teachers with problem-solving experience approach new tools with curiosity, reducing downtime. John and Wheeler (2015) advocate integrating such experiences into teacher training for better digital tool adoption. Mollborn et al. (2021) reinforce that fostering curiosity and experimentation boosts confidence in troubleshooting and implementing technology. Given the limited research on how early problem-solving skills impact workplace technology adoption among Sri Lankan teachers, this study seeks to explore this connection.

Childhood Use of Technology in Communication

Saha et al. (2014) state that early exposure to digital communication tools enhances workplace technology adoption. Malekzadeh, Mustafa, and Lahsasna (2015) argue that familiarity with social media and messaging apps strengthens understanding of communication modes like videoconferencing. Orben, Dienlin, and Przybylski (2019) add that early digital communication enhances articulation and interaction, improving both written and verbal skills. Doering, Hughes, and Huffman (2014) observe that teachers with early exposure are more comfortable using workplace communication tools. Mollborn et al. (2021) highlight that digital communication experience cultivates multitasking, which is crucial for managing school environments. Orben et al. (2019) assert that teachers familiar with digital communication are more adept at using learning management systems, boosting student engagement. Nipyrakis, Stavrou, and Avraamidou (2023) differentiate between passive (e.g., television) and interactive (e.g., online chat) tools, with the latter fostering active participation. Knibbs (2022) sees childhood as a crucial phase for learning empathy and sociability, while Budiyanto et al. (2021) highlight the role of online etiquette in fostering professional communication. Güneş (2020) suggests that early exposure to digital professionalism reduces resistance to workplace technologies, a claim reinforced by Mollborn et al. (2021), who link digital teamwork to greater workplace digitalization acceptance.

Childhood Technology Use with Parental Guidance

Budiyanto et al. (2021) assert that parental guidance fosters responsible technology habits, promoting a balanced work-life approach. Starkey et al. (2023) highlight that such oversight instils moderation, critical thinking, and ethical technology use. Saha et al. (2014) found that parental guidance maximizes educational benefits while preventing overreliance. Doering,

Hughes, and Huffman (2014) emphasize that early lessons on privacy, digital footprints, and cyberbullying reduce workplace technology misuse. Gulec and Smahel (2022) link supervised childhood technology use to workplace adaptability, suggesting early experiences shape lifelong technology relationships. Priyashantha, Pratheesh, and Pretheeba (2022) argue that early exposure prepares individuals for seamless technology integration. Arifin et al. (2019) note that parental guidance fosters intellectual growth, while Richter, Adkins, and Selkie (2022) claim constructive oversight enhances children's potential in workplace technology adoption. Arifin et al. (2019) also emphasize that monitoring against inappropriate content influences responsible workplace technology use. Priyashantha et al. (2022) argue that individuals with greater parental supervision are more receptive to adopting new technologies (Gecu-Parmaksiz & Hughes, 2023). Fernando and Marikar (2017) stress parents' influence on teenagers' online behaviour, while Gulec and Smahel (2022) highlight parental control's role in cognitive and non-cognitive skill development. Aagaard (2021) underscores parental concerns over addiction and safety risks. Arifin et al. (2019) conclude that parents, as early media gatekeepers, shape digital exposure and future workplace habits.

Childhood Technology Addiction

Saha et al. (2014) warn that technology use focused on entertainment rather than education may lead to dependency, resulting in tech addiction. Overuse can impair attention span, memory, and executive functioning, affecting task management. Spring (2015) argues that individuals who view technology as entertainment may resist adopting workplace tools, failing to see their professional value. Orben, Dienlin, and Przybylski (2019) note that childhood tech addiction may cause social isolation, hindering interpersonal skills crucial for teachers. Starkey et al. (2023) suggest that teachers with a history of tech addiction may struggle with new technologies due to frustration, decreased motivation, and resistance to change. Elhajjar, Kaskas, and Tlaiss (2022) highlight a link between childhood technology use and workplace distractions. Raj (2021) raises concerns about early exposure's negative impact of early exposure on workplace performance. Aagaard (2021) notes that young people are often early adopters of emerging technologies, with digital games and online resources shaping education. Elhajjar et al. (2022) stress the need for further research on how early technology use affects patience in adopting workplace technologies.

Methods

This research followed a positivist paradigm, using quantifiable responses from a structured questionnaire to examine the relationship between childhood technology exposure and workplace technology adaptability. A deductive approach was employed, supported by scientific data collection, interpretation, and theory review methods. The dependent variable

was embracing workplace technology advancements. In contrast, the independent variables encompassed childhood familiarity with technology, childhood problem-solving using technology, childhood use of technology for communication, childhood technology use under parental guidance, and childhood technology addiction. The study was conducted at ABC College, a leading private Christian girls' school in Colombo, Sri Lanka. It was chosen as a representative institution reflecting similar private-sector secondary schools in the country. Data were collected via an online questionnaire distributed through Google Forms, adopting a mono-method design within a cross-sectional time horizon. A structured questionnaire using a five-point bipolar Likert scale and a numerical rating scale collected quantitative responses from all 140 secondary school teachers at ABC College. Since the entire population was surveyed, the sample frame and sample were identical, constituting a census study. Statistical analysis, including descriptive and regression analyses, examined relationships between variables. As the full population was studied, no hypothesis testing was required.

Results and Discussion

Data Analysis

Table 01: Cronbach's Alpha Summary for all independent variables

Variable	Cronbach's Alpha	N of Items	Conclusion
All items	0.937	21	Highly Reliable

The reliability of the study constructs was assessed using Cronbach's Alpha. Six constructs were measured, including five independent variables related to childhood technology exposure and one dependent variable related to workplace technology adaptability. Each of the five independent constructs consisted of 4 items, and the dependent construct consisted of 1 item, totalling 21 items across the full questionnaire.

Table 02: Pearson Correlation Analysis Summary

Variable	Pearson Correlation	Remarks	Rank of factor
Childhood familiarity with technology	0.560	Moderate positive relationship	1
Childhood_Technology_Use_in_Problem Solving	0.528	Moderate positive relationship	3
Childhood_Technology_Use_in_Commu nication	0.517	Moderate positive relationship	4
Parental_Guidance_in_Childhood_Techn ology_Use	0.482	Moderate positive relationship	5
Childhood_Tech_Addiction	0.538	Moderate positive relationship	2

ISBN: 978-624-5553-76-1

Table 03: Results of multiple regression analysis

Variable	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
Constant	.270	.397		.680	.497
Childhood familiarity with technology	.380	.104	.324	3.654	.000
Childhood_Technology_Use_in_ProblemSolving	.115	.148	.094	.778	.438
Childhood_Technology_Use_in_Communication	-.019	.180	-.013	-.106	.916
Parental_Guidance_in_Childhood_Technology_Use	.166	.129	.131	1.284	.201
Childhood_Tech_Addiction	.312	.109	.254	2.849	.005
Adj. R Square – .424 F-Value - 19.820					

Discussion

The data analysis demonstrates that early technology exposure significantly influences workplace technology uptake. According to a multicollinearity diagnostic, Pearson correlation coefficients showed no significant intercorrelations between independent variables. The reliability of the data was ensured by the confirmation of residual normality, with standardized residuals lying within the permitted range (-3.29 to +3.29) and ranging between -2.839 and 2.392. The Durbin-Watson value (1.987) confirmed the independence of observations, and model fit analysis showed that early technology exposure accounts for 65.1% of the variance in teachers' adoption of workplace technology ($R2 = 0.651$, $p < 0.05$). Additional influencing factors are suggested by a secondary model with moderate explanatory power ($R2 = 0.403$, Adjusted $R2 = 0.424$). The dependent variable is significantly predicted by the regression model, according to the ANOVA test ($F(5,134) = 19.820$, $p < 0.0005$). Unstandardized coefficients show that workplace technology adoption is positively impacted by childhood technology familiarity ($B1 = 0.380$), childhood technology use in problem-solving ($B2 = 0.115$), parental guidance ($B4 = 0.166$), and childhood technology addiction ($B5 = 0.312$). In contrast, workplace technology adoption is slightly negatively impacted by childhood technology use in communication ($B3 = -0.019$). In order to improve digital competency and workplace flexibility, these findings highlight the necessity of incorporating technology-related experiences into early education and professional development.

The study initially looked at the relationship between secondary school teachers' usage of technology in the workplace and their familiarity with it as children. Strong agreement among respondents was indicated by descriptive statistics, which showed mean values close to 4 and standard deviations below 1 for exposure to educational games, device settings, software

ISBN: 978-624-5553-76-1

abilities, and internet navigation. A moderately positive association is shown by the Pearson correlation coefficient of 0.56. This supports research showing that early exposure promotes digital literacy and a positive attitude toward technology, influencing professional adoption (Knibbs, 2022). These findings are supported by studies (Malekzadeh, Mustafa & Lahsasna, 2015; Alawi & Al Mubarak, 2019; Peled & Perzon, 422).

The study also looked at how workplace technology adoption is affected by children's use of technology for problem-solving. For troubleshooting, digital experimentation, and autonomous problem-solving using technology, descriptive statistics revealed mean values close to 4 and standard deviations below 1, indicating high agreement among respondents. A somewhat positive association is shown by the Pearson correlation coefficient of 0.528. These results support the idea that early exposure to technological problem-solving improves an individual's ability to adjust to changes in the workplace (Doering, Hughes & Huffman, 2014).

Another goal was to evaluate the connection between workplace technology adoption and early technology use for communication. For early exposure to digital communication tools, online etiquette, and team-based platforms, descriptive statistics revealed mean values close to 4 and standard deviations below 1, suggesting consensus among respondents. A moderately positive association is shown by the Pearson correlation coefficient of 0.517. It is consistent with studies (Bukhari et al., 2021; Nipyrakis, Stavrou & Avraamidou, 2023; Orben, Dienlin & Przybylski, 2019) showing that early exposure to communication technology increases digital adoption and confidence in work.

The study also examined how parental supervision of children's technology affected workplace technology adoption. According to descriptive data, respondents agreed on supervised technology use, parental boundaries, and content monitoring, with mean values close to 4 and standard deviations below 1. Although it is the lowest of the components examined, the Pearson correlation coefficient of 0.482 indicates a moderate correlation. This is consistent with research showing the impact of parents on workplace technology openness (Arifin et al., 2019; Gulec & Smahel, 2022; Priyashantha, Pratheesh & Pretheeba, 2022). Although there are no direct studies on this topic, research indicates that job adaptability is positively impacted by parental supervision of early technology use (Richter, Adkins, & Selkie, 2022).

Finally, the study examined the effects of childhood digital addiction on adopting technology in the workplace. Strong agreement among respondents was indicated by descriptive statistics, which showed mean values for screen time, distraction, dependency, and patience with learning new technologies close to 4 and standard deviations below 1. A moderate association is shown by the Pearson correlation coefficient of 0.538. Although there is concern about tech addiction (Aagaard, 2021; Raj, 2021), research shows a strong correlation between early excessive technology usage and workplace adoption, which is consistent with findings on the behavioural and neurological effects (Elhajjar, Kaskas & Tlaiss, 2022; Knibbs, 2022).

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Conclusion

In conclusion, this study investigated how Sri Lankan secondary school teachers' adoption of contemporary workplace technology was impacted by their early exposure to technology. The results showed that teachers' capacity to adjust to workplace technology was significantly positively correlated with all five aspects of childhood technology exposure: familiarity with technology, use of technology in communication, problem-solving, and under parental supervision, as well as technology addiction. Childhood technology familiarity showed the most significant association (r = 0.56), suggesting that it plays a significant role in forming digital adaptation. Moderate but significant relationships were found between childhood technology addiction (r = 0.538), problem-solving use (r = 0.528), communication use (r = 0.517), and parental guidance (r = 0.482). These results highlight the long-term advantages of early and balanced technology exposure in fostering digital fluency and adaptability, two qualities essential for successful instruction in the rapidly changing educational environment. Organized technology engagement should be incorporated into early childhood education and continuing professional development to better prepare teachers for the needs of contemporary digital workplaces.

The study admits an array of limitations despite the insightful information it produced. The findings' generalizability was limited because the data came from a single private secondary school in Sri Lanka. Furthermore, the study only used a quantitative and deductive methodology, excluding qualitative information that could have provided a more thorough comprehension of the experiences and viewpoints of teachers. Further limiting the capacity to examine differences across gender, age, or subject speciality was the lack of demographic data. It is recommended that future studies address these issues by using longitudinal designs, bigger and more varied sample sizes, and a combination of techniques to gather deeper, more complex findings. Additionally, investigating the extent of early technology exposure, the impact on families, emotional aspects like technology-related anxiety, and the possible drawbacks of excessive technology use may benefit theoretical advancement and real-world applications. These findings significantly impact human resource professionals, teacher preparation programs, and legislators because they highlight how crucial early technology experiences are in preparing teachers for success in increasingly technologically advanced learning environments.

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ISBN: 978-624-5553-76-1

Influence of Cybersecurity Vulnerabilities on the Adoption of Fintech Applications among Millennials in Sri Lanka

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Abstract

Rapid advancements in technology have enabled the financial industry to use information technology to provide efficient and effective services to their customers. While the blessing of technology provides value-added service to customers there are also risks that come with it in the form of various cyber vulnerabilities. This research investigates the influence of cybersecurity vulnerabilities on the adoption of fintech applications among millennials in Sri Lanka. The focus of this study on cyber vulnerabilities was data breaches, malware attacks, unsecured communications, privacy concerns, weak authentication, and reputational damages. There was substantial literature available in cybersecurity and fintech adoption outside of Sri Lanka. However, there was a gap in the literature in the context of Sri Lanka. This study adopted Saunders et al.'s Research Onion framework, employing a positivist philosophy and a deductive approach to test hypotheses on cybersecurity vulnerabilities which were the independent variables and FinTech adoption among Sri Lankan millennials, being the dependent variable. Data was collected via a mono-method, cross-sectional survey and administered electronically to over 384 participants through a judgmental sampling and used both descriptive statistics (mean, standard deviation) to summarize the data and inferential statistics (Pearson Correlation, Chi-Square Test) to test the hypotheses and draw conclusions about the relationships between variables. The analysis has been undertaken by statistical software, SPSS to validate the findings. Further, this study confirms that cybersecurity vulnerabilities significantly deter FinTech adoption among Sri Lankan millennials. Empirical findings consistently show a positive correlation, with respondents agreeing that these vulnerabilities influence their adoption decisions, aligning with existing literature. Moreover, research highlights the critical need for robust cybersecurity measures in FinTech applications to build user trust and foster adoption in the Sri Lankan context, especially given the country's unique challenges in financial inclusion and ICT infrastructure.

Keywords: *Cyber security, Fintech adoption, Millennials*

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ISBN: 978-624-5553-76-1

Introduction

As a result of technological advancements and the subsequent Fourth Industrial Revolution, which has enabled the rapid transformation of entire systems of production, management, and governance (Barroso and Laborda, 2022); Xu, David, and Kim, 2018). This results in the establishment of new business models in the form of financial services called Financial Technologies (FinTech) (Barroso and Laborda, 2022). Due to the technology embedded in such financial services, there are so many advantages because of the digitalization factor, which enables financial institutions to provide products and services through digital mediums (Barroso and Laborda, 2022). Thus, entering inexperienced players provides access to more specialized services cantered on the needs of their customers that are flexible and swift and enhance innovation and competition throughout the financial industry (Barroso and Laborda, 2022). The swift transition of the Smart-Everything movement and advancements in artificial intelligence-enabled sophisticated cyber threats that traditional methods could not counteract (Javaheri et al., 2024). The threat of cyber threats in financial technology is extremely important because this technology is highly dependent on data and functions 24 hours a day a day (Javaheri et al., 2024).

Millennials are vital to the FinTech industry, readily embracing digital solutions like mobile banking and online investments. However, their enthusiastic adoption is directly impacted by cybersecurity risks, including malware, data breaches, and integrity issues, inherent in FinTech applications. Understanding how these vulnerabilities influence their decisions is crucial. This includes examining risks not just in FinTech itself, but also in traditional banking systems, as these can affect overall trust. Ultimately, addressing these security concerns is key to securing millennials' adoption, which is essential for the continued growth and future direction of the entire FinTech sector..

Objectives

The study aims to find the cybersecurity vulnerabilities that influence the adoption of fintech applications among millennials in Sri Lanka. The specific objectives are as follows:

- SO1: To examine the effect of data breaches and adoption of fintech applications among millennials in Sri Lanka.
- SO2: To examine the effect of Malware and Phishing Attacks and the adoption of fintech applications among millennials in Sri Lanka.
- SO3: To examine the effect of unsecured communication and adoption of fintech applications among millennials in Sri Lanka.
- SO4: To examine the effect of privacy concerns and adoption of fintech applications among millennials in Sri Lanka.
- SO5: To examine the effect of weak authentication and adoption of fintech

ISBN: 978-624-5553-76-1

applications among millennials in Sri Lanka.

- SO6: To examine the effect of reputational damages and adoption of fintech applications among millennials in Sri Lanka.

Literature Review

From the continuation of the literature review from Part One which gave a detailed account of the literature at hand about the fintech industry, trends and development globally and locally. The authors discussed a general overview of the literature available on cybersecurity and its implications it has had on the fintech industry globally and Sri Lanka.

Data breaches, defined as unauthorized access to sensitive information (Kosinski, 2024), significantly impact fintech adoption. Studies show that concerns about data breaches and fraud reduce fintech adoption in Malaysia. Trust is crucial for fintech adoption especially given Malaysia's high rate of cyberattacks. Research by Zhang Wenxiang et al. (2023) further emphasizes the influence of data security, perceived ease of use, perceived usefulness, fintech promotion, and customer trust on fintech adoption in commercial banks.

Malware and phishing, defined as malicious software and deceptive online fraud respectively, pose significant threats to fintech adoption. Phishing attacks, often mimicking legitimate fintech companies, trick users into revealing sensitive data, leading to breaches and fraud. Research indicates that perceived security and privacy are critical concerns in online transactions due to these cyber threats (Anti-Phishing Working Group, 2021; Jafri et al., 2024). Therefore, robust security measures, including firewalls and multi-factor authentication, are essential for financial institutions to protect customers from cyberattacks (Jafri et al., 2024).

Unsecured communications, lacking necessary safety measures, allow hackers to intercept sensitive data (Reasonlabs, 2023). Public Wi-Fi networks pose significant cybersecurity risks to mobile fintech applications, particularly through Man-in-the-Middle (MitM) attacks (Balogun et al., 2024). Fintech company ethical practices are crucial for building trust, acceptance, and confidence (Aldboush & Ferdous, 2023). Factors like confidentiality, integrity, availability, authentication, authenticity, accountability, assurance, privacy, and authorization significantly influence customer trust (Stewart & Jurjens, 2018; Aldboush & Ferdous, 2023).

Fintech companies must prioritize data privacy to maintain customer trust and avoid financial repercussions (Finance Magnates, 2023). Implementing robust security, transparent communication, and user data control is essential. Research in Jordan emphasizes the need for transparent policies, customer education, and user-friendly control over systems (Aldboush & Ferdous, 2023). Studies reiterate the importance of robust cybersecurity infrastructure and transparent data privacy policies for building trust (Karangara & Manta, 2024). Factors like perceived usefulness, usability, device security, and

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organizational trust influence user adoption. Secure information sharing between banks and third-party providers is also vital for protecting customer data (Khan et al., 2024). Overall, privacy concerns significantly affect fintech adoption.

Weak authentication exposes fintech systems to data breaches, identity theft, and financial losses (Portswigger, 2023; Mazzotta, 2024), damaging company reputation. Reports indicate a high prevalence of breaches due to authentication weaknesses (Georgia Tech News Center, 2023). Factors like confidentiality, integrity, authentication, and privacy strongly influence customer trust and fintech adoption (Aldboush & Ferdous, 2023). Weak passwords are a significant vulnerability, and multi-factor authentication (MFA), including biometrics, is recommended as a stronger security measure (Barefoot, 2020).

Research in Sri Lanka identifies various factors influencing fintech adoption, including digital accessibility, convenience, social influence, and security concerns. While security concerns exist, their statistical significance in hindering adoption is debated within the Sri Lankan context. Trust, tied to security, is crucial for internet banking adoption (Boateng et al., 2016; Thilina & Bandara, 2021). Studies highlight the impact of cybersecurity infrastructure, emerging technologies, organizational factors, regulatory compliance, and customer trust on digital resilience in Sri Lankan banking (Jayasundara & Wickramarachchi, 2024). Perceived convenience, security, technological readiness, and social influence positively affect mobile banking adoption (Jayasekara, 2024). However, Sri Lanka's fintech development lags globally, necessitating focused efforts on adoption dynamics, regulatory challenges, and user perspectives to guide stakeholders (Arshard & Imthiyas, 2024). From the context of literature analyzed by the authors there has been substantial literature on cybersecurity and fintech adoption outside Sri Lanka.

Methods

In this research, the research was focused on a mono quantitative method to gather data by way of using questionnaires and surveys from a representative sample of the millennials in Sri Lanka. The collected data was analyzed using statistical and mathematical models to find the relationship between various vulnerabilities and their impact on fintech adoption by millennials. Therefore, the philosophical position was concerned with positivism as philosophical paradigm. The authors undertook the study using a deductive approach because the approach to test the various vulnerabilities were undertaken based on hypotheses statements framed on the variables such data breaches, malware and phishing attacks, unsecured communications, privacy concerns, weak authentications and reputational damages as independent variables as they are directly perceptible and impactful to the end-user. A millennial might not know other vulnerabilities such as SQL injection, but they certainly understand the fear of a "data breach" or a "phishing attack". And fintech adoption by millennials as dependent variable was tested to corroborated to see whether those were

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statistically significant from the collected data. Key variables is guided by established Technology Acceptance Models (like TAM/UTAUT extensions) and Perceived Risk theories. These frameworks, supported by extensive empirical studies on FinTech and e-service adoption, identify these specific cybersecurity concerns as critical factors directly impacting user trust and willingness to adopt digital financial services. vulnerabilities like data breaches, malware, phishing, privacy concerns, weak authentication, and reputational damage are directly perceptible and impactful to the end-user. A millennial might not know other vulnerabilities such as SQL injection, but they certainly understand the fear of a "data breach" or a "phishing attack." The survey responses from the participants were distributed electronically to reach a larger sample base of 384 responses and concluded expeditiously. Therefore, this study was a cross-sectional study**.**

The researcher used judgmental sampling which helped to easily reach the participants within the minimum time. The survey did not have questions constructed to collect demographic information such gender, age, education, occupation, region, civil status and ethnic backgrounds. For the author, age is a key demographic variable considering the focus on target group being millennials from 1981 to 1996. As the survey did not have any key questions constructed with respect to the age variable at least could have more validity and reliability to the study. Despite this, the author has reached the minimum sample of responses and the Cronbach alpha > 0.08 to measure reliability and Pearson Correlation for validity for all the statements P-Values were less than 0.05 indicating that the measurement tool to gather the data was both consistent and trustworthy.

As per the research Questions, Independent and dependent variables can be formulated as shown in Figure 1. as below. Data breaches, Malware and Phishing Attacks, unsecured communication and the adoption of fintech applications, privacy concerns, weak authentication and reputational damage are recognised as independent variables while adoption of fintech applications is identified as dependent variables.

Hypotheses

The hypothesis statements are as follows:

H1: There is a positive relationship between data breaches and the adoption of fintech applications.

H2: There is a positive relationship between Malware and Phishing Attacks and the adoption of fintech applications.

H3: There is a positive relationship between unsecured communication and the adoption of fintech applications.

H4: There is a positive relationship between privacy concerns and the adoption of fintech applications.

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H5: There is a positive relationship between weak authentication and the adoption of fintech applications.

H6: There is a positive relationship between reputational damage and the adoption of fintech applications.

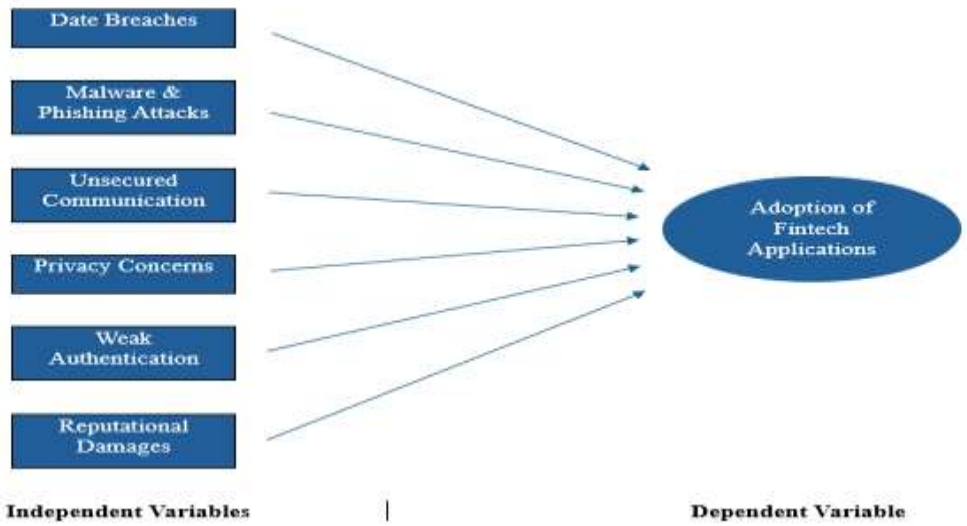

Figure 01: Conceptual Framework

Results and Discussion

The- P-Value .000 was less than 0.05 for all statements. Hence, the relationship between the statement and total score is significant and valid. The overall summary of the statistical analysis carried out is depicted in the respective tables of this section.

Table 01: Reliability and validity test

Variable	Cronbach's Alpha	N of Items	Conclusion
All Questions	0.958	24	Highly Reliable

The following section would examine how each independent variable would relate to the decision if the millennials chose to adopt to fintech adoption if they have concerns relating to the various vulnerabilities.

Table 02: Summary of Inferential Statistical Analysis

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Inferential Statistical Analysis				
Independent Variable	Pearson Correlation	Remarks	Chi-Square	Rank of factor
Date Breaches	0.385	Moderate Positive correlation	Alternative hypothesis accepted	1
Malware & Phishing Attacks	0.410	Moderate Positive correlation	Alternative hypothesis accepted	2
Unsecured Communications	0.353	Moderate Positive correlation	Alternative hypothesis accepted	3
Privacy Concerns	0.394	Moderate Positive correlation	Alternative hypothesis accepted	4
Weak Authentication	0.272	Weak Positive Correlation	Alternative hypothesis accepted	5
Reputational Damages	0.386	Moderate Positive correlation	Alternative hypothesis accepted	6

Based on the empirical findings undertaken for variable data breaches and fintech adoption reveal Pearson Correlation indicated that a positive relationship between data breaches and fintech adoption and chi square test of independence indicates P-Value was 0.000< 0.05 (95% Significance Level) where the null hypotheses (H0) were rejected, and H1 Alternative Hypothesis was accepted.

As highlighted by Jafri et al. (2024) these cyberattacks significantly increase perceived security and privacy risks, thereby deterring adoption. The Pearson correlation coefficient showing a positive relationship and Chi-Square Test 0.000< 0.05 (95 % significance level), rejecting the null hypotheses and accepting the alternate hypotheses. Thus, the empirical finding of the authors authenticates the literature in section 2 which has been emphasized above. Moreover, the literature on the subject has been conducted with different methodologies. Consequently, both the literature reviewed, and the empirical findings of the support substantiates the research objectives, and the hypothesis statements that malware and phishing attacks influence fintech adoption among millennials in Sri Lanka.

The research's third objective was to find out the relationship between the effect of unsecured communications and adoption of fintech applications among millennials in Sri Lanka.

Pearson correlation showing a positive relationship between unsecured communications and fintech adoption and Chi-Square test P-Value 0.000 < 0.05 significance level (95%) which rejects the null hypotheses (H0) and accept the alternative hypotheses clearly indicating the statement is valid.

The research's fourth objective was to find out the relationship between the effect of privacy concerns and adoption of fintech applications among millennials in Sri Lanka. The Pearson correlation was positive, and Chi-Square test was P-value 0.000< 0.05 (95 % Significance value), therefore the null hypotheses (H0) is rejected, and alternative hypotheses (H1) is accepted. Thus, the empirical findings of the authors clearly support the alternative hypotheses statement that privacy concerns influence fintech adoption among millennials in Sri Lanka.

The research's fifth objective was to find out the relationship between the effect of weak authentication and adoption of fintech applications among millennials in Sri Lanka. Pearson correlation is positive and the Chi-Square test P-value 0.000 < 0.05 (95% significance level). As a result, the null hypotheses (H0) is rejected and alternate hypotheses is accepted,

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meaning the hypotheses statement focusing weak authentication influences fintech adoption among millennials in Sri Lanka.

The research's six objective was to find out the relationship between the effect of reputational damages and adoption of fintech applications among millennials in Sri Lanka. There is a positive correlation with reputation and fintech adoption. Finally, the Chi-Square test indicates that P-Value 0.000 < 0.05 (95% Significant Level) thereby rejecting the null hypotheses (H0) and accepting the alternate hypotheses (H1). This corroborates the alternate hypotheses (H1) statement that reputation influences fintech adoption among millennials in Sri Lanka with the research question and objectives.

Conclusion

As per the findings of data analysis and literature review the content here provides strategies that fintech companies can undertake from the context of Sri Lanka. As extensive literature substantiated the claim that users place cybersecurity and fintech adoption have a direct relationship. The data analysis provided from the responses obtained centered around the means which means the majority of the respondents agreed with the statements. In other words, the users of the fintech applications by the customers placed great emphasis on cybersecurity and if the customers find that if they find any vulnerabilities the chances of adoption the fintech application is questionable. Moreover, this should also be understood from the context of Sri Lanka due to the different contextual scenarios need to be cautioned when recommending the strategies. The authors before providing relevant recommendations for various vulnerabilities in relation to the country with the focus on Millennials there needs to be context of the literature review. The authors reinforce the same point that population in Sri Lanka there is underbanked population because of geographical boundaries, limited financial literacy, income inequalities, high cost of borrowing and regulatory hindrances. Hence, the utilization of fintech services is very low. For instance, the economic situation between the different provinces varies greatly. On the other hand, it should be noted that information communication technology infrastructure of the country is very weak. There have been increasing incidents over the years. To illustrate by revisiting the literature on the points as it will provide context for the strategies to be adopted. Examples include lack of committed government, lack of responsibility and commitment from the public and private sector to share information, deficiency in cybersecurity infrastructure, laws and regulations not implemented, lack of experts and lack of awareness, no effective information communication technology policy frameworks, corruption and audits and monitoring. Therefore, appropriate strategies will be framed based on the context of the country is faced with subject of cybersecurity and not limiting to fintech industry as whole as. In other words, the literature has shown that it is a national issue considering how many the authors has revisited the

issues concerning cybersecurity from the context from Sri Lankan. The findings offer actionable insights for FinTech companies and policymakers in Sri Lanka. They underscore the critical need for multi-faceted, context-specific interventions that go beyond basic security features. This includes investing in robust cybersecurity infrastructure, implementing transparent data privacy policies, and enhancing user education on digital safety. Theoretically, it extends the understanding of technology adoption models by empirically demonstrating the direct negative influence of specific cybersecurity vulnerabilities on FinTech adoption within a unique emerging market context. It corroborates existing theories on perceived risk and trust, while also highlighting the particular salience of these factors among millennials in a developing nation like Sri Lanka, where systemic ICT and governance issues amplify user concerns.

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ISBN: 978-624-5553-76-1

ICME 2025 "Entrepreneurial Bricolage: Steering Volatile Markets through Improvised Strategies and Innovative Thinking"
Proceedings of 14th International Conference on Management and Economics

The Effect of Parental Migration on the Academic Success of Students from Low-Income Families in the Western Province of Sri Lanka

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Abstract

This research investigates the impact of parental migration on the academic performance of children from low-income families in Sri Lanka. Although Sri Lanka has improved its overall development indicators, a significant percentage of its population continues to live in conditions characterized by poverty and its associated harmful effects. One such trend among Sri Lanka's low-income communities, particularly in the Western Province, is the increasing number of parents who migrate abroad in search of improved economic opportunities. Such labor migration, often considered a means of improving family income, typically results in one or both parents leaving their children to be cared for by extended family members or guardians. Despite the financial remittances sent home, the physical absence of parents may have a profound impact on the emotional well-being, supervision, and educational support of the children left behind. The research aims to investigate how such family arrangements, a characteristic of low-income families, affect the academic achievement of the remaining children. This phenomenon presents both unique challenges and opportunities for the education of these children. This study explores the impact of parental migration on the education of children in the Western Province of Sri Lanka. It adopted a quantitative approach based on data analysis and included a survey quantifying the effects of one or both parents' absence due to migration on children's education. Grounded in a quantitative survey of 384 students, the study reveals that economic instability, psychological challenges, and parental non-participation have a significant impact on performance. The findings suggest that effective interventions require improved economic support, mental health assistance, and enhanced communication between children and their migrant parents.

Keywords: *Academic success, Parent migration, Remittances, Sri Lanka, Socio-economic impact*

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ISBN: 978-624-5553-76-1

Introduction

This study examines the impact of parental migration on the academic success of children in Sri Lanka, with a focus on the Western Province. The "left behind" perspective suggests that children whose parents migrate may face emotional and psychological challenges due to separation, leading to feelings of abandonment, anxiety, and lack of guidance. (Iqbal et al., 2020; Tesfaw & Minaye, 2022). This can negatively impact academic performance, as children often have to take on more chores at home. (Siriwardhana, 2015). Parental migration is a significant socio-economic phenomenon in Sri Lanka, impacting the academic success of children. Children often express increased loneliness and a desire for parental care, which can lead to poor scores and increased behavior problems (Tesfaw & Minaye, 2022). Teachers play a crucial role in addressing these issues, as their biased perceptions can affect students' educational performance. Teachers' attitudes towards students from migrant backgrounds can influence their expectations and behavioral responses, leading to negative attitudes and low academic support (Herman & Reinke, 2017; Liu et al., 2020).

Parental support, both academically and financially, can enhance students' performance. However, the type of engagement can vary depending on the parents' migration status and socio-economic conditions at home (Cooray, 2012; Topor et al., 2010). Children who receive frequent contact and affection from their parents during separation perform better in class. They also found that children who were in regular touch and received affection from their migrant parents performed better in school, despite long separations. "Separation" here is operationalized as the absence of parents due to international labor migration, as opposed to divorce. This finding is relevant to the present Sri Lankan study because it suggests that continuous affective contact and communication between children and migrant parents can reduce the adverse academic effects of migration (Iqbal et al., 2020). Researchers investigate why the educational outcomes of Sri Lankan children deteriorate after their parents leave for work, while their educational attitudes change. The researchers present three potential interventions to enhance these results by reinforcing school-based support and creating community-based support networks, along with guardian education programs. The study findings contribute to the development of cultural child welfare policy and the design of potential community-based support plans. It also addresses the challenges within Sri Lanka's socio-economic landscape, aiming to fill an academic void and providing practical tools and recommendations to support left-behind children in a nurturing environment (Dharmadasa & Herath, 2020; Siriwardhana, 2015).

Research Objective(s)

1. To examine the impact of parental migration on the academic success of students with migrated parents in the Western Province of Sri Lanka.

ISBN: 978-624-5553-76-1

1.1. To examine the impact of mental well-being on academic success
1.2. To examine the impact of a lack of parental care on academic success
1.3. To examine the impact of economic issues on academic success

2. To provide recommendations for enhancing the academic success of students with migrant parents in the Western Province of Sri Lanka.

Literature Review

The literature review for the study 'Effect of Parental Migration on the Academic Success of a Student' is conducted using keywords such as 'academic success,' 'parental migration,' 'remittances,' 'Sri Lanka,' and 'socioeconomic impact.' Literature related to parental migration and the academic success of students is searched across both local and global contexts through various research databases. The research utilizes various digital databases, which include Google Scholar, ResearchGate, Scopus, Web of Science, ERIC, Sri Lanka Journals Online, the National Science Foundation of Sri Lanka, and university repositories. Parental migration is a common phenomenon in many developing nations, including Sri Lanka, where economic factors drive parents to seek employment opportunities abroad, leaving their children behind. While the financial benefits of such migration, particularly through remittances, are well-documented, the psychosocial and educational impacts on children left behind are less understood (Dunusinghe, 2021). To explain how this complex set of dynamics relating to left-behind children's academic success takes place in the context of parental migration, the study must be grounded in current theories of migration, child development, and educational outcomes.

Theoretical Foundation Of The Study

Based on the theories of attachment, social learning, family systems, and human capital, this theoretical framework provides a multidimensional analysis of how parental absence leads to mental maladjustment and academic difficulties in children. These theories provide insight into the psychological, social, and economic factors that influence the academic outcomes of children 'left behind' when their parents migrate. Furthermore, the theory of attachment can be viewed as a theoretical framework. John Bowlby formulated the theory of attachment, which posits that the bonds between a child and caregivers are essential for the child's psychological and emotional security (Bowlby, 1969). According to Bowlby (1969), children with secure attachments have a foundation of safety, enabling them to explore their environment and engage in learning activities with confidence. In the event of an attachment interruption, however, emotional instability can become a hindrance to various cognitive functions and to achieving adequate academic performance (Fellmeth et al., 2018). Social learning theory can

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be introduced as the second theory of the theoretical framework. According to the social learning theory put forward by Albert Bandura, a person (especially a child) learns by observing, recording, studying, and using examples of behavior demonstrated by the most influential people (i.e., parents) (Bandura, 1985). This theory is important in helping us to understand how the absence of parents may lead to behavioral and academic outcomes in the children left behind. Bandura suggests that children without parental presence may miss out on learning from important life experiences, such as their parents serving as role models for social norms, academic diligence, and problem-solving skills. The lack of their presence can interfere with children's adherence to positive learning and behavioral patterns that ultimately lead toward academic achievement (Fellmeth et al., 2018; Hill & Tyson, 2009). Family systems theory is a theory contained in the theoretical framework. In family systems theory, as formulated by Murray Bowen, it is emphasized that individuals cannot be understood in isolation but must be understood in terms of their membership in a family system, where family members' behaviors are always related to and influence the entire family dynamic. This theory contributes to an understanding of how parental migration can disrupt family structures, including roles and emotional balance within the household. Children left behind often face stress within their family and on themselves when parents migrate, as other family members, such as older siblings or grandparents, take on the burden of their responsibilities (Dharmadasa et al., 2020). According to Siriwardhana (2015 family dynamics are a key factor in the development of children in Sri Lanka, and parental migration significantly alters these dynamics, affecting academic outcomes. The study highlights that when older siblings assume caregiving responsibilities in the absence of parents, they may neglect their education, which can harm both their academic progress and the emotional and academic development of their younger siblings. The other theory that belongs to the theoretical framework is the theory of human capital. A theory most prominently discussed by economists like Gary Becker, known as the theory of human capital, states that an individual's economic productivity and earning ability are directly related to how much they invest in education and skill-building. The remittances of migrant parents can be explained by the investment in children's education through the theory of human capital (Cooray, 2012), as a measure of a possible investment in children's education, contributing financial capital for better schooling, tutoring, and learning materials, for example. Typically, financial remittances are intended to enhance the educational opportunities of children, in part to address the desire of migrant parents to improve their children's human capital, thereby achieving future economic stability and social mobility (Aslam & Sivarajasingham, 2021).

Integrating theories refers to a theory that belongs to a theoretical framework. A holistic perspective of all these theories of attachment, social learning, family systems, and human

ISBN: 978-624-5553-76-1

capital provides an elaboration on how parental migration impacts the academic success of the left-behind children. Attachment theory, social learning theory, and family systems theory all posit that the presence of a stable parent is necessary for emotional security and behavioral modeling. However, they also address the ripples this absence of a parent can produce in the web of roles within the family. At the same time, the theory of human capital describes the financial motivation to migrate and the limited effect of economic support when parents are not involved in achieving academic results. Examining these theories together, they suggest that the academic struggles of left-behind children are both psychological and socio-economic, indicating that financial investments (e.g., remittances) cannot fully replace the presence of parents. For example, sending remittances allows children to access better educational resources, but a lack of attachment and role modeling may impede the children from using the resources to their best benefit (Fan & Chen, 2001; Fellmeth et al., 2018). These theories are interconnected, requiring consideration of the emotional and social needs of left-behind children, in addition to their financial needs, to thoroughly examine the underlying causes of the problem in Sri Lanka. These theories are applied to the Sri Lankan context with several implications for policy and practice. The attachment and social learning theories suggest that community-based support networks, such as mentoring programs, can provide children with the absence of consistent adult role models — the very individuals who have come to epitomize and embody 'parenting' (Henderson & Mapp, 2002). According to family systems theory, counseling and training for caregivers may help strengthen family support structures, thereby maintaining stability in households affected by migration. The theory of human capital was aligned with initiatives that provided financial aid along with educational mentorship to children, ensuring they had the resources and guidance needed to succeed academically (Dharmadasa & Herath, 2020). Finally, this theoretical framework offers a comprehensive approach to addressing the academic challenges faced by left-behind children. Understanding the theoretical perspectives on the multi-dimensional effects of parental migration on children in Sri Lanka, stakeholders in the country will be able to target interventions aimed at the emotional well-being of children affected by parental migration, as well as their educational needs. This framework also serves as a foundation for the empirical analysis of how these theoretical concepts are situated within the experiences of left-behind children in the western province of Sri Lanka.

Hypothesis development is based on the conceptual framework. This framework integrates various theoretical perspectives to explore the mechanisms through which parental migration influences children's education, considering both positive and negative aspects. Furthermore, it encompasses mental well-being, inadequate parental care, and economic issues. As the first hypothesis, mental well-being encompasses various aspects, such as emotional stability, stress

levels, and psychological resilience. It affects how students cope with academic challenges and their overall performance. Mental well-being encompasses emotional stability, stress management, and anxiety reduction. Emotionally stable children with better mental well-being tend to have higher academic achievements due to improved focus and motivation (Suldo & Shaffer, 2008). It can be identified that there is a significant impact of a lack of parental care on the students' academic success with migrant parents. As the second hypothesis develops, a lack of parental attention refers to insufficient involvement and support from parents in their children's educational activities, which can include inadequate supervision, encouragement, and assistance with schoolwork. The absence of parental supervision and involvement resulting from migration can significantly impact children's educational outcomes. Parental involvement has been widely recognized as a key factor in determining academic success (Hill & Tyson, 2009). As the third hypothesis, there is a significant impact of economic issues on students' academic success. Economic issues, including financial constraints and socioeconomic status, can impact access to educational resources such as tutoring, extracurricular activities, and educational materials. Economic issues consist of resource availability, stress, and stability. This study examines the intricate relationship between parental migration and its impact on children's educational outcomes in Sri Lanka. This conceptual framework chart shows how the migration of parents' independent variables affects the dependent variable of academic success.

Methods

This section outlines the research approach, data collection methods, and analysis techniques used to examine the impact of parental migration on students' academic success, mental well-being, and socio-economic challenges in the Western Province of Sri Lanka. This study examines the impact of parental migration on children aged 12-16 in the Western Province of Sri Lanka, with a focus on poor academic performance, mental well-being, and economic status. This research employs a survey, resulting in 384 responses. The philosophical foundation of this study is positivism, which asserts that knowledge originates from observable phenomena and that social reality can be objectively measured. Positivism is appropriate for this research as it seeks to quantify the impact of parental migration on educational outcomes through statistical analysis, allowing for generalizations to be made about the population of interest (Bryman, 2016; Dustmann & Glitz, 2011). This study employs a quantitative research approach, aiming to explore the relationships between parental migration, mental well-being, parental care, economic issues, and academic success. Correlational analysis is suitable for this study as it allows for the examination of how changes in one variable may be associated with changes in another without establishing a cause-and-effect relationship (Bouoiyour & Miftah,

2016). The research approach employed in this study is deductive, which involves testing existing theories and hypotheses through empirical data collection and analysis. The deductive approach is appropriate for this study as it allows for the examination of specific relationships between variables based on established theories related to migration and education (Bennett et al., 2015). This study employed a survey as its research strategy, which involves administering structured questionnaires to gather data from a sample of participants. Surveys are an effective method for collecting quantitative data, allowing for the informed collection of data from many respondents in a relatively short period (Boone et al., 2022).

The target population for this study consists of children aged 12 to 16 years, residing in the Western Province of Sri Lanka, who have experienced parental migration. This population comprises adolescents currently enrolled in schools. The focus on this age group is crucial, as it encompasses critical developmental stages that significantly impact educational attainment. The sample size for this study was determined to ensure adequate statistical power for detecting significant relationships between variables. This sample was drawn from the general population and was considered representative of the population under study (Zinkova & Hnylykevich-Prots, 2023)

Table 01: Sample composition

District of Western Province	Population	Percentage	Sample Size
Colombo	34,704	41.9%	161
Gampaha	30,871	37.2%	143
Kalutara	17,233	20.8%	80
Total	82,808	100%	384

Source: Sri Lanka Bureau of Foreign Employment (2022).

This study, conducted in Sri Lanka's Western Province, employed quota sampling to investigate parental migration and the educational performance of children. They used structured questionnaires and surveys to gather information on factors affecting academic success, mental well-being, and economic conditions. The data was analyzed using SPSS. The study's credibility relies on the validity and reliability of its survey instruments. Questions were designed to accurately measure constructs such as mental well-being and academic success, with expert reviews ensuring content validity. Reliability was assessed through pilot surveys, internal consistency evaluations, and Cronbach's alpha analysis. Tools were modified and developed based on the results of the pilot tests to enhance data reliability and accuracy. The researchers conducted the surveys in a supportive and ethical manner, ensuring the well-being of participants. Informed consent was obtained, responses were anonymized, and participants' identities were protected. Respondents had the right to withdraw at any time, ensuring a safe,

non-threatening research environment that prioritized their well-being. This section presents a structured study on the academic, emotional, and socio-economic impacts of parental migration in Sri Lanka's Western Province. A multiple linear regression analysis was conducted to ensure the validity and reliability of the results. A multiple linear regression analysis was performed to assess the relationship between academic success and key independent variables, including economic issues, mental well-being, and parental involvement. The regression equation used in this study is as follows: $Y=\beta 0+\beta 1X1+\beta 2X2$

$\boldsymbol{\gamma}$ = Academic Success

$\boldsymbol{\beta_0}$ = Constant Value

$\boldsymbol{x_1}$ = Mental Well-being

$\boldsymbol{x_2}$ = Lack of Parental Care

$\boldsymbol{x_3}$ = Economic Issues

Data Analysis

This study investigates the impact of parental migration, particularly mothers' migration, on the academic performance of 384 students in Sri Lanka's Western Province, with a focus on the psychological and economic influences. The research reveals that economic challenges are the primary driver of migration, influencing 80% of cases, while educational and employment opportunities account for 16%. Over half of the students (54%) reported that their parents had migrated within the past one to three years. The sample included a significant number of students aged 13 and 14. The study found that female students slightly outperform male students in academic performance. Additionally, most respondents have at least one sibling, which influences both their family responsibilities and academic commitments. Despite the difficulties, 59.4% of students continue their education journey. Research shows that 79.7% of Sri Lankans' parents migrate in search of better opportunities. In many cases, it is the mother who migrates, leaving the children in the care of the father or other relatives. Most migrant parents have completed at least secondary or high school education, with 84.4% attaining this level of education or higher. Economic necessity is the leading factor in migration, rather than educational or professional benefits. Students face mental health distress and reduced academic performance due to parental migration, with students rating their mental health at 4.44 out of 5. Insufficient emotional support is identified as the primary difficulty. Loneliness, stress, and anxiety affect students to such an extent that it becomes hard for them to follow academic responsibilities. Educational achievement is closely linked to parental involvement. When parents migrate for work, their absence can reduce students' motivation due to a lack of direct supervision during homework and assignments. The regression analysis reveals that

financial problems causing migration are unrelated to students' academic performance, but other factors impact their success rates.

The study reveals a positive correlation between academic achievement and psychological well-being, social support, parental absence, and economic hardship. Better mental health leads to better academic outcomes, while social support helps students develop emotional support from their social networks. Parental absence harms academic performance, but peer and guardian support can help mitigate its effects. Economic hardship has a negative connection, as financial instability affects student educational success. Learning is influenced by economic adversity, but psychological well-being and social network quality become more important determinants of learning achievement. Overall, these factors contribute to better academic outcomes for students.

Regression Analysis

Table 02: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.503[a]	.253	.204	.7117

a. Predictors: (Constant), Economic Issues, Engagement and Support (Lack of parental care), Psychological and Social Factors (Mental Well-being)

The research employed multiple regression analysis to assess the predictive ability of economic conditions in conjunction with social structures and psychological attributes on academic outcomes. Three fundamental variables entered the regression model: economic hardship, psychological well-being, and social support. The table below shows the model summary information. Academic performance exhibits a moderate explanatory capability through this model, as it accounts for 25.3% of the total variance ($R^2 = 0.253$). The F value of 15.21 ($p < 0.001$) in the ANOVA test demonstrates statistical significance, indicating that economic hardship, parental support, and psychological state have a direct impact on university grades. Marking 0.387 for beta value, psychological well-being demonstrates the most substantial positive relationship with academic results ($\beta = 0.387$; $p < 0.01$) while social support displays $\beta = 0.342$ at $p < 0.05$. Economic difficulties show a lower negative impact on study outcomes compared to other factors ($\beta = -0.217$, $p < 0.05$). Research data shows that emotional and social aspects surpass financial stability in predicting student academic results. The study employed factor analysis, utilizing the Kaiser-Meyer-Olkin (KMO) sampling adequacy measure and Bartlett's spherical test, to validate the research constructs. Factor analysis of the dataset shows adequate suitability, as indicated by the KMO value of 0.789. Bartlett's test displayed a

ISBN: 978-624-5553-76-1

significant p-value of less than 0.001, which reinforced the ability to factor the correlation matrix. The survey scales underwent reliability testing through Cronbach's alpha evaluation to assess their internal consistency. The results obtained demonstrate exceptional reliability, as every scale achieved a coefficient greater than 0.7.

- Psychological Well-being Scale: $\alpha = 0.832$
- Social Support Scale: $\alpha = 0.794$
- Economic Hardship Scale: $\alpha = 0.765$

The research instrument demonstrated both validity and reliability according to these results, thus strengthening the solid nature of the findings obtained through the study. Parental migration can cause learning difficulties for children; however, mental influences and social relationships can mitigate the economic effects. Students who receive good emotional support and have good mental health tend to perform better academically. Financial aid alone is insufficient; comprehensive programs that address psychological and social support needs must be the core strategy. Schools should implement organized support frameworks in collaboration with community organizations to address the issues caused by parental migration. Students benefit from counseling programs and peer support groups. The study emphasizes the need to unite financial support with mental health treatment to reduce educational problems. Future research should investigate resilience approaches and coping strategies for students facing parental migration challenges.

Discussion

This study examines the impact of parental migration on the academic outcomes of children in Sri Lanka's Western Province, identifying economic hardship, emotional strain, and reduced parental involvement as key factors contributing to underperformance. Financial difficulties are a primary factor affecting educational performance. Several students mentioned economic uncertainty as a hindrance to maintaining minimum school supplies and fees, forcing many to take on part-time work. This change in priorities takes away the time and effort for studies. Studies from earlier work confirm these findings, indicating that economic adversity can have a detrimental effect on children's education by limiting their access to requisite resources and adding to their non-school responsibilities (Amuedo-Dorantes & Pozo, 2010; Gindling & Poggio, 2012). Other research conducted in developing countries also confirms that children in migrant households usually face financial hardships, which impact their education, as noted by this study. Emotional and mental health also play significant roles in determining success in educational settings. Parents', particularly mothers', absence results in emotional discomfort, stress, and feelings of loneliness. Past research stipulates that parents' absence

could result in emotional problems, which work against students' interests and concentration in schools (Graham & Jordan, 2011; Parreñas, 2005). Additionally, family breakdown, with older siblings taking up caregiving roles, adds to the emotional and academic burden. The findings concur with prior literature that advocates for the significance of high emotional support in achieving academic success. Although parental involvement is not necessarily the most statistically significant factor, it is vital in shaping the motivational and academic achievement of students. Where there is no parental direction and responsibility, motivation is low, and academic achievement is poor. Research conducted by (Levitt & Lamba-Nieves, 2011) identifies that, despite physical absence, regular communication and involvement in the child's education can help mitigate some of the adverse effects. Research conducted in multi-socio-cultural environments also establishes that virtual parental involvement, i.e., regular communication and emotional support, fosters sustained academic motivation and a sense of stability in children. This study suggests that parental migration can impact children's education, despite economic stress and emotional trauma. Engaged parental participation can mitigate these effects, and economic stability, as well as emotional support networks, may improve educational outcomes. Future research should investigate strategies to enhance parental involvement and community support to mitigate these concerns.

Conclusion

Parental migration in Sri Lanka may significantly impact children's academic success, according to findings from the Western Province. This socioeconomic dynamic leads to lower grades and higher absenteeism rates. The Western Province struggles to balance the financial benefits of remittance with the educational needs of young people. The emotional and psychological impact of absent parents on children's academic performance is significant, even when families invest in private tuition and superior facilities. The absence of regular monitoring and involvement often creates a negative impact on the child's educational goals, affecting both their academic and personal growth. Research indicates that the influence of parental migration may be either lessened or increased, depending on the sociocultural setting, including the role of extended family networks. Policy interventions that prioritize social support networks are crucial for ensuring children's academic achievement and maximizing the economic benefits of migration. Strategic interventions such as community-based educational assistance, counseling services, and policies encouraging greater family communication are essential to prevent the children of migrant parents from falling behind in their education. However, this study recognizes an important limitation. The selected variables, including parental migration, mental well-being, and economic issues, explain only about 25% of the variation in students' academic performance. Therefore, future research

should aim to investigate a broader range of factors, including psychological conditions, school-related influences, and the broader social environment, to gain a more comprehensive understanding of the issue.

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ICME 2025 "Entrepreneurial Bricolage: Steering Volatile Markets through Improvised Strategies and Innovative Thinking"
Proceedings of 14th International Conference on Management and Economics

Enhancing the Effectiveness of Decision-Making Through Data-Driven DSS in Sri Lanka

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Abstract

Effective decision-making is essential for enhancing operational efficiency and performance in the dynamic supermarket sector in Sri Lanka's supermarket industry. The impact of Data-Driven Decision Support Systems (DDSS) presents a valuable opportunity to improve the effectiveness of managerial decision-making processes. Despite the proven advantages of Decision Support Systems (DSS) in streamlining decisions and increasing responsiveness, implementation remains limited across many supermarkets. This study investigates the role and effectiveness of DSS components, including the database, database management system, data directory, and query facility, in supporting decision-making among middle- and top-level managers in supermarket operations. Using a quantitative research approach, we collected data using a structured questionnaire with 37 items, each measured on a five-point Likert scale. A conceptual framework was developed to analyse the relationships between key DSS components (independent variables) and managerial decision-making effectiveness (dependent variable). Responses were obtained through simple random samples from selected supermarket branch managers. Structural Equation Modelling (SEM) was employed to test the research hypotheses and validate the conceptual model. Findings reveal that DSS implementation significantly enhances operational decision-making, particularly at the branch management level. The results underscore the positive impact of well-integrated DSS components in improving decision quality, operational efficiency, and overall performance in the supermarket sector. This research fills a critical gap by identifying specific DSS systems that contribute most effectively to supermarket managerial decision-making. Future studies are recommended to expand the scope by incorporating longitudinal data and exploring sector-wide technological adoption barriers. The insights generated are valuable to supermarket

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ISBN: 978-624-5553-76-1

managers, policymakers, and technology developers aiming to optimise decision-making processes and drive innovation in supermarket operations.

Keywords: *Data Driven-DSS, Effectiveness of managerial Decision-making, Supermarket Sector*

Introduction

In the competitive supermarket chain environment of the present day, it is essential to leverage technology to assist in decision-making. Managers of supermarkets are increasingly relying on Data-Driven Decision Support Systems (DDSS) to make timely and effective decisions and, in turn, enhance operational effectiveness and profitability. (Negulescu & Oriana, 2014; Şuşnea, 2013). DDSS integrates several technological components to capture and analyze enormous volumes of data to optimize critical operations like inventory management, procurement, and customer service.

Sri Lankan Supermarket chain stores have introduced advanced DDSS tools, including SAP, to support decision-making. (Cil & Turkan, 2019). However, existing research has not thoroughly investigated the effect of specific DDSS components on the effectiveness of managerial decision-making. (Malkawi, 2018). This study attempts to bridge the gap by examining four key DDSS components: the Decision Support System Database (DSS-DB), Database Management Systems (DBMS), Data Directory (DD), and Query Facility (QF), with a view to their impact on decision-making effectiveness in Sri Lankan supermarkets. (Nagarur, 1999). The study could create a systematic understanding of how DSS components and their system features are used to enhance managerial decision-making in the supermarket sector. To the best of the author's knowledge, this current study is the first to examine this particular area. In this context, it can give an in-depth examination of the variables that influence the efficacy of management decision-making and serve as an overview for future research. Identifying the critical factors influencing the effectiveness of managerial decision-making can provide insightful information about the difficulties and opportunities associated with this type of supermarket and guide the creation of practical adoption strategies.

Problem Statement

In today's fast-evolving business environment, effective management decision-making increasingly relies on Data-Driven Decision Support Systems (DDSS) to provide timely and accurate information. While Decision Support Systems (DSS) are effectively known to support the efficiency of decision-making (Cil & Turkan, 2019). Few research studies focus on the extent to which the Database Management Subsystem (DBMS), comprising the DSS database, DBMS, DD, and QF operating together, contributes to the effectiveness of the decision. Effective decision-making is based on speed, accuracy, and inclusiveness to provide strategic business

outcomes. While existing research focuses on individual DSS components, this study aims to bridge the gap by examining how DBMS entities make decisions effectively in supermarkets. It will emphasize the role of the DSS database in decision success rates. (Williams, 2007). The role of data manipulation routines is to aggregate and filter data and ensure compatibility with analytical software. In addition, the study will investigate how triggers and instant notifications influence decision timing. Based on this investigation, the study will provide practical recommendations on how the functionality of DSS may be maximized, ultimately improving decision results and the abilities of decision aid to supermarket operations.

Literature Review

Database

A database is a collection of data sets, such as store inventory and customer and supplier details lists. A database system allows users to read, insert, delete, and update data on a computer system (Amin, 2023; Aparajitha et al., 2010). That aids decision-makers to integrate helps organizations gain a more profound knowledge of their operations, increase the quality of managerial decisions, and ultimately raise their performance (Hurbean et al., 2023; Molla et al., 2022). DSS development has focused on supporting management decision-making for out-of-sort structured instances in a user-friendly manner (Goslar, 1986). In addition, DSS supports real-time decision-making and the fast processing of extensive data volumes, enabling organisations to respond adequately to market fluctuations (Molla et al., 2022). Power (2007) describes data management as one of the main functions of a Decision Support System (DSS) database element. According to the above explanations, the hypotheses below are developed.

H_1: The DSS database has a significant impact on the effectiveness of managerial decision-making.

DBMS

The Database Management System (DBMS) is a computer program collection that enables users to insert, modify, update, delete, maintain, and access the database. It covers the complexities of the storage of data and the algorithms required for managing database operations, allowing users to interact with the data more easily (Grad, 2009). Data-driven insights give a clearer picture of the market environment and client requirements. These systems allow companies to convert large amounts of data into actionable information, facilitating informed, data-driven decision-making (Hosen1 et al., 2024). All database management systems possess a database language by which users can command the computer to utilize data stored in the database structure. Every item of information in such systems must be stored only once so that it is easily accessible to be retrieved and modified from time to time

(Ramakrishnan, 2003). Besides, integrating DBMS into decision support systems increases analytical power, reporting quality, and response times to market changes in Sri Lanka (Williams et al., 2007). Under Database management systems, Ad Hoc Data Filtering and Retrieval, Data Summarization, Excel Integration, Report Design Generation and Storage, and Statistical Analysis are the features of the system (Power, 2007). According to the above explanations, the hypothesis below is developed.

H_2: Database management system has a significant impact on the effectiveness of managerial decision-making.

Data Directory

The data directory is a key component of DSS that aids the organization, administration, and retrieval of data at the intelligence phase. Data directories provide relevant and cumulative information about data sources and use parameters, enhancing organizational decision-making (Nagarur, 1999). Core operations of data directories in DSS environments are the creation of metadata, the retrieval of metadata, and the presentation of predefined analysis reports. While there have been notable advances in metadata tool functionality and developing capacities, research in academia has concentrated chiefly on technical performance testing, with insufficient attention to user experience feedback and perceptual testing. The identified methodological limitation provokes a substantial knowledge gap concerning probable evolutions and adaptations of metadata systems within respective decision-making settings (Zhang, 2008). Pre-existing report formats, such as dashboards and balanced scorecards, allow stakeholders easy access to information in succinct and comprehensible formats. Besides, these data formats can be exported to other analysis platforms when customers desire in-depth customization (Kozlowski et al., 2018). Based on the above theoretical background, the following hypothesis is given.

H_3: The Data directory has no statistically significant impact on the effectiveness of managerial decision-making.

Query Facility

The query facility is one of the key components of a Database Management System (DBMS) to enable users to extract particular data from large databases using properly formatted commands, usually SQL (Bolloju, 1989; Hosen1 et al., 2024). Queries for DSS are formulated and processed by a scientific and comprehensive approach (Sharma, 2013). It plays a critical function within information retrieval systems, as it guarantees that correct data can be found in response to user requests and therefore has an important impact on the efficiency and effectiveness of the system (Straube, 1990). These systems handle an analysis and retrieve data effectively, supporting real-time analysis and insights. SAP HANA and such in-memory databases retain data in RAM instead of drives. This significantly enhances the processing

speeds, allowing real-time analysis as well as fast query response (Hosen1et al., 2024). Query optimization can enhance response time and lower resource utilization when handling larger data. In relational databases, query optimization using indexing, caching, and query rewriting minimizes the execution cost. Query optimization in web search engines facilitates the quick delivery of results, even when billions of requests are handled daily (Currim et al., 2016). Under Query Facility, Create Data Displays, Alerts, Triggers, and View Production Reports are the features of the system (Power, 2007). According to the above explanations, the hypothesis below is developed.

H_4: Query Facility has a significant impact on the effectiveness of managerial decision-making.

Effectiveness of Managerial Decision Making

The effectiveness of managerial decision-making is the capacity of managers to produce timely, accurate, and informed decisions that improve organizational performance (Yassine, 2017). It is an essential competency in dynamic corporate situations where one must decide on complex and frequently dubious data. Studies show that access to reliable data, analysis skills, and the manager's cognitive ability all affect the effectiveness of decisions (Elbanna & Child, 2007). Managers believe that decision quality is influenced by information availability, subordinate involvement, team guidance, and environmental factors (Negulescu & Oriana, 2014). The significance of implementing a knowledge management process to DSS has also been realized so that decision-makers can combine different types of knowledge (tacit and explicit) and data (internal and external) available in different forms. Organisations can significantly enhance their productivity, asset utilization returns, and stock prices with the implementation of data-based decision-making practices (Kabadurmus et al., 2023).

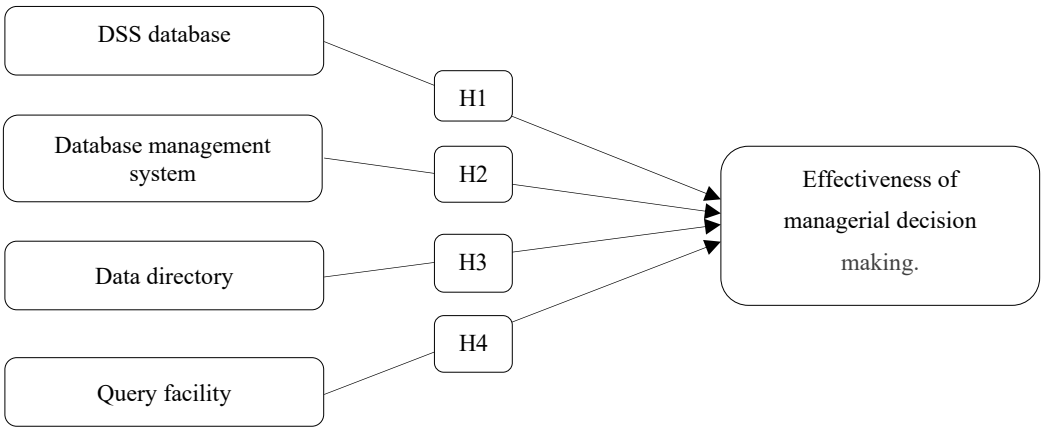

Figure 01: Conceptual Framework

ISBN: 978-624-5553-76-1

Although structural equation modelling prefers three or more indicators per construct, this study employed two-item constructs for the Data Directory based on their high theoretical relevance and confirmed internal reliability (Bollen & Lennox, 1991). The use of two-item constructs is justified in the literature, which accommodates their suitability under some conditions where indicators are conceptually valid and statistically equivalent. Further, more advanced identification methods, such as the MIIV-graphical approach, enable stable parameter estimation in limited-item situations (Ankan et al., 2023). Further, Bayesian distributional SEM models show how complex latent structures can be adequately modelled even with limited indicators (Fazio & Burkner, 2025). These approaches justify using two-item measures based on theoretical coherence and extremely high internal consistency.

Table 01: Operationalization Table

Variables	Indicator	Item Code	Link
DSS-Database	Data Management	DM	(Nagarur, 1999)
Database Management Subsystem	Ad Hoc Data Filtering and Retrieval	DBMS1	(H.Chen, 2012)
	Data Summarization	DBMS2	(Ahmed, 2018; Shankar, 2011)
	Excel Integration	DBMS3	(Hampton & Foley, 2022; Shang, 2008)
	Report Design, Generation, and Storage	DBMS4	(Hosen1 et al., 2024; Niu, 2021)
	Statistical Analysis	DBMS5	(Ferrara, 2014)
Data Directory	Metadata Creation and Retrieval	DD1	(Furner, 2019; Kraak, 2007)
	View predefined data displays.	DD2	(Gorgan, 2015; Power, 2007)
Query Facility	Create Data Displays	QF1	(Schriger D. L, 2001)
	Alerts and Trigger	QF2	(Heringa, 2018)
	View Production Reports	QF3	(Park, 2005)
Effectiveness of Managerial Decision-making	The success rate of decisions influenced by DSS	EMDM1	(Murali, 2024; Williams, 2007)
	Information Reliability	EMDM2	(Michael Lawrence, 1997)
	Respond Time	EMDM3	(Chan, 2017)

Methodology

This study investigates the influence of Data-Driven Decision Support Systems (DDSS) on decision-making effectiveness in Sri Lankan supermarkets. Primary data were collected with a structured questionnaire from 291 branches of 1,186 government and private supermarket

branches involved in decision-making and had experience with DSS tools. These questionnaires were explicitly given to supermarket branch managers involved in managerial decision-making and experienced Decision Support System (DSS) users. This made it reliable data that was collected and could be used to analyze the impact of DSS on managerial decision-making. A five-item Likert scale (1–5) was used to measure significant variables and determine correlations among independent and dependent variables. A five-point Likert scale from 1 to 5 was utilized to measure salient variables and calculate the correlation between independent and dependent variables. Cross-sectional data analysis was conducted using the Smart PLS program, whereby trends and inferential statistical analysis, such as regression analysis, were identified to ascertain the significance of variable relationships. In order to calculate data reliability, an initial pilot test gathered 70 responses, whereas subsequently, 252 responses were gathered. Nevertheless, due to data error, 39 responses were retained external to the final analysis.

Table 02: Descriptive Statistics

Variable	Mean	Median	Standard deviation
DSS-Database	4.726	5.000	0.354
Data Directory	4.789	5.000	0.296
Database management system	4.834	5.000	0.265
Effectiveness of managerial decision-making	4.783	5.000	0.308
Query Facility	4.840	5.000	0.309

Table 03: Validity and Reliability Statistics

Variable	Cronbach's alpha
DSS-Database	0.703
Data Directory	0.700
Database management system	0.863
Effectiveness of managerial decision-making	0.700
Query Facility	0.774

Data Analysis

This study uses SMARTPLS software and the Partial Least Squares Structural Equation Modelling (PLS-SEM) approach, with which it is possible to examine intricate relationships between numerous variables, namely latent variables and indicators. Assessment of the measurement model, which examines the relationship between the indicators and their constructs, is the first step in PLS-SEM (Hair, 2014; Wong, 2013).

Results and Discussion

Every HTMT score was below the 0.90 cutoff, indicating that the constructs are still separate. These conceptions are conceptually distinct, as evidenced by the poor correlation in the Query

Facility DSS Database relationship (HTMT: 0.596). The effectiveness of Managerial Decision-Making and the DSS Database had the most excellent HTMT value (0.872), suggesting a close link while preserving construct differentiation.

HTMT

Table 04: Heterotrait-monotrait ratio (HTMT) - List

Indicators	HTMT
Data Directory vs DSS-Database	0.702
Database Management System vs DSS-Database	0.733
Database Management System vs Data Directory	0.830
Effectiveness of managerial decision-making vs DSS-Database	0.872
Effectiveness of managerial decision-making vs Data Directory	0.763
Effectiveness of managerial decision-making in a database management system	0.788
Query Facility vs DSS-Database	0.596
Query Facility vs Data Directory	0.835
Query Facility vs Database Management System	0.860
Query Facility vs Effectiveness of Managerial Decision-Making	0.770

The database management system (HTMT: 0.830), query facility (HTMT: 0.835), DSS database (HTMT: 0.702), and effectiveness of managerial decision-making (HTMT: 0.763) all have acceptable relationships. Higher-order constructs are distinct, as confirmed by other important relationships, including Query Facility Effectiveness of Managerial Decision-Making (HTMT: 0.770) and Database Management System's links with DSS Database (HTMT: 0.733), Query Facility (HTMT: 0.860), and Managerial Decision-Making (HTMT: 0.788).

Structural Model Assessment

The study's researchers assessed the importance and strength of the associations as they examined the data. They concentrated on path coefficients, standard deviations, t-values, and p-values to evaluate these associations. A hypothesis was rejected if its t-value was less than 1.96 or its p-value was more than 0.05 (insignificant), according to the 5% significance level used to evaluate the structural correlations (H1–H4).

Thus, all the route coefficients, t values, and p values show positive and significant connections supporting our hypothesis, supporting H1, H2, and H4. In this case, lower p-values and higher t-values emphasize how the hypothesis is supported. H1 demonstrated that the DSS Database significantly improves managerial decision-making effectiveness ($\beta = 0.366$, $p < 0.000$, $t = 5.651$); H2 demonstrated a positive significant relationship between the Database management system and managerial decision-making effectiveness ($\beta = 0.193$, $p < 0.030$, $t = 2.173$); and H4

ISBN: 978-624-5553-76-1

showed that the query facility has a statistically significant positive impact on managerial decision-making effectiveness. However, because its t-value (1.508) was less than 1.96 and its p-value (0.131) was greater than 0.05, indicating a statistically insignificant association, H3 (Data Directory and Effectiveness of Managerial Decision-Making) was not supported. The availability of other mediating elements that affect management decision-making effectiveness, or the inadequate integration or use of data directories inside decision-making frameworks, could be two explanations for this insignificance (Falahat, 2020; Hair et al., 2014; Wong, 2013). R^2 values for endogenous variables were described as 0.02 for weak, 0.13 for moderate, and 0.26 for substantial. However, in the context of PLS-SEM, R^2 values of about 0.67, 0.33, and 0.19 can be interpreted as substantial, moderate, and weak, respectively, as indicated by (Chin, 1998). The current study obtained an R^2 value of 0.528, indicating a relatively high explanatory power between moderate and substantial.

Table 05: Hypothesis Testing

Hypothesis	Path	Path coefficient	Standard deviation	t-value	p-value	Decision
H1	DSS Database and Effectiveness of Managerial Decision-making	0.366	0.065	5.651	0.000	Supported
H2	Database Management System and Effectiveness of Managerial Decision-making	0.193	0.089	2.173	0.030	Supported
H3	Data Directory and Effectiveness of Managerial Decision-making	0.100	0.066	1.508	0.131	Not supported
H4	Query facility and Effectiveness of Managerial Decision-making	0.219	0.089	2.468	0.014	Supported

Discussion

Findings show that DSS can effectively impact managerial decision-making in daily business activities in all supermarkets. (Cil & Turkan, 2019). Other findings show that if supermarket managers are not using DSS for supermarket activities, it will harm the relationship with employees and other activities. Another finding that was discovered is that if supermarket managers use DSS, supermarkets can be affected due to high competition in the industry (Negulescu & Oriana, 2014).

If the P value of the above variables is below 0.05, the variables are significant. In the reliability test, the indicator system shows solid internal consistency as all Cronbach's alpha test indices

showed values of more than 0.7, which is the benchmark of this test. The validity test, which includes AVE and the HTMT ratios for indicator relationships, confirms discriminant validity, as all values fall within an acceptable range, with the highest being 0.872. These results confirm that the data is reliable and valid for further analysis.

The R^2 value of 0.528 signifies that the independent variables account for approximately 52% of the dependent variable variability, highlighting the model's substantial explanatory power. The structural model of the study represents the results of the particular study and talks about the relationships with the variables concerning the P-value coefficient and CR Value. As shown above in the table and discussed earlier, the results displayed that only three variables support and have a statistically significant impact. DSS, DBMS, and QF did not have a statistically significant impact but showed a positive impact.

Limitations and Future Research

The cross-sectional design of this research constrains it to track the long-term impacts of DSS deployment. The findings are unique to Sri Lankan supermarkets and thus are less applicable to other firms or international markets. Furthermore, the study focuses primarily on the DSS database, DBMS, data directory, and query facility. It does not consider other potential moderating variables such as company culture, user training, and regulatory influences. The role of the data directory in decision-making does not appear to be substantial in study hypotheses, and doubts emerge regarding its efficacy. Moreover, the use of accepted management data increases the likelihood of response bias, which could hinder the validity of the findings.

Future research should use an ongoing method to evaluate DSS effectiveness over time and generalize it to other industries or foreign markets for further implementation. Incorporating other variables like company culture, user training, and regulatory regimes would offer a better picture of DSS adoption. An investigation into the usefulness of the data directory by industry might conclude whether its weak effect is industry-specific in the case of supermarkets. By using objective performance information, such as AI-driven analytics, the accuracy of results can be improved while minimizing reaction bias. Also, embedding artificial intelligence and machine learning into DSS models can support more effective and efficient decision-making and management results.

Implications

Theoretically, the findings illuminate the differential impact of various components of data-driven DSS. As previously, theoretical frameworks have assumed a balanced style for the conceptualization of these components to be equally effective; the current study suggests a

hierarchical framework where user-interface components (like query facilities and formatted displays of data) can have greater impacts on decision outputs than system-infrastructure components, such as the DBMS. In practice, the action implications of the findings would be that supermarket businesses in Sri Lanka and similar emerging market settings need to invest mainly in (1) complete training programs in building management skills in using query tools efficiently, (2) having directories of data properly arranged and kept up to date regularly, and (3) keeping well-founded and contextually adequate repositories of data. Improvement in these specific dimensions can lead to measurable improvements in decision quality, particularly in highly competitive retail environments with high levels of market change. Rephrase the above in another way to put conference paper, but do not lose meaning.

Conclusion

This study presents the significant role of Data-Driven Decision Support Systems (DDSS) in enhancing managerial decision-making in Sri Lankan supermarkets. The findings depict the contributory effect of the essential DDSS components, DSS Database, Database Management System (DBMS), and Query Facility, on decision-making performance, particularly for inventory management, procurement, and demand forecasting tasks. However, the Data Directory was found to have no direct contributory effect. The research proposes that better incorporation of these components of DDSS can improve the decision-making procedures, and technologies such as machine learning and AI can further support DDSS capabilities in the grocery market.

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Entrepreneurship

Women Entrepreneurs in Sri Lanka: An Exploration of Psychological Characteristics

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Abstract

The psychological characteristics of women entrepreneurs are unique and essential for entrepreneurial engagement and related decision-making. They are directly involved in building successful entrepreneurs who grow amidst challenges. This research explores the psychological characteristics of women entrepreneurs in the craft-based fashion sector in Sri Lanka (SL) to enhance the theoretical understanding of the unique perspective of women entrepreneurship (WE) in understudied countries in the global South. The research adopts a qualitative approach where semi-structured in-person interviews were conducted with fifteen respondents selected through a purposive sampling. Data were reviewed and analysed through thematic analysis, and six psychological characteristics of women entrepreneurs in SL were identified. They are enthusiasm, intelligence, tolerance, agility, empathy, and courage. This research aims to contribute to the literature on WE in developing countries, specifically the Global South. The findings highlight the importance of utilizing distinctive approaches and systems to encourage WE, especially in SL, and open more avenues for future researchers to study contextual identity further through insights from women's standpoints.

Keywords: *Psychological Characteristics, Sri Lanka, Women Entrepreneurs, Women Entrepreneurship*

Introduction

Entrepreneurship is a dynamic economic activity central to economic development, employment creation, and improving people's living standards in different communities (Ndofirepi, 2020). It is being explored as a gendered phenomenon (Ahl, 2006) where most prior literature has arranged its research objectives around male entrepreneurial performances (Marlow & Martinez Dy, 2018). This notion has been criticized as women's engagement in owning businesses grew (Henry et al., 2016). Women entrepreneurs contribute over 40% of the global workforce while creating innovative opportunities for future generations (Foss et al.,

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ISBN: 978-624-5553-76-1

2019). WE research approaches and ant growth during the past few decades with the application of gender, economic, technological, and social approaches, and explore the research area concerning both developed and developing economic domains. When considering the South Asian (SA) region, India, Bangladesh, and Pakistan have investigated WE widely (Hossain et al., 2009; Ingalagi et al., 2021; Khan et al., 2021). To broaden the existing literature further, and to have a distinctive view of WE in the global south, it is essential to focus on the under-studied countries, as generalizing findings may conceal contextual identities (Peris-Delcampo et al., 2023). Grounding this identification, this research focuses on exploring WE in SL, a developing country in the SA region, where WE are realized as a crucial factor for ensuring continuous economic progress (De Silva & Wijewardene, 2019).

SL is a multicultural society where most of its population is women (Country Meters, 2024). Even though women's engagement in entrepreneurship and other economic activities is much lower compared to developed countries (De Silva et al., 2021). The main reasons are the male-dominated societal system, which hinders women's potential, and the social stigma related to entrepreneurship as an unsustainable career choice (Peiris et al., 2023). However, the current economic downturn in SL is gradually changing society's perception of WE, and they have realized the importance of utilizing the unexploited women's entrepreneurial potential to contribute to the country's economic growth.

Our research in SL is growing and tries to signify its contextual identity within the entrepreneurship literature. Existing literature mainly discusses the challenges and barriers women entrepreneurs face in SL (De Silva et al., 2021). The perspective of research has further expanded towards discussing gender and entrepreneurship, investigating women's entrepreneurial personae in navigating a variety of gendered roles (Peiris et al., 2023). Similarly, researchers explore the vast factors that influence WE in SL. Psychological capital is recognized as a crucial factor as it moulds the personality to thrive through contextual barriers, and its empirical explorations may contribute to the literature within the context (Ambepitiya & Gao, 2019).

Accordingly, we seek to explore the psychological factors of women entrepreneurs in SL to deepen the existing literature related to the context and expand the literature related to understudied countries in the global south. The main research question is 'What are the psychological characteristics of women entrepreneurs in SL?'. Proper identification of psychological characteristics that influence women entrepreneurs is important in regulating the support systems for women entrepreneurs (Ahl, 2006). It is essential to persuade related statutory bodies to develop a gender-oriented support system and encourage an intensive entrepreneurial education and training system for female students interested in becoming future entrepreneurs (Foss et al., 2019).

Literature Review

Women Entrepreneurship

Entrepreneurial women in society undergo many challenges on their way to success while being bound by several norms and beliefs socially and culturally (Rashid & Ratten, 2020). However, some women succeed in their entrepreneurial ventures amidst such challenges. They earn profits and drive the country's economic growth, which captivates researchers who want to investigate and identify different factors influencing WE. Financial factors, social factors, and individual factors are recognized as critical influential factors (Rashid & Ratten, 2020; Ingalagi et al., 2021) for WE. However, the influential nature of these factors could vary based on the country's economic status, particularly for WE in developing countries, due to its male-dominated society system, and the fact that social, cultural, religious, educational, and economic factors disproportionally favour men over women in developing countries (Rashid & Ratten, 2020).

Furthermore, existing literature highlights the need to expand research in such developing economies to generate a holistic view of WE and its influential factors in different industries (Yadav & Unni, 2016). Strawser et al. (2021) also elaborate that the unique challenges women entrepreneurs face in developing countries are relatively unexplored in the literature, which stresses that there are still more areas to be explored in the field through systematic theoretical approaches.

In Developing Countries

When exploring WE in developing countries, African and Asian regions have been popular domains for WE research. In Asian developing regions such as India, Indonesia, and Bangladesh, social, psychological, and financial factors and resources are critical when it comes to women's entrepreneurial success (Anggadwita et al., 2017; Hossain et al., 2009; Ingalagi et al., 2021). These factors were explored by utilizing available entrepreneurial theories, which generally discuss entrepreneurial traits.

The majority of the entrepreneurial theories that emerged in Western developed countries fail to incorporate the individual factors of developing countries and express only one side of the picture (Rashid & Ratten, 2020). Relying on such theories and frameworks when interpreting factors related to developing countries will not give practically viable insights for decision-making. It does not acknowledge important contextual factors in developing countries. Therefore, it is essential to develop pluralistic and multilevel perspectives in studying WE by giving equal importance to the various factors that affect WE in emerging economies. Further, it is not fair to generalize findings by region, as it may hide the contextual distinctiveness of understudied regions (De Silva & Wijewardene, 2019; Peiris et al., 2023).

Individual Characteristics of WE

Individual characteristics can be defined as person-specific attributes that can differentiate a person from the average group (Notthoff et al., 2017). Antoncic et al. (2015) suggest that gender-related personality differences may be larger when considering the overall population. However, the cognitive mechanisms of entrepreneurship and ability-related individual characteristics still require systematic research to expand the literature related to individual characteristics of entrepreneurship in cross-cultural domains (Antoncic et al., 2015).

Existing research particularly focuses on person-based psychological characteristics as a subsector of individual characteristics that differentiate an entrepreneurial personality (Notthoff et al., 2017). In contrast, some literature debates that individual factors or personality traits alone will not differentiate entrepreneurial engagement and success in WE, where access to finance, networking, external environmental factors, socio-cultural factors, utilization of resources, and experience are similarly influential for women's entrepreneurial growth and success (Alene, 2020; López-Núñez et al., 2020; Ogundana et al., 2021; Valdez-Juárez et al., 2024). However, Ingalagi et al. (2021), Anggadwita et al. (2017), and Hossain et al. (2009) highlight that in Asian developing regions, psychological factors remain critical due to the culturally bound nature of society and the continuous barriers women entrepreneurs face, including financial, technological, economic, and social barriers.

Psychological Characteristics of WE

Identification of psychological characteristics is different from one context to another. One of the most discussed psychological factors in entrepreneurship literature is personality traits. Rauch & Frese (2000) suggest personality traits are predictors of entrepreneurial behaviour, including biological determinants, broad personality factors, motives, and generalized self-efficacy. The Big Five personality model is frequently used in entrepreneurship research (Antoncic et al., 2015; Brandstätter, 2011).

Lee (1996) highlights the need for achievement as the desire to reveal personalized efforts to achieve personalized rewards. The need for affiliation is explored as maintaining warm and friendly interpersonal relationships. The need for autonomy is the preference for a self-directed work ethic amidst others' opinions. The need for dominance is the desire to control the behaviours and sentiments of others (Lee, 1996). Littunen (2000) explains that a strong need to achieve is related to targets and the desire to reach these targets, which is a prominent characteristic of entrepreneurs, specifically of the founders of ventures willing to grow. In the process of entrepreneurial success, opportunity recognition and the pursuit of opportunities are essential personal qualities. This quality is explained in the literature as the locus of control. As Rotter (1966) explains, the locus of control is either internal or external. Individuals with an internal locus of control believe that they control their fate and the environment (Ndofirepi,

2020), while individuals with an external locus of control believe that their fate is out of their control. A successful entrepreneur is equipped with an internal locus of control, which motivates them to achieve success (Brandstätter, 2011; Frese & Gielnik, 2014; Littunen, 2000; Ndofirepi, 2020). Furthermore, self-efficacy is a key psychological parameter differentiating entrepreneurs from non-entrepreneurs (Feng & Chen, 2020). It helps entrepreneurs to voluntarily set goals and persist in entrepreneurial behaviour for a long time. Self-efficacy exhibits a significant relationship with the emotional intelligence of entrepreneurs, where high emotional intelligence enables them to believe in their entrepreneurial abilities and perceive better opportunities for entrepreneurial development (Mortan et al., 2014).

Risk-taking propensity refers to the degree to which an individual is willing to take chances that involve a possibility of loss (Ndofirepi, 2020). It is an inimitable feature of entrepreneurs as initiating a new venture comes with more risk. Risk-taking propensity is critical in shaping an individual's decision to engage in an entrepreneurial career rather than pursue corporate employment (Antoncic et al., 2015). Entrepreneurial passion is a positive psychological characteristic that encourages entrepreneurs to engage in entrepreneurial behaviour as a driving force in hardships and challenges (Feng & Chen, 2020). Frese and Gielnik (2014) explain entrepreneurial passion as a source of energy to work hard for long hours with persistence, leading to high-goal achievement. In addition, optimism is recognized as a key requirement of entrepreneurship, where optimistic entrepreneurs believe more in the success of their actions and are more likely to establish new ventures even within a crisis (Hernández-Sánchez et al., 2020).

SL as a Developing Economy

SL is a multicultural SA country, diversified with plenty of natural and human resources. It is being identified as a developing country with an economic growth rate of 5.0% (Central Bank of Sri Lanka, 2024). Out of its population of 21.9 million, 51.6% are women (World Bank Group, 2023). Even though in 2020 only 33.9% (Department of Census and Statistics, 2022) women were engaged in economic activities. It is much lower compared to developed countries, such as the United States, Canada, and New Zealand (T. De Silva et al., 2021). The National Human Resource Policy of SL highlighted that there is a considerable unexploited segment of women in SL who could actively contribute to the country's economic development, through a variety of sectors (T. De Silva et al., 2021). In developing countries, the development of entrepreneurship is commonly seen in the small and medium-sized enterprise (SME) sector (Tambunan, 2009). It can also be observed in SL, where the SME sector contributes 45% of the gross domestic product (GDP). Out of the entire SME sector, only 25% of the entrepreneurs are women (Sri Lanka Export Development Board, 2022), which is a significant rate compared to its male counterparts. Therefore, it is essential to explore the significant factors that influence

WE and encourage women entrepreneurs to participate more in the country's economic development.

The Fashion Industry and the Craft-based Fashion Sector in SL as the Context for WE Research

The fashion industry is one of the world's most significant industries that drives the global economy forward. With the development of the global fashion education system, more graduates enter the industry with the dream of pursuing a successful career. The fashion industry has the highest number of graduates who want to start a business after graduation (Lang & Liu, 2019). More than 50% of fashion businesses do not survive after four years of operation due to a lack of the required skills to pursue success. Fashion entrepreneurs should adapt by understanding the importance of design and business knowledge, along with the factors that influence entrepreneurship. However, fashion domain-based entrepreneurship is identified as one of the least researched segments (Lang & Liu, 2019), which emphasizes the need for further research.

The SL fashion industry consists of a rich culture of the craft-based fashion sector. It consists of traditional crafts such as handloom, batik, crochet, and leather-related techniques, incorporated with modern-day fashion products. The sector is identified as a growing economic sector that targeted $6 billion in exports in 2021 (Fibre2Fashion, 2021). Government involvement is expected to revamp the craft-based fashion sector in SL towards global marketplaces and positively impact craft-based fashion artisans and entrepreneurs while supporting them in developing their ventures. (Jayawardena, 2020).

Methods

The methodology of this research follows the approach of interpretivism, where interpretivists admire the contextual uniqueness that emerges through research (Saunders et al., 2019). Accordingly, this research is focused on identifying the psychological characteristics of women entrepreneurs within the craft-based fashion sector in SL. The novelty of the research within the specified context has guided the research towards a qualitative stance, which was focused on using semi-structured in-person interviews for data collection by strictly following an interview protocol. A semi-structured interview guide was developed using eight psychological characteristics identified through the literature review, considering their wide and repetitive usage in the existing literature. They are the need for achievement, locus of control, personality traits, self-efficacy, risk-taking propensity, passion, optimism, and stress management (Brandstätter, 2011; Feng & Chen, 2020; Frese & Gielnik, 2014; Hernández-Sánchez et al., 2020; Lee, 1996; Rauch & Frese, 2007).

Context and Characteristics of the Sample

The target population for the research was the women entrepreneurs in the SME sector who are engaged in the craft-based fashion sector in SL. The selection of the target population should be defined in terms of related elements and boundaries (Sekaran & Bougie, 2016). Therefore, the craft-based fashion sector, which designs and manufactures clothing and accessories, was focused on due to the potential growth identified within the sector. The main reasons behind selecting the craft-based fashion sector are the growing nature of the sector and the higher number of women engaged (Sri Lanka Export Development Board, 2022).

The specific sample of respondents was selected through the non-probabilistic homogeneous purposive sampling method (Saunders et al., 2019). Aiming at the women entrepreneurs who built and owned the venture, to explore the psychological characteristics required for entrepreneurial engagement. The sample frame was developed considering the business growth (Davidsson et al., 2005) Through their experience in entrepreneurship, which is supposed to be more than five years, expansion and exposure to international platforms and markets, and the number of permanent employees working within the venture, which was considered more than five during the time. Family businesses and family take-over businesses were excluded when selecting the sample, as it was required to study the sole entrepreneur who visualizes entrepreneurial behaviour in experiencing every aspect of a business. The key characteristics of the sample are mentioned in Table 1.

Table 01: Key Characteristics of the Sample

Respondent Reference	Related Sector	Experience (in years)	International Exposure	No. of Permanent Employees	Duration of the Interview (in minutes) and Mode
R1	Batik	5	Export business.	6	52.17 Zoom call
R2	Leather	8	Export and studied the craft in a foreign art school.	10	22.14 Zoom call
R3	Handloom	30+	Export business.	180	23.45 Zoom call
R4	Handloom	12	Export business.	6	36.50 WhatsApp Call
R5	Beeralu	7	Export business.	5	47.55 WhatsApp Call
R6	Batik	20	Export business.	6	27.56 WhatsApp Call
R7	Beeralu	15	Export business and exposure in global workshops.	8	41.04 WhatsApp Call
R8	Beeralu	18	Exposure to global workshops.	6	43.40 Zoom call

ISBN: 978-624-5553-76-1

R9	Batik	20	Exposure to global workshops, and exhibitions	12	20.18 Zoom call
R10	Batik	6	Export business.	7	26.18 WhatsApp Call
R11	Handloom	35	Exposure to global workshops.	10	20.33 WhatsApp Call
R12	Leather	5	Export business.	5	28.36 Zoom call
R13	Handloom	33	Export business and Exposure in global workshops.	20	29.11 WhatsApp Call
R14	Beeralu	15	Exposure to global workshops.	8	34.22 WhatsApp Call
R15	Batik	31	Exposure to global workshops.	12	31.25 Zoom call

The considered sample size for this specific research was fifteen. It was the point where data saturation occurred, as it indicates that an adequate amount of data has been collected for a comprehensive and credible analysis (Kerr et al., 2010). The majority of the respondents were well-experienced in the field of entrepreneurship and had gone through both successes and failures throughout. They represent the age range of 30 to 70 years, including single, married with and without children, and widowed women with children. They were mainly from SL's Western, Southern, Central, and Sabaragamuwa provinces. Some women entrepreneurs depend on the venture as the only income source for their family. At the same time, some earn from the venture as a secondary income for the family, where they do not depend solely on the income of the entrepreneurial venture. Individual and sociodemographic characteristics of the sample are mentioned in Table 2.

Table 02: Individual and Sociodemographic Characteristics of the Sample

Respondent Reference	Related Sector	Age	Marital Status	Education Level	Status of the Income
R1	Batik	30	Married	Bachelor's (BL)	Primary
R2	Leather	38	Married with children	Postgraduate (PG)	Secondary
R3	Handloom	68	Married	PG	Secondary
R4	Handloom	41	Widowed	Vocational education (VE)	Primary
R5	Beeralu	55	Married with children	VE	Primary
R6	Batik	47	Single	VE	Primary
R7	Beeralu	45	Married	BL	Secondary
R8	Beeralu	52	Widowed with children	VE	Primary
R9	Batik	53	Married with children	VE	Primary
R10	Batik	32	Single	VE	Primary
R11	Handloom	66	Married	VE	Primary
R12	Leather	35	Married	BL	Secondary

ISBN: 978-624-5553-76-1

R13	Handloom	61	Married with children	VE	Primary
R14	Beeralu	55	Married	VE	Primary
R15	Batik	58	Single	VE	Primary

Semi-structured interviews were conducted through online platforms, such as Zoom video conferencing and WhatsApp audio calls, due to the social distancing regulations imposed within the country due to the COVID-19 pandemic during the data collection period. The interviews were conducted in the English language, audio recorded with the respondent's consent, and the verbatim transcripts were produced manually by referring to the recordings closely and reviewing them multiple times to maintain the accuracy of the transcripts. The transcripts were further reviewed and edited where necessary, allowing the data to be reviewed independently.

Data Analysis

The transcribed data were analyzed using thematic analysis to identify the distinctive psychological characteristics of WE in SL. Thematic analysis in qualitative research examines how events, realities, meanings, and experiences are affected by various discourse operations within society. (Braun & Clarke, 2006). Thematic analysis can be identified as a method to reveal social realities with transparency. The initial coding was done manually using the method developed by Saldana (2009) and Braun and Clarke (2006). Accordingly, the original answers given by the respondents related to each question were referred to independently, and a list of preliminary codes was extracted considering the significance of each sentence. The preliminary codes were further analyzed to identify patterns and inter-relationships between each code. They were revisited and further reviewed along with the research objectives. Finally, they were combined and refined to identify the true essence of each code and to determine the aspect of the data each code captures (Braun & Clarke, 2006; Saldaña, 2009).

Findings

As a result of the thematic analysis, six themes were generated as the psychological characteristics of women entrepreneurs in SL. They are enthusiasm, intelligence, tolerance, agility, empathy, and courage. The uniqueness of each characteristic, with the examples drawn from the original data, is discussed below to justify the findings further.

Enthusiasm

In SL, women entrepreneurs' enthusiasm helps them maintain a strong work ethic by committing themselves to what they desire. It is identified as a significant characteristic in building up determined personalities. According to 60% of the respondents, the enthusiasm

for working hard and enjoying their work has helped women entrepreneurs in the sector to motivate themselves positively to do what they need to achieve in life, giving them the strength to face economic and societal challenges.

> "... I love to work. By working throughout or engaging myself in some activity, I do not remember any problems...." (R8)
>
> "...I work always. I work both day and night to achieve what I have planned...." (R6)

According to the respondents, SL society is built around the family phenomenon, where women play a vital role within domestic environments as daughters, wives, and mothers. They are bound by responsibilities throughout, and society's expectations make them vulnerable mentally and emotionally. Women entrepreneurs within the craft-based fashion sector frequently arrange their business activities around the domestic environment due to the convenience of attending to family needs when necessary. They are expected to prioritize domestic requirements more than business activities, which is one reason for the limited growth within the sector.

Intelligence

Intelligence within this context comes with mastery in the field, experience, awareness of the risks and uncertainty that come with the next minute, and preparing to face it with a clear vision. All the respondents displayed intelligence through various activities, including effective time utilization, planning tasks, maintaining a fair work-life balance, and especially identifying priorities where appropriate.

> "...If I decide the task, plan to achieve it, manage the time effectively, assign the work properly, and guide the team towards achieving the task, I know that we will be successful...." (R9)
>
> "...My organizing and planning are not on paper. My planning and organizing are in my mind...." (R3)
>
> "...I always work with a 50% risk of failure, by thinking about the practical side of it. So, with that in mind, I plan my work ...." (R10)

The respondents showcased their tactful and bold moves in finding creative and innovative solutions to daily challenges. The frequent uncertainties of the SL economy and its influence on human lifestyles are significant reasons for the emergence of strong and intelligent women entrepreneurs within the sector.

Tolerance

Concerning the craft-based fashion sector in SL, tolerance of women entrepreneurs can be elaborated through the self-confidence and the emotional stability they visualize throughout

the entrepreneurial journey by being able to endure different situations arising from the changing economic and social environments.

As 75% of the respondents mentioned, women entrepreneurs' confidence in their skills and capabilities helps them build self-trust and face challenges bravely. Amidst many external influences that may force them to stick to the accepted behaviour and cultural norms, they become more tolerant to bear the pressure.

> "...I get angry but I never let it come out through my words or behaviour. If I am harsh on people, no one will come to work with me. Then the loss is only for me, not for them..." (R8)
>
> "...I continue my work no matter how hard the situation is..." (R9)

Respondents show independence in making decisions, focus, and responsibility towards themselves and their team. They can manage emotions such as anger and stress, which they face daily related to work and family commitments, without impacting the tasks and the people around them. Respondents highlighted that they follow individualized techniques to tolerate such emotional challenges and to get on with the tasks.

Agility

Agility can be discussed as a relative factor to tolerance, as enduring situations lead to adaptation or change to survive within them. According to the respondents, they show a confident personality developed through the ability to tolerate change. One of the key reasons for such tolerability is that they act quickly to adapt to the new situation and continue in what they do. They are sensitive to external influences, flexible to change initial plans, and open to new ideas that can help them endure change.

> "...We cannot survive in a market with narrow interests and by doing the same known thing all the time. We need to develop with time and also to suit the customer requirements." (R15)
>
> "....When operating a plan, we face many practical problems along the way. Especially, with the current situation in the country, organizing and planning are difficult. We have to address issues efficiently and solve the issues practically...." (R13)

Enduring and overcoming the impact of the COVID-19 pandemic was a recent circumstance highlighted by most respondents as an example where they visualized agility in entrepreneurship. Their existing market shrank more than expected, customer lifestyles were changing due to lockdowns, so the expected sales targets were not achieved, suppliers could not provide raw materials, and deciding on a price for their products at the end was more problematic. Among such difficulties, they still survive at a minimum level by controlling unnecessary production volumes, implementing cost reduction strategies, and moving towards

online platforms. It has helped them to realize new business avenues and move away from rigid traditional practices.

Empathy

Entrepreneurship is a team effort, and the entrepreneur has a massive responsibility in taking their team towards the desired goal. The speciality observed among the respondents was their concern and empathy towards the employees, customers, family, and society. Most women entrepreneurs employ women with a generous intention of empowering women within their villages and societies. Most of them undergo similar domestic necessities and behave similarly. They respect individuality and try to maintain a strong, yet supportive interpersonal relationship within the business.

> "... different people come from different backgrounds, and they carry different mental statuses and issues with them. So, if we are harsh or inflexible without giving them their freedom, we cannot continue to have their support to achieve our target in the end...." (R13)

Similarly, women entrepreneurs empathize with their relations, friends, and customers and willingly lend support. They share knowledge generously and help novices build their own identities as well.

Courage

Amidst how challenging it would be to balance a family and a business within such a culturally bound society, all the respondents display the ability to continue and manage resources at their best level. They are not ready to give up, which comes from their courageous personality.

> ".... When we have started something, I do not believe in giving up. I always advise my staff that when we start something new, we do our best even if it is more challenging, even if it is more costly, and even if it takes more time, carry on and try to develop...." (R3)

> "...I try my best to do the tasks I have amidst any difficulty. Anyhow, I will try to do it. There are times I get exhausted and hectic, but I try to do my best no matter how hard it is...." (R9)

Courage helps these women to be tolerant, resilient, and optimistic. They are experimental and try to find creative ways of overcoming barriers and keep believing in trying.

Discussion

This research presents six psychological characteristics of women entrepreneurs in SL. When considering enthusiasm as the first characteristic, existing literature identifies enthusiasm as an emotional depiction of passion (Jiang et al., 2022), which explains the emotional

attachment to desires. The findings show that women entrepreneurs in SL are enthusiastic about what they do within their venture, but they limit growth due to personal and family commitments. They hardly think of committing to their venture profoundly and having an unwavering dedication to achieve long-term entrepreneurial goals, as passionate individuals do (Feng & Chen, 2020). Starting from the point that women choose the sector to be involved in, the social and cultural boundaries accept enthusiasm about working and earning but restrain them from having a ground-breaking passion for entrepreneurial success. Therefore, women entrepreneurs in the sector limit business growth, yet operate to maintain independence in earning. It is essential to distinguish this difference related to the SL context, change the societal perspective of sharing family responsibilities, and encourage women entrepreneurs to dream high within entrepreneurship.

Intelligence is presented as the second psychological characteristic of women entrepreneurs in SL, as a factor that makes a strong personality. As highlighted in the prior literature, intelligence ranges from the individual's neural efficiency to the ability to adapt to different environments (Batey & Furnham, 2006). Intelligent individuals who have expertise in specific fields through systematic education and training tend to perform efficiently in their accomplishments (Grabner et al., 2006). Hence, it is visible that women entrepreneurs in SL are intelligent individuals capable of handling multiple tasks effectively, where they can be encouraged and facilitated more with proper education and support systems to enhance their business intelligence further.

When considering tolerance and agility as the following two psychological characteristics of women entrepreneurs in SL, prior literature discusses tolerance concerning risk and stress tolerance (Rauch and Frese, 2007; Ndofirepi, 2020), where agility in entrepreneurship is explained as a factor that gives a remarkable ability to be sensitive to external changes and to adjust and adapt through the exploration of new opportunities (Stephan et al., 2023). In a developing country such as SL, the turbulent economic conditions created due to political instability, high debt levels, social changes, and financial challenges disfavour WE, as they create unexpected barriers that hinder growth as expected. Such a scenario can directly reduce entrepreneurship engagement, closure of existing ventures, and narrow the entrepreneurial landscape compared to other developing countries in the region. Therefore, a context-specific approach is needed to improve the entrepreneurial landscape and is practically viable within SL. The tolerance of positive and negative emotions that can arise through unpredictable external environments, such as labour turnover, increased raw material prices, export and import restrictions, limited demand, and domestic pressure, needs to be emphasized. Such unfavourable circumstances make entrepreneurship more challenging for women entrepreneurs, mentally and physically. However, agility as a psychological characteristic has helped them build confidence and adapt to change with a positive instinct.

The fifth psychological characteristic extracted through the analysis is empathy. Existing literature highlights that empathetic individuals mostly behave in ways that are beneficial to others (Bacq & Alt, 2018). Empathy is a characteristic inherited in SL women, influenced by religion, culture, and a family-oriented nature within society. Prior literature explains that empathetic entrepreneurs are more successful in working with family members, employees, customers, and stakeholders, where they present better negotiation skills and maintain less stressful working environments (Humphrey, 2013). When functioning in a country with various external environmental stresses, an entrepreneur must keep their teams together to achieve desired goals while facing business obstacles. Empathy can be highlighted as a positive characteristic within WE in SL in improving social togetherness through entrepreneurship, which needs continuous motivation from society.

Courageous entrepreneurs visualize a willful attitude, and their decisions contain risk, freedom to act, and a purpose for the desired outcome (Bockorny & Youssef-Morgan, 2019). Courage, as the final psychological characteristic of women entrepreneurs in SL, demonstrates the bravery of women entrepreneurs to sustain themselves within the SL business environment, even within its unstable economic conditions. It is essential in facing challenges, tolerating risks, and decision-making, which are crucial for WE. Courage is a positive psychological characteristic that can significantly impact business professionals through proper knowledge and potential development programs (Rate, Clarke, Lindsay, and Sternberg, 2007). Encouraging courageous women entrepreneurs to sustain themselves within their specific industries and providing the surrounding environment that favours entrepreneurship are essential to creating sustainable entrepreneurial ventures that women lead in SL.

Conclusion and Recommendation

This research focuses on exploring the psychological characteristics of women entrepreneurs in SL and discusses the contextual relevance of each characteristic. The craft-based fashion sector was focused, and semi-structured interviews were conducted for data collection. Data were analyzed using thematic analysis, finalizing six data-driven themes that answer the main research question. They are enthusiasm, intelligence, tolerance, agility, empathy, and courage. Our findings underpin the real experiences of women entrepreneurs within the sector without relying on prior findings. We show that even though the characteristics are generated with familiar terms compared to prior literature, their application and interpretations are unique to the context, highlighting the need for a unique development plan to suit SL's economic, social, and financial surroundings.

The research advocates recognizing women entrepreneurs' contribution to the country's economic development. Women entrepreneurs face various barriers due to the culturally

bound society system in the country, where they sustain entrepreneurship mainly due to their unique personalities. The encouragement of WE has become a social responsibility with the involvement of governments, related statutory bodies such as the National Craft Council, the National Design Centre, the Ministry of Industry and Commerce, and the community as a whole. It is essential to develop a gender-oriented support system for WE development. The supportive programs should address the different roles and responsibilities women entrepreneurs represent, share knowledge and training on utilizing their capabilities, while retaining in crisis, and focus on long-term entrepreneurial success.

Governments could improve the policies to support WE by creating a supportive environment by providing tax incentives, access to resources and suppliers, and simplifying business registration processes and related financial procedures to motivate enthusiastic and courageous entrepreneurial women to plan their businesses. Further, facilitating networking, opportunities to share knowledge and experiences, and improving awareness of technological and business advances can also encourage women entrepreneurs in SL as they try to build up the entrepreneurial community. Workshops and training programs can be developed to make women entrepreneurs aware of business aspects and managing work-life balance, prioritizing tasks, and techniques to improve tolerance and agility in crises, which can benefit women entrepreneurs more practically. Moreover, society as a whole could come to a point where they appreciate and encourage successful women entrepreneurs who are also successful mothers, daughters and the women entrepreneurs who were intelligent enough to make the right choice by accepting the risks and uncertainties that occurred due to the turbulent economic situations while rescuing the jobs of their staff. They need to be recognized as role models for future generations to make novice entrepreneurs aware of the importance of having substantial psychological capital in becoming an entrepreneur in a developing country such as SL.

When exploring WE in developing nations, the related literature needs to be context-specific, and the related theories must be developed based on the context-specific findings. The general approaches and theories used in developed and similar developing countries, even within the same region, can hardly be applied to under-studied countries when WE are concerned. Hence, this research sheds some light on entrepreneurship literature by specifying the distinctiveness of context-specific literature related to WE in developing countries, specifically in the SA region.

This research follows a qualitative stance, in which the findings offer more opportunities for quantitative researchers to further test and validate the findings. The data collection was done online and in distance learning modes. Thus, future research could employ other modes of data collection, such as observing the worksite, through the participants' behaviors, gestures, and expressions while answering the questions, to enrich the findings. The demographical and geographical elements were not considered within this research, and the research context was

solely focused on the craft-based fashion sector in SL. The analysis was done following manual thematic analysis methods, where the process could be much more straightforward if software such as NVivo were used. Moreover, future research can examine other industries and consider different demographic and geographical factors affecting WE to understand WE in SL better.

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ISBN: 978-624-5553-76-1

ISBN: 978-624-5553-76-1

Revival of Sri Lankan Handicrafts: Identifying Challenges through Collaboration for Sustainability

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Abstract

Traditional craft industries throughout Sri Lanka face sustainability challenges, including a decline in the prominence of the craft industry, sourcing difficulties for raw materials, a dwindling supply of young artisans, and inconsistent awareness of technological tools. The theory of collaborative advantage (TCA) principles and strategies within Sri Lankan craft manufacturing will be evaluated for their potential to enhance heritage preservation while optimizing resource utilization and creating market opportunities in sustainable global business operations. Semi-structured interviews were administered to artisans in crucial areas for qualitative research analysis. The analysis of twelve themes from interviewed data included common aims, work processes, communication, and resource constraints using MAXQDA software for coding and thematic analysis. Research outcomes identify TCA solutions for digital platforms, skills development initiatives, and strategic marketplace connections that drive beneficial sustainability improvements. Supply chain members can enhance their market accessibility through collaborative marketing efforts, whereas shared resources decrease pricing to increase profitability. Digital tools enable streamlined communication and management within the supply chain framework. The results show that TCA allows sustainable development of the craft industry through effective cultural coordination alongside environmental and economic targets. The generated outcome will provide industry leaders and policymakers with better methods to align theoretical frameworks with practical sustainability strategies in transitioning global economy towards sustainability.

Keywords: Traditional Craft, Collaborative Advantage Theory, Handicraft, Economic Impact, Sustainability

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ISBN: 978-624-5553-76-1

Introduction

Since ancient times, Sri Lanka's traditional industries such as pottery, textiles, reed and cane crafts have provided economic benefits to families and kept its culture alive. In addition to being part of our cultural heritage, these crafts employ many rural people, thereby supporting their communities. However, in recent years, these industries have faced significant challenges such as trade, shortage of raw materials, a decline in skilled artisans, and the inability of the products they produce to effectively compete with today's commerce, which can lead to their disappearance from the market.

During Sri Lanka's ongoing post-war recovery, preserving tradition and helping people find sustainable employment are particularly important, as these are essential for the country's development. Since traditional crafts are often found in rural areas, these areas need to be revitalized using cultural practices without harming them. Traditional crafts provide a way for people to develop their economy and culture together, strengthening society. According to the study applying the cooperative advantage theory, a collaboration between artisans, industry members, and policymakers is necessary to revive Sri Lanka's traditional handicrafts in the global market, thereby emphasizing their authenticity and cultural value.

The research aims to show how organizations in the Sri Lankan traditional handicraft industry can use teamwork to improve how they share resources, encourage new ideas, and access international markets, helping the industry survive for many years. It proves that these industries have the potential to boost the economy as well as strengthen the country's culture and continuous development. The main objectives of post-conflict recovery follow this objective, where focusing on the economy and tradition benefits the people and society.

Research Problem

Sri Lanka has a rich heritage of traditional handicrafts, textiles, woodwork, pottery, and metalwork, each of which bears witness to the nation's cultural heritage and craftsmanship. Despite their importance, these crafts face barriers to entry into global markets. However, small businesses in the handicrafts sector play a significant role in developing countries' gross domestic product (GDP). Export Development Board EDB (2024) mentioned that craft persons generate jobs and income, protect cultural heritage, teach the same to the new generation, and contribute to increasing production in their country using the latest techniques. A review of the craft classification by EDB (2024) reveals noticeable declining trends in sub-categories such as pottery, heated bamboo, cane, textiles, rush, batik, and metalwork. Notably, pottery, textiles, and cane products have experienced a significant decrease in export rates compared to 2022 and 2023. When studying the EDB report, it can be observed that exports have decreased in 2023 compared to 2022. The following three industries can be identified to analyse the clay, cane, and textile sectors. According to the EDB (2024), the pottery industry decreased by

ISBN: 978-624-5553-76-1

approximately 1.66% in 2023 compared to 2022. The cane industry decreased by 0.3, while the textile industry decreased by 0.9. Researchers can identify each country's unique craft industry, which equates to the country's identity. From that, researchers understand that traditional crafts are a significant factor in a country.

However, in many countries, including Sri Lanka, the traditional craft industry is an industry that is ending. The decrease in traditional handicraft industries is happening around the world. As an example, crafts in Colombia earn substantial income and provide many job opportunities, even though the sector encounters problems resulting from globalization and market shifts (wang, 2022). There are about 30 million people employed in Thailand's craft industry, but the sector is decreasing mainly in the central parts because young people are choosing better-paying jobs instead of craftsmanship (Chudasri et al., 2012). Just as in Asia, traditional skills such as blacksmithing and shoemaking in Brazil are not as common now, which brings difficulties to the lives of craftsmen (Rezaul & Franco, 2020). Because of both labour gaps and old methods, Malaysia's handicraft industry cannot compete as strongly as it should (Redzuan & Aref, 2011). Over the last twenty years, Japan has worked hard to save its old crafts, but the number of workers and sales has fallen by half (Chudasri et al., 2012).

The drop in clay, textiles, and rush/reed/cane crafts in Sri Lanka has greatly affected rural communities. Traditional crafts have been an important resource for supporting people's incomes and employment in many rural areas. When the economy slows, families' incomes are lower, poverty rises, and the regions experience weaker economic growth. Also, losing traditional abilities threatens both cultural traditions and the unity of communities. Many young people leave the field of handicrafts and rural areas because of few opportunities and low wages, which further threatens the existence of handicraft traditions and unbalances their local economies (Redzuan & Aref, 2011). The decrease also reaches related industries such as local raw material making, which adds to the economic problems in smaller rural areas of Sri Lanka. To deal with these challenges, special policies are needed to help artisans with money and skills and to link them to markets so that the handicraft sector remains lively and important to rural people. We interviewed several artisans in each category to find information about such industries. The interviews concluded after we reached the required level. We had an interview guide based on the study's objectives for these interviews. This guide was developed based on the theory of Collaborative advantages to coordinate well with the questions of theoretical foundation and research objectives.

Research Questions

- What challenges does the Sri Lankan traditional handicraft industry face in reaching a competitive market?
- What is the current state of the Sri Lankan traditional craft industry?

ISBN: 978-624-5553-76-1

Contribution of the Study

The research explores the traditional handicraft industry in Sri Lanka, highlighting its economic and cultural contributions, job creation opportunities, and conservation of cultural resources. It also explores local arts and crafts like handloom (dumbara weaving), beeralu lace making, batik, rush reed and cane, and pottery while addressing income generation issues. The findings can help policymakers design policies supporting the industry, suggesting technology, market linkages, and financial structures. The study also provides actionable strategies for artisans, such as technology marketing and international trade fair participation. The report points out ways to help artisans in Sri Lanka's handicraft industry, focusing mainly on technology and participating in international trade fairs. With the help of e-commerce, social media and internet marketplaces, artisans can contact people directly and expand their audience worldwide, without the need for middlemen. Through Instagram and Facebook, artisans can attract new people, highlight what they do and strengthen their brand. Targeted advertising and partnering with influencers are other digital approaches that allow a brand to reach a bigger audience. Joining international trade shows allows artisans to get to know others, learn about what sells and form relationships for export. Together, they allow artisans to make more money, compete better and uphold their traditional cultures worldwide.

Literature Review

Sri Lanka's rich heritage of traditional handicrafts, textiles, woodwork, pottery, and metalwork showcases the state's cultural and historical past and craftsmanship. Despite going through boundaries to international marketplace entry, those crafts contribute to growing international locations' Gross Domestic Product (GDP). It was initially a practical enterprise. (e.g. batik, reed work, wickerwork, etc.).

Behaviour of craft business

Historically, crafts in Sri Lanka have challenged the effects of mass production and are important in postcolonial society. In traditional culture, crafts, including batik, reed, and cane, were usually made and used by the community. Because of mechanization, many old practices have been replaced, and fewer people are interested in traditional products since mass-produced goods are more available (De Silva, 2019). However, the COVID-19 pandemic caused people to seek local products more because of import bans and the shutdown of responsible businesses. At the same time, the National Enterprise Development Authority's contests favoured companies that work this way.

Though craft businesses usually present creative ideas, and high-quality items, care for the community, and focus on the season, their market growth is stunted due to several underlying issues, like limited use of digital tools and ineffective support from the government (Jigyasu, 2021; Sweta & Sundararaman, 2021). They focus on top-quality items and new ideas, yet lack

the use of modern design and online tools to keep up with the competition worldwide (Jin, 2022; Somwethee et al., 2023). A company can turn handicrafts into competitive international products by cooperating with designers and following helpful policies.

Characteristics of Creative Craftsmanship

Combining tradition and new ideas, artisans create special pieces that reflect their talents and where they come from. Practitioners in this field sharpen their talents for many years, use the best of both older and newer styles, and more frequently make their work using sustainable and ethical materials (Wang et al., 2023). The fast progress in technology and the growth of knowledge-based societies make many manual jobs less common, putting many artisanal skills at risk (Tarquini et al., 2022).

Challenges aside, making products with their hands gives craftsmen a sense of pride and ties them to their history. It is important to take steps to protect intangible cultural heritage to save these traditions. Teaming up with young designers and gaining recognition from luxury brands helps the industry to remain creative and supports its long-term survival.

What is a Traditional Craft?

Many generations have mastered traditional crafts, so they represent the traditions and style of a culture. Pottery, weaving, carpentry, and basketry belong to them, and such crafts are treasured because they are hand-made, last for years, and are used during rituals. Still, it is tough to measure and define the craft industry, as wealthier regions experience a drop in their size (Vanderploeg & Lee, 2019; Zbuchea, 2022).

Handicrafts are an important source of income for low-income families, though they usually do not get enough support (Khan et al., 2023). Because of globalization and mass production in India, the craftsman's skills are not valued as much, forcing them to seek out employment in low-skilled cities (Purwar, 2010). A combination of education, boosting markets, backup from government policies, and involvement by local people is necessary to defend traditional crafts. Digital methods can bring in younger people and sustain traditional crafts in society.

Traditional Craft in the Global Market

Business in the handicraft sector is increasing, especially in home accessories, giving artisans more business opportunities. Still, there are issues that Sri Lankan exporters have to deal with because of globalization. Using fusion crafts, developing a brand, and using tourism are some of the best practices Sri Lanka can use to remain competitive in handicrafts.

The tourism industry could be much more beneficial for crafts by improving integration and offering additional training (Curkovic, 2021). If artisans focus on updating digital tools, building good branding, and making products fit customers' needs, their standing and daily

lives will improve. In the future, studies should find ways to enhance promotion techniques in tourism to secure the sustainability and competitiveness of Sri Lankan handicrafts.

Traditional Craft Industry in Sri Lanka

Traditional Crafts Sri Lanka Traditional crafts refer to the skills of antique artisans that have been transferred over generations and portray the country's cultural identity, special techniques, and aesthetic values . Such crafts are pottery, weaving, batik, rattan work, and reed/cane work, which are usually produced by rural people and used or substituted as or in addition to decoration. It does not matter how culturally important and handmade the items are; the realm of the handicraft industry is hard to define; thus, it is challenging to determine the input the sector has in the economy and the number of craftspeople. In Sri Lanka, where handicrafts are mainly manufactured at home, they are of great importance to more than six million artisans, the majority of whom are women and marginalized groups in rural regions (Teo et al., 2020; Vanderploeg & Lee, 2019).

Sri Lanka's Ceramic culture is very ancient, and the island started using clay to create tools and build structures. This culture bears the society's transition from a hunter-gatherer society to a settled society. High-quality raw materials such as kaolin and ball clay have made it possible to produce high-quality porcelain and ceramics to be exported. Nevertheless, the modern ceramic industry is plagued by various problems like an increase in the cost of production, slow demand in the home market owing to low rates of construction growth, migration of labour, and lack of innovation, which have impacted the industry's profitability and market share on a global scale. Other challenges to the technological development of the industry are a shortage of skilled labour worldwide and capacity excess (Arunashantha & Bandara, 2020).

The Dumbara handloom weaving tradition, with a 300-year history of being performed by the Kinnara community, is one of the examples of the textile-rich history of Sri Lanka. The art is re-emerging since only a few families practice the craft, yet the market demand is growing. Due to social-professional changes and industrialization, unemployment among women is growing, who previously earned part of the household income with such crafts as lacemaking, rope-twisting, palm-mat weaving, and pottery, and many of the traditional crafts are declining (Dodamani & Senadheera, 2018; Kulathiaka & Abesinghe).

Batik is one of the most colourful and culturally rich crafts still offered in Sri Lanka, which the Dutch introduced. Batik centres in the tourist regions of Hikkaduwa and Galle employ complicated wax-resist dyeing patterns to create vibrant multi-coloured designs. It is, however, thriving on individual creativity because it is a small-scale industry, and the economic factor of export and tourism offers it an added advantage, where the tourists get an opportunity to experience a bit of a different culture (Steelyana, 2012).

ISBN: 978-624-5553-76-1

Rush and reed/cane crafts are rural livelihood forms that utilize natural resources in the wetlands to create bags, mats, and huts. Mass production, in addition to the modernization of agriculture, interrupted the development of raw materials, which were interfered with by mass production and agriculture, which threatened the economic sustainability of these crafts. In response, conservation and diversification programs were initiated to rescue this heritage. Kalu Pottan or the cane industry has early roots that can be archeologically traced back and toponymically or through place names, i.e., it was always an economically important product in regions like Radavadunna and Weveldeniya (Handapangoda et al., 2016; Rathnayaka & Kodithuwakku, 2021).

In sum, the traditional crafts of Sri Lanka are a rich culture and the predominant livelihood for most, especially rural women. However, challenges of industrialization, labour migration and market are encountered in sustainability. Concerted innovation, market creation, and preservation efforts are required to revive these crafts for a cultural and economic future in a globalized society.

Collaborative advantage theory

A framework known as the Theory of Collaborative Advantage (TCA) highlights the benefits and Advantages businesses experience when cooperating instead of competing. It highlights the benefits of teamwork, partnerships, and Collaborative planning, which promote progress and effectiveness. Strategic planning promotes collaborative principles, broader participation, and interpersonal unity by helping businesses communicate effectively, negotiate changes, and utilize resources (Kanter, 1994).

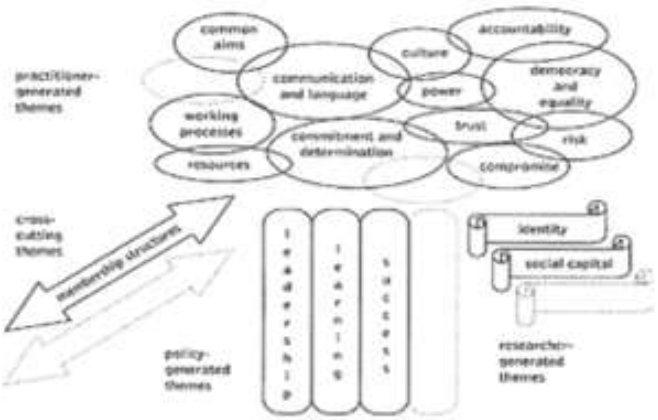

Figure 1: Collaborative advantage theory factors

ISBN: 978-624-5553-76-1

The collaborative advantage theory emphasizes managing the collaborative process in dynamic contexts. Key practitioner-generated themes include common goals, efficient work processes, sharing resources, effective communication, commitment, culture, power, trust, compromise, accountability, democracy, equality, and risk sharing. Common goals align efforts and resources towards shared goals, while efficient work processes ensure precise task distribution and innovation.

Trust builds between partners, and compromises balance individual and collective interests. Accountability ensures all parties fulfil their responsibilities, and democracy and equality enforce inclusive practices (Vangen & Huxham, 2013).

After the war in Sri Lanka, focusing on culture and employment is important. TCA's emphasis on working together can strengthen the groups of artisans, unite local communities, and form sustainable patterns of economic support. Hence, TCA provides a helpful plan for boosting the handicrafts sector with relations that ensure sustainability, drive new ideas, and help sell goods in many countries.

Methodology

Semi-structured interviews guided this qualitative research project to analyze Sri Lanka's traditional craft industries as they try to gain access to global competitive markets. The research selected 15 declining export artisans (until they reached saturation points) in ceramics, textiles, and rush/reed/cane crafts from the important craft areas of Molagoda, Wewaldeniya (Radawadunna), Galle, and Kandy (Talagune) through purposive selection. It was the rich traditions and historical status that made Molagoda, Wewaldeniya (Radawadunna), Galle, and Kandy (Talagune) the right choice as central locations for ceramics, textiles, and rush/reed/cane crafts. Since these regions are experts in specific crafts and have seen a drop in exports, understanding what challenges artisans encounter when trying to compete internationally is very important. Data gathering used a semi-structured interview guide, allowing artisans to talk about their experiences, what they face, and what they think without limiting their answers. As a result, I could explore ideas about collaboration, resource sharing, and innovation, which follow the principles of the Collaborative Advantage Theory. Participants could offer detailed responses while following the study's main objectives because open-ended questions allowed for this from the Collaborative Advantage Theory developed by Vangen & Huxham (2013) to maintain correspondence between research purposes and theoretical underpinnings. The data collection interval ended when the saturation of information was confirmed. The research used MAXQDA software to perform thematic analysis based on the Braun and Clarke framework (Braun & Clarke, 2006) to identify meaningful relationship patterns that answered the research questions. The Collaborative Advantage Theory guided the interpretation and data collection stages because it stressed the advantages of collaborative

work, relationship-building, and resource-sharing while encouraging innovation throughout the research process.

Results and Discussion

Results

Thematic analysis was used to identify patterns in textual data, using collaborative advantage theory as a framework. The study identified common aims, working processes, resources, communication, commitment, culture, power, trust, compromise, accountability, democracy, and risk.

Common Aims

The craft industry combines cultural traditions with artistic practices and promotes economic stability. Through their innovative work, artisans hold a link between the present and beyond cultures while holding onto age-old pottery and weaving strategies. *"It is now not pretty much-making merchandise; it is approximately maintaining our background alive,"* one artisan emphasized. They aim to share their knowledge with the next generation because youth involvement in their practice continues to decrease. Artists who share their skills through collaborative work find solutions to issues that generate a vibrant artistic ecosystem. Through their commitment to creativity, they protect both modern trends and authentic value. *"We hope to create beautiful designs while keeping our culture forward."* Their mission unites heritage preservation with economic growth aspirations.

Working Process

The craft industry is a vital combination of age-old methods and contemporary development. Artisans in the clay industry focus on two key points: *"We do most of this by hand, using machines as well. However, the designs we make are entirely by hand."* Artisans observe that handloom weaving requires specific hand-based operations to create refined products. *" Beeralu lace making is all carried out by hand, with great care and precision."* Batik creation relies on manual labour, as artisans state, *"Batik making here is still very much reliant on manual labour."* Traditional hand tools throughout the industry help product makers showcase skilled practices of heritage arts.

Resources

The Sri Lankan craft industry exists in a challenging setting, and it navigates old customs against new developments. Artisans deal with two main problems involving cultural heritage protection and the need for modern adaptation. Clay pottery artisans encounter issues carrying

their products to market and dealing with government rules for raw materials. *"It takes fifty-five to get a truck from Polgahawela,"* one noted, emphasizing financial strain. One noted, emphasizing financial strain. The increase in cotton yarn prices leads handloom weavers to depend on imported yarn, while market experts request better prices. *"Access to affordable credit"* and *"subsidies for yarn purchases."* Beeralu lace makers confront inconsistent thread quality, while cane artisans prefer imported materials for uniformity. Artisans showcase resilience and adaptability despite obstacles: "Our craft reflects not just our skill but also our ability to adapt to changing times."

Communication & Language

Artisan businesses depend heavily on language and communication systems to build productive relationships between producers, suppliers, creators and customers. One artisan notes, *"I primarily converse with suppliers and transporters in Sinhala."* Language utilization in local areas takes precedence. However, *"Our main challenge is that our English skills are not very strong,"* complicates international business. Despite these limitations, artisans create WhatsApp groups for digital collaboration, and they state, *"We connect with craft associations via a WhatsApp group."* Art enables communication across linguistic sections because, as another artisan observed, "Everyone understands the art, and that is all that matters."

Commitment & Determination

The creative industry relies heavily on the spirit of persistence, which artisans combine with their deep love for their artistic work to sustain traditional cultural knowledge and techniques. One artisan notes, *"Craft is creating with my hands from my heart and having control over the whole process."* As artisans explain, the practice has passed through generations: "*It is something that is carried out as an inheritance from our fathers and mothers."* In the face of economic difficulties, artisans focus on their artistry more than monetary earnings by stating, *"I do a job to make a living, not to make a profit."* Due to their devotion, the craft continues as a treasured folk tradition, as another artisan notes. *"Craft means great products, individually and lovingly made by a creator who cares."*

Culture

The traditional handwork sector of Sri Lanka vividly displays national values through multicultural heritage by maintaining traditional practices alongside innovative market changes. According to a local potter, Floor pottery is essential in historical development because it links craftsmen to sacred practices and national ceremonies. *"Customers are acquiring a piece of Sri Lankan history."* Handloom weaving, described as *"a legacy of Sri Lankan history,"* symbolizes continuity and creativity. Beeralu lace has been successfully transmitted between generations because people hold it in great esteem.*"A part of Sri Lanka's*

ISBN: 978-624-5553-76-1

cultural identification." The batik technique combines artistic skill with traditional techniques because artisans add texturing through clever use of "*traditional motifs*" to attract tourists. The art of cane contains vibrant elements from rural life that craftsmen proudly glorify."*This is our tradition."*

Risk

The traditional craft sectors in Sri Lanka, including pottery production, handloom weaving, Beeralu lace making, batik, and cane industries, encounter serious difficulties that jeopardize their continued existence. Adult artisans in pottery face mounting costs for materials and shipment expenses, which a pottery artisan unambiguously expresses his discouragement about. *"We spend so much, and yet we cannot sell our products."* Regulatory barriers further complicate operations. *"If we are hauling clay, we are arrested by the police."* The combination of environmental influences and changes in the generational population worsens the existing problems. Artisans working in the handloom industry encounter unstable yarn prices and imported goods in the market competition. *"Competition with cheaper imports led to the decline."* These cultural creations need strategic assistance to maintain their essential value despite difficult times.

Power

According to collaborative advantage theory, "power" means that the involved parties can guide decisions, manage resources, and create good outcomes for everyone, as they also fulfil their objectives. It requires leading efforts by groups and making sure partners work together effectively. Multiple forces determine the structure of Sri Lankan traditional arts, which impacts resource availability and marketplace leadership. Artisans obtain support from institutions such as Shilpa Sabha, though they encounter bureaucratic challenges. *"The biggest problem is finding the documents required to gain government subsidies."* Under current market conditions, intermediaries acquire goods at cheap rates while selling them at inflated prices to benefit themselves.*"The intermediaries come most commonly, taking our products for a lower rate and then selling them at a better price."* While navigating through these hurdles, artisans hold strong value in collaborative work relationships. *"In our workshop, I make many decisions but always consult other artisans."* External forces exist, composed of intermediaries and foreign buyers who exert substantial control and influence on the industry.

Trust

Trust is the primary foundation that supports the Sri Lankan craft industry, which includes pottery production and Beeralu lace production. Artisans usually base their agreements on verbal terms, according to the statement. *"We commonly do not use contracts. It is typically*

ISBN: 978-624-5553-76-1

based on trust and know-how." Trust reaches suppliers under arrangements, including *"Yes, we will bring it to the village when we say so."* In Beeralu lace, artisans say, *"In the past, people would come to the houses. They would collect them. It is the same today,"* highlighting long-standing trust-based systems. However, this trust also leaves artisans vulnerable to exploitation.

Compromise

The craft industry in Sri Lanka, including pottery, Beeralu lacemaking, and cane weaving, is characterized by compromise. Artisans balance tradition with market demands, often sacrificing profit margins: *"I reduce the price just to get the cost back."* Customization is key, as artisans adapt to customer needs: *"If you are given a design, we will make the same design but with small modifications."* Economic pressures force artisans to yield creative integrity, yet adaptability allows them to thrive: *"We had to adapt to survive."* This adaptability is crucial for survival in a fluctuating marketplace.

Accountability

The Sri Lankan craft industry battles with the construction of reliability systems throughout its diverse pottery, handloom, and cane crafts sectors. The artisans pursue their work based on trust and shared responsibilities, although they struggle with insufficient institutional support. One artisan laments, *"I am waiting for such assistance...but there is no response yet."* The slow distribution of funds and insufficient resources become an additional obstacle to development progress. *"We do not get the cash and equipment right now."* Despite all obstacles, artisans maintain rigorous professional standards as they profess, *"We need to have a lovely finish."* Despite all obstacles, artisans maintain rigorous professional standards as they profess.

Democracy & Equality

The rural craft industry functions through democratic and equal principles to build its foundation. The artisans stress their dedication to working with governmental institutions while promoting team collaboration. *"I can only do this if someone is willing to help me,"* and *"If the government gives proper support, we will be able to do these things well."* Artisans function as a team, which leads them to support each other and bypass intermediaries integrally. *"Take too much of the income."* The maintenance of cultural elements is essential, according to artisans who say, *"It is our responsibility to maintain this for a long time."* The industry maintains both heritage preservation and employment creation functions for society.

ISBN: 978-624-5553-76-1

Discussion

Traditional craft businesses in Sri Lanka, including pottery, handloom weaving, cane work, and textile making, face survival-threatening issues. These industries need manual labour in challenging settings because the financial compensation remains low. The shift of young people toward higher-paying careers alongside their reluctance to hand down traditional crafts creates a worsening situation for their long-term survival. The accessibility of raw materials remains restricted for pottery workers and cane artisans because regulation demands specific approval to move clay. In contrast, unauthorized clay transportation leads to enforcement penalties, including fines or detention. Rural artisans encounter limited market access because of pricey transportation fees created by logistical obstacles.

The entry of inexpensive imported products weakens traditional crafts within Indian markets. Handloom weavers experience unstable yarn prices combined with an ever-growing market of mass-produced products, while Beeralu lace makers deal with poor yarn reliability. The collapse of local raw material supplies leads Rattan artisans to import alternative materials since their domestic sources have become unavailable. Production disturbances and market operation interruptions from the COVID-19 pandemic have worsened these existing problems. Reserving cultural heritage remains a vital objective for artisans even when facing hardships. Traditional crafts in Sri Lanka are historical and artistic representations that bridge cultural elements from traditional practices with current market dynamics. Artisan communities maintain authentic product traditions through adaptive practices that include adding traditional motifs to batik designs to attract tourists. Preserving traditional culture clashes with the need for modern change in a complex manner.

Discriminatory power dynamics inside this sector allow intermediaries to acquire goods from artisans at minimal prices and charge excessive premiums when they resell them. Procedures enforced through bureaucracies hinder artisans from accessing government support programs and financial assistance programs to ease their economic burden. The survival of Sri Lanka's craft industries demands strategic strategies involving market connections, financial help with raw materials, and improved regulations that empower artisans.

Conclusion and Policy Implications

The traditional industries in Sri Lanka are now in a crucial position, trying to keep their originality intact while making changes for foreign markets. For operations to remain sustainable, an alliance should exist among artisans, policymakers, and business stakeholders. Such collaboration may happen if artisans, policymakers, and businesses meet and discuss how to support artisans, develop strategies, and connect them to buyers. By using these platforms, artisans can join forces to acquire yarn and clay at reduced prices, which helps them enhance their goods and contributes to the location’s economy.

Recommendations for policymakers include giving financial support to farmers to reduce their expenses and using products available in the region, which steadies employment in rural areas. The government should simplify its policies to assist artisans faster and without delay. By using e-commerce sites, producers can sell their products directly to customers from other countries, so they do not have to go through intermediaries and ensure more people know about Sri Lankan crafts. Besides, participating in international trade exhibitions enables craftsmen to introduce their goods to markets everywhere, mix with people from different cultures, and possibly increase their sales abroad.

Mixing knowledge about today's skills and ancient techniques is vital for new ideas in crafts. These programs' training should help artisans go beyond average skills and produce more with methods they know will continue their cultural ways. If designers, artisans, and technical people collaborate, they can develop products to meet today's standards while also keeping the unique crafts of Sri Lanka alive. When efforts from various sectors come together, the Sri Lankan craft industry significantly boosts its economy, traditions, and international market success.

Future Research Directions

Enabling artisans to use e-commerce platforms is crucial for their economic uplift, as it streamlines connecting with buyers. Because of Etsy and Instamojo, geographic boundaries have been removed, allowing more people to view artisan products, and artists to interact with customers easily, and providing them with helpful tools to make informed decisions. Still, people face problems with costs and worry that learning new technology might result in forgetting old skills.

To appeal to young people, community groups such as the Norwegian Folk Art and Craft Association set up camps and offer workshops combining learning traditional skills and bringing together people from different cultures. With these programs, young people learn weaving, knitting, and woodworking hands-on and find traditional crafts interesting and amusing. DIY online archives support youth by offering simple guides to help them build new skills and be creative. By including youth, such projects ensure they take responsibility and help preserve traditional arts and crafts.

At the same time, communities should preserve their history while using new ways to move forward. Worldwide, Indigenous crafts are marketed through web platforms that respect the cultures where they come from and consider market needs. Eco-friendly products are made possible when designers and artisans work with each other, with the community taking part in keeping practices green.

Digital marketplaces, as well as help from the government, are positive for artisans because they help them become financially independent, use fewer middlemen, and have more direct

ISBN: 978-624-5553-76-1

communication with clients. These steps support the well-being of people, empower their communities, maintain old traditions, and improve their capability to face economic challenges.

Promoting the growth of local cotton by supporting the handloom industry helps cut costs, makes the country less dependent on foreign goods, and increases jobs for artisans. For this reason, handloom supports sustainable farming that is environmentally friendly and makes it easier for handloom products to compete at home and overseas.

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ISBN: 978-624-5553-76-1

Financial Literacy and Debt-Trap of Micro, Small, and Medium Enterprises in the Northern Province of Sri Lanka

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Abstract

The financial vulnerability of Micro Small and Medium scale Enterprises (MSMEs) in Sri Lanka threatens their survival and the livelihoods they support within communities. Thus, this study investigates the influence of financial literacy on the debt-trap of MSMEs, with a particular focus on the mediating role of financial decision-making. Based on the data collected from a structured survey, with a sample of 400 MSMEs operating in manufacturing and industry, trading, and service sectors in the five districts of Northern Province and analyzed using both SPSS and SmartPLS, the study explores a conceptual model in which financial literacy is conceptualized as a multidimensional construct consists of financial knowledge, financial attitudes, and financial behavior. According to research, these MSME entrepreneurs have a financial literacy percentage ranging from 25% to 32%, below the average rate in Sri Lanka (57.9% in 2021). The structural equation modelling results reveal that financial literacy significantly and negatively impacts the likelihood of MSMEs falling into a debt trap ($\beta = -0.549$, $p < 0.01$). Furthermore, financial literacy significantly enhances financial decision making ($\beta = 0.872$), which in turn also negatively influences the debt-trap ($\beta = -0.415$). The mediation analysis confirms that financial decision-making partially mediates the relationship between financial literacy and the debt-trap ($\beta = -0.362$), indicating that better financial literacy directly and indirectly reduces debt vulnerability. The study findings provide constructive awareness for policymakers and financial institutions in Sri Lanka to design targeted financial literacy programs that cater to the specific needs of MSME owners.

***Keywords*:** *behavioural finance, debt-trap, financial literacy, financial distress, micro, small, and medium enterprises*

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ISBN: 978-624-5553-76-1

Introduction

Despite the vital role played by the micro, small, and medium enterprises (MSEs) in the Sri Lankan economy, many of these entities struggle with high debt levels (Mithula, 2015). In developing nations, MSMEs are invariably linked to economic and social issues such as unemployment, poverty, and economic inequality. Per the Sri Lanka Export Development Board (2021), MSMEs in Sri Lanka accounted for 45% of employment, including that of women and young people, and contributed 52% of the nation's GDP. Additionally, 90% of all businesses in the country are MSMEs.

One of the key obstacles to a sustainable and successful enterprise is the lack of appropriate financial literacy (Lusardi & Mitchell, 2012). Particularly in emerging economies, financial literacy has become a crucial factor in determining how well MSMEs perform, where several studies show that financial literacy improves access to financing and risk management, and it is positively correlated with MSME performance (Buchdadi et al., 2020; Rahadjeng et al., 2023). Meanwhile, financial decision-making for financial stability is essential for all business entities (Mithula, 2015). Standard or traditional finance and behavioural finance are the two main ideas in the literature that describe the financial decision-making of investors and entrepreneurs. Traditional finance makes unrealistic assumptions about people's ability to make logical economic decisions. In contrast, behavioural finance aims to recognize and understand human psychological processes. It bases its conclusions on observing the financial behaviour of investors, which is assumed to be irrational or normal (Pompian, 2012).

Recent Department of Census and Statistics reports indicate that Sri Lanka reported a noteworthy adult literacy rate. With a 92% adult literacy rate as of 2022, Sri Lanka leads among South Asian nations in adult literacy. Considering this, it is surprising to discover that, corresponding to the latest financial literacy survey of Sri Lanka, which was carried out by the Central Bank of Sri Lanka in the year 2021, the country's financial literacy rate is lower at 57.9%. It further stated that this rate varies by geography, where rural areas record a rate of 12.10%. This is significantly below the global average in terms of financial literacy. This demonstrates clearly that there is a requirement to improve financial literacy among Sri Lankans and that many investors still find it challenging to take advantage of these developments even in the face of a sophisticated financial system and infrastructure.

In many developing countries, including Sri Lanka, lease purchase, jewellery pawning, loans from formal and informal sectors, and microfinance lending negatively affect small businesses, particularly in rural communities. Regulated and unregulated financial intermediaries provide loans in return for daily or weekly interest, where the effective annual interest rate ranges from 40% up to 220%, especially with microfinance borrowings of small business owners (Kadirgamar, 2020). As per CFA Institute, Sri Lanka (2019), there exist loan fraud and reckless lending schemes that impose effective interest rates as high as 220% yearly, trapping already

vulnerable individuals in debt and sometimes even resulting in suicide as a result of financial exclusion brought on by ignorance. According to the Asian Development Bank (2020), in comparison to large firms, MSMEs are particularly vulnerable during economic downturns and supply-side shocks because they are too small to shrink, have lower capitalisation, are less diversified in their economic operations, and lack a variety of financing choices. It is also reported that, despite the recent moratoriums provided by the banks with the instructions of the Central Bank of Sri Lanka, the majority of MSMEs are averse to taking on high-interest debt and the danger of having to roll over working capital without enough income (Asian Development Bank, 2020). Thus, the debt-trap situation of MSMEs has to be studied in detail, along with the financial decisions they have taken in the past, to predict their financial performance in the future.

This research is primarily concerned with the Northern Province because of continued ethnic conflict until 2009; there are not as many surveys and research specifically focused on the Northern Province (Kadirgamar, 2020). MSMEs play a crucial role in the region, providing employment and supporting local economies. These enterprises are predominantly engaged in agriculture, fisheries, small-scale manufacturing, and handicrafts, contributing significantly to livelihoods in the province (Central Bank of Sri Lanka, 2022). However, despite their importance, MSMEs in the Northern Province face numerous challenges that hinder their growth and sustainability, particularly financial accessibility, infrastructure deficits, and excessive debt burdens (Sivarajah & Markkandayan, 2021). A noticeable discrepancy exists between the national poverty and Northern Province headcount indexes. The most recent data indicates that in 2019, the Northern Province headcount index was 23.8%, and the national poverty headcount index was 14.3%. The Mullaitivu District of the Northern Province has the highest percentage of poverty (44.5%) in the country. A large portion of the population of our country's northern province lives below the poverty line. According to the UNDP (2023), the Multidimensional Vulnerability Index (MVI) of Sri Lanka indicates that it is vulnerable to several threats. In developing nations, MSMEs are invariably linked to economic and social issues such as unemployment, poverty, and economic inequality (Fatoki, 2014). Thus, focusing on developing MSMEs in this province would support poverty alleviation and regional development.

According to Mithula (2015), business owners from Northern Province have not only lost millions in interest to the financial intermediaries like banks, finance companies, and informal lenders, but also have lost their properties, businesses, and lives. The microfinance loans adversely challenged businesses and families in this province (Kadirgamar, 2020). Thus, this research emphasises the Northern Province of Sri Lanka as it is critical to measure the degree of financial literacy among owners of MSMEs, along with understanding how that affects their financial decision-making and the debt trap. Thus, the primary research question of the study

ISBN: 978-624-5553-76-1

is, how does the level of financial literacy among MSME entrepreneurs in the Northern Province of Sri Lanka influences the debt-trap of their businesses, where the study focuses on the objectives to measure the level of financial literacy among the MSME entrepreneurs, to measure the level of debt trap among the MSMEs and to analyze the relationship between the financial literacy, financial decision-making and debt trap of MSME in Northern Province Sri Lanka.

Literature Review

Debt-Trap of the Firm

Businesses must obtain funding for running activities from internal or outside sources (Flynn, 2017). Undistributed profit and earnings are used in internal financing (Bester & Scheepens, 1996), whereas borrowing and stock issues are used in external financing. The research findings on how debt structure affects investment and financing have been inconsistent. Even though John and Muthusamy (2011) and Bae (2009) stated a positive relationship, Aivazian and Santor (2008), Phan (2018), Flynn (2017), and Kannadhasan (2014) claimed that this relationship is significantly negative.

Debts are expected to improve future finance and investment, according to Myers (1977). On the other hand, Aivazian et al. (2005) discovered that underinvestment issues result from debt financing sources. Also, Flynn (2017), He and Xiong (2012), and Kalemli-Ozcan et al. (2018) anticipated that debt would cause problems for future funding. Taiwo et al. (2016) state that personal savings and unstructured loans from friends and lenders rank among the top funding sources for small businesses. Banks, informal financial markets, and partners are additional sources that contribute to a small business's capital structure.

Debt-trap is the distressing condition where businesses cannot pay mature debts or expenses, leading to liquidity problems, inadequacy of equity, and unavailability of current assets (Hui & Jing-Jing, 2008 as cited by Younas et al., 2021). According to Aviantara (2021), a debt-trap is set off when a business collapses to meet scheduled payments or when cash-flow forecasts reveal that it will be incapable of meeting the maturing obligations. Financial distress faced by a business might trigger bankruptcy or forced liquidation. According to Platt, H., and Platt, M. (2006), even though debt-trap and bankruptcy are used interchangeably, it is vital to identify the difference between the two; in most instances, bankruptcy occurs after a period of debt-trap.

Financial Literacy

The term financial literacy was first invented in 1787, in the USA, when the country confessed the need for financial literacy to overcome the widespread distress in America due to unawareness towards credit, cash flow, and the nature of currency (Financial Corps, 2014).

ISBN: 978-624-5553-76-1

This term has become popular and extensively known in research since the 1990s (Goyal & Kumar, 2021).

Corresponding to Bongomin et al. (2018), financial literacy is the competency to obtain, comprehend, and evaluate appropriate information needed to make financial decisions and choices, along with the knowledge of likely financial outcomes. This literacy is essential for small businesses in developing economies to be sustainable and accessible to financial services. As defined by OECD (2022), financial literacy is the composition of awareness, knowledge, aptitude, attitude, and behaviour required to make thorough financial decisions, which ultimately help to attain personal financial health. According to the revised UK Adult Financial Capability Framework of Australia (2008), financial literacy is classified into four main segments: financial understanding, financial proficiency, financial responsibility, numerical literacy, and Standard literacy.

According to Mandell et al. (2007), financial literacy is "the ability to evaluate the new and complex financial instruments and make informed judgements in both choice of instruments and extent of use that would be in their own best long-run interests". Financial literacy is the capacity to apply knowledge and skills in managing financial resources, which is essential to the financial success of MSMEs in developing nations (Bongomin et al., 2018). Research indicates that businesses led by financially competent entrepreneurs are more likely to succeed than those without that competency (Anshika & Singla, 2022).

Development of Hypothesis

De Mel et al. (2012) emphasise that MSMEs' growth is significantly influenced by financial knowledge and behaviour, which is crucial in deciding debt and financing. The studies show that entrepreneurs with greater financial literacy perform better in business financing (Charfeddine et al., 2024). As stated by Cole et al. Financial literacy is crucial in determining the investor's ability to obtain financing.

According to McKenzie (2009), it is important to remember that even someone who is financially well-informed may make poor financial decisions that put them in danger of falling into a severe debt trap. Aron, Muellbauer, and Murphy (2006) emphasise the necessity of regularly researching to monitor the business's financial literacy and debt levels to reduce the financial risks related to loan non-performance and payback default. Lusardi and Tufano (2015) studied the connection between overindebtedness and financial literacy. Only one-third of the participants could apply financial ideas to comprehend everyday financial decisions, indicating lower financial literacy levels. People who lack financial literacy to make informed decisions are more vulnerable to the wide range of financial services and products available on the market and are less able to differentiate between safe and risky investments (Lyons, 2004). As a result, they are more likely to experience financial difficulties like default and debt. Disney

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and Gathergood (2013) support this viewpoint by highlighting that people underestimate the cost of credit or financing if they lack financial literacy and become more exposed to debt accumulation; that is, families or entities with lower financial literacy typically take on higher levels of debt and may even become overly indebted.

H1: Financial literacy influences the Debt-trap of MSMEs

The financial complexities make financial literacy more crucial for individuals, particularly those taking charge of their long-term financial well-being and decisions (Spiranec et al., 2012). Many studies have shown the link between financial literacy and financial decision-making (Adomako et al., 2016; Esiebugie et al., 2018; Guiso & Viviano, 2015). Less financially literate people are more vulnerable to financial mistakes, unconventional practices, and the inability to handle emergencies (Hung et al., 2009). Better financial literacy provides responsible financial behaviour and attitude (Borden et al., 2008; Robb & Woodyard, 2011), positive credit behaviour (Hastings et al., 2013), stock market participation (Van Rooij et al., 2011), better retirement planning (Lusardi and Mitchell, 2007, 2011) and increased wealth accumulation (Van Rooij et al., 2012).

Several investigators have identified and agreed on the link between financial literacy and business decisions (Esiebugie et al., 2018). According to Nyamboga et al. (2014), from the previous studies conducted, there is mixed evidence on the effects of financial literacy on the financial outcomes of MSMEs. According to Lusardi and Mitchell (2014), financial literacy is essential to small business achievement and improves their decision-making. High levels of financial literacy trigger higher incomes and savings through better decisions (Disney & Gathergood, 2013). Some authors (Calcagno & Monticone, 2015) have considered financial education necessary to make the right financial decisions. It is generally connected with an MSME owner or manager's financial knowledge of appropriate financing decisions that would invariably affect the company's performance as it moves through different stages, and the most suitable financing products and services (Utomo et al., 2020).

H2: Financial literacy influences the MSMEs' decision-making

Sound business decisions also require accurate financial information. According to Ezejiofor, Ezenyirimba, and Olise (2014), sound financial data that is timely, relevant, and user-friendly must be used to support company decisions related to growth, retain a competitive edge, and prevent business collapse. Previous studies have also demonstrated a strong correlation between financial literacy, the proficiency to make prudent financial decisions, domestic prosperity, and the continued existence of businesses (Njoroge, 2014; Turyahebwa et al., 2013; Lusardi & Mitchell, 2015). Because financial literacy enables and teaches investors to evaluate

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financial goods and draw informative conclusions, they are necessary to the continued existence and management of MSMEs.

Additionally, financial literacy helps people develop their risk-management abilities. Based on Siekei et al. (2013), financial literacy equips investors with the tools they need to manage risk by helping them save money, diversify their holdings, buy insurance, avoid going into too much debt, and be less susceptible to shady business scams. A financially intelligent person is a better planner and wise resource allocator than a financially ignorant counterpart when faced with limited resources and various conflicting wants. This is backed up by Greenspan's (2002) assertion that financial literacy gives investors the knowledge to set budgets, start saving, and make wise investment choices.

H3: Financial decision making mediates the relationship between financial literacy and the debt-trap of MSMEs.

Analyzing the previous literature, the following conceptual framework is developed.

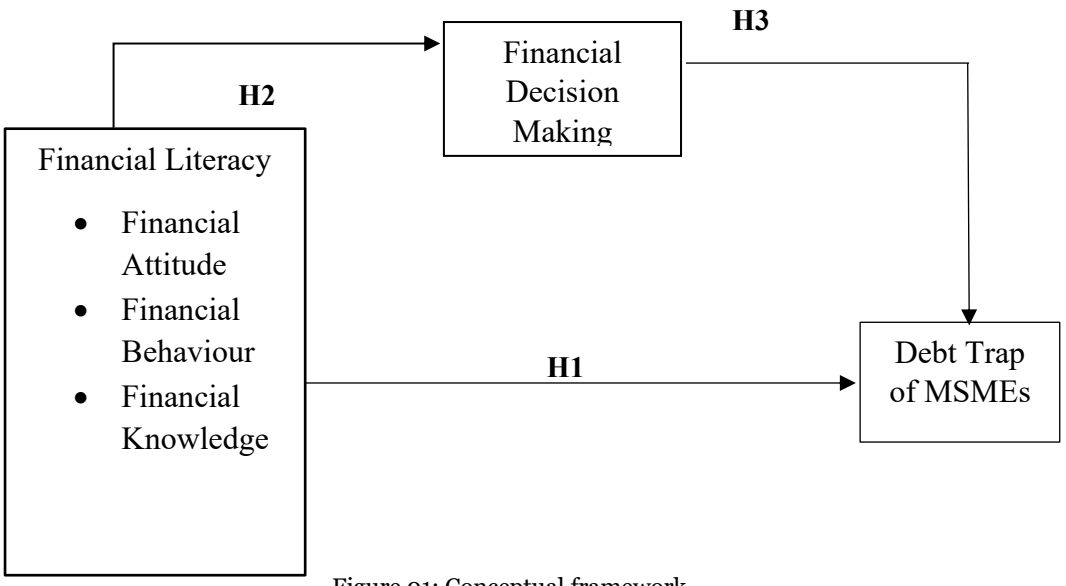

Figure 01: Conceptual framework

Methods

The research paradigm of this study is post-positivism, and the research approach is quantitative. This research focuses on a survey method using a sample of MSMEs across various industries in Northern Province. International organisations, nations, and statistics agencies apply numerous definitions of MSMEs based on numerous factors, including capital investment, number of employees, turnover, asset value, and balance sheet. According to

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Esubalew and Raghurama (2017), there are drawbacks to adopting the number of employees as a criterion for defining MSMEs because the labour force is declining as technology improves. Thus, using turnover as a parameter is effective because the development of the business is determined by revenue generation. The study will use turnover as a parameter to define MSMEs, as illustrated in Annexure 1.

The target population was determined by identifying the number of MSMEs registered with DS divisions of the Northern Province as of the year 2023. Annexure 2 illustrates the list of such enterprises in Northern Province. A representative sample of 400 was selected for the data collection based on statistical power analysis from the target population. This is the base used to estimate the minimum sample size required for a study based on the significance level, statistical power, and effect size required. For this study, 379 or more samples are required at a confidence level of 95% that the real value is within ±5% of the measured/surveyed value. A purposive sample method was applied to collect the data of MSMEs. In research investigations, purposive sampling chooses a specific group of participants or units for examination (Okesina, 2020). When a researcher wants to choose a sample that is typical of the traits they are interested in researching and has a clear notion of those characteristics, then this method is ideal (Saunders, Lewis, & Thornhill, 2019). In this study, participants are selected based on specific characteristics such as the MSME's owner and primary decision maker, representing all the DS divisions of Northern Province (Annexure 2).

The financial literacy of MSMEs was determined by the 'adult OECD/INFE financial literacy survey', which is the sum of the scores for financial attitude, financial behaviour, and financial knowledge. The total financial literacy (FLT) score was calculated by identifying the average of knowledge, attitude, and behaviour values. The study has used the survey questionnaire of OECD 2020 to measure the financial decision-making of MSME owners. Financial awareness indicators were used to determine how much knowledge MSMEs have about conventional and alternative financing choices, as well as whether they are aware of the primary business insurance options offered in the nation. The financial inclusion indicators provided an overview of how much MSMEs use traditional and digital formal platforms in decision-making. The scale for over-indebtedness and attitude towards debt, based on previous studies by Almenberg, Lusardi, Save-Soderbergh, and Vestman (2021), was used to measure the debt-trap of MSMEs.

Initially, the questionnaire was given to subject-matter experts to get their input on face validity—that is, how well the questionnaire seems to measure what it purports to measure among Sri Lankan respondents. Construct validity, or the degree to which a test assesses a theorised hypothetical construct, was further guaranteed because the variables' indicators were from research that had already undergone testing. To determine how much the test highlights

measurement consistency, or reliability, Cronbach alpha was computed in SPSS based on the pilot survey results.

Results

The analysis of the data reveals the following characteristics of demographics. Four hundred MSME entrepreneurs comprised the total number of responders; 148, up 37.0% of the samples, were from the Jaffna district. The remaining 116 entrepreneurs came from Vavuniya, 64 from Mannar, 48 from Mullaitivu, and 24 from Kilinochchi. Analysing the gender of the participants in the survey, most respondents (82%) were males, and 18% were females. The majority of the MSMEs in the Northern province were owned and operated by males. All these respondents also indicated that they were the primary decision-makers. Even though they obtain the required information to make their financial decision from friends, relatives, experts, bank staff, and advisors, and discuss with those support systems, these business owners make the final decisions.

The descriptive statistics in Table 2 offer a comprehensive overview of financial behaviour, attitude, knowledge, decision making, and debt-trap.

Table 02: Descriptive statistics

Variable	Mean	Std. Deviation	Skewness	Kurtosis
Financial Behaviour	3.37	1.18	-0.498	-1.264
Financial Attitude	3.38	1.24	-0.443	-1.257
Financial Knowledge	3.40	1.21	-0.504	-1.257
Financial Decision Making	3.42	1.27	-0.552	-1.200
Debt Trap	2.98	1.09	0.326	-1.201

Source: *Survey data, 2023*

The descriptive statistics indicate that respondents demonstrated moderately positive outcomes across key financial dimensions, suggesting a generally favourable self-perception. The standard deviations, ranging from 1.09 to 1.27, reflect a fair amount of response variability. All variables show a roughly normal distribution (skewness and kurtosis are within ±2).

Table 03: Reliability and Validity Testing

Scale	Type of scale	No. of items	Cronbach's alpha (CA)	KMO Value
Financial Behaviour	5-point Likert	14	0.886	0.871
Financial Attitude	5-point Likert	7	0.881	0.829
Financial Knowledge	5-point Likert	14	0.789	0.761
Financial Decision Making	5-point Likert	9	0.886	0.753
Debt Trap	5-point Likert	7	0.875	0.846

Source: Survey data (SPSS)

All the scales demonstrate strong internal reliability, with financial behaviour, financial attitude, financial decision-making, and debt-trap scoring above 0.87. Financial knowledge also shows acceptable reliability (0.789), supporting the consistency of the questionnaire items. All KMO values are above 0.75, which indicates that the data is suitable for factor analysis, and the constructs used in the questionnaire are valid representations of their respective concepts.

The multi-collinearity was tested using SPSS using the indicator – Variance Inflation Factor (VIF). As per the VIF of variables, the indicator value is less than 10, indicating no severe multicollinearity. The Levene test should be run if the population has two or more groups, since most statistical tests assume that the population variance is equal (Gastwirth, Gel & Miao, 2009). As the study respondents come from the manufacturing, trading, and services sectors, Levene's test was run to ensure no appreciable variations in the study variables' measurements within and between the categories. Since there were no discernible differences between the groups according to the results, the replies were analysed as a whole.

The survey data indicates that most entrepreneurs in the Northern Province have a financial literacy score between 25 and 32%. This is considerably lower compared to the financial literacy rate of Sri Lanka, 57.39%, which was published by the Central Bank of Sri Lanka in 2021 through the 'Financial Literacy Survey Sri Lanka'. This demonstrates that, notwithstanding the postwar advancement of the financial system and infrastructure facilities, many investors still find it challenging to use these advancements effectively and are negatively impacted by the debt trap. This indicates that there is a necessity for improving the financial literacy of Northern Province entrepreneurs. Surprisingly, even though over 95.3% of business people hold degrees higher than the G.C.E. Ordinary level, only 27.3% of businesspeople have taken finance or economics as a module in their undergraduate or graduate studies. This can also account for the lack of financial literacy.

The study model was assessed using SmartPLS 4.0 to test the hypothesised relationships among the constructs: Financial Literacy (FL), Financial Decision-Making (FDM), and Debt-Trap (DT). The analysis revealed acceptable reliability and validity indicators, confirming the robustness of the model.

Table 04: Outcome of measurement model

	α	ρ_A	CR	AVE
Financial Behaviour	0.875	0.870	0.886	0.749
Financial Attitude	0.882	0.881	0.887	0.801
Financial Knowledge	0.789	0.788	0.779	0.772
Financial Decision Making	0.884	0.800	0.789	0.789
Debt-trap	0.885	0.883	0.884	0.768
Optimal values	> 0.7	> 0.7	> 0.7	> 0.5

Note: *α = Cronbach Alpha; ρ_A = Rho A; CR = Composite Reliability; AVE = Average Variance Extraction*

Source: Survey data (SmartPLS)

ISBN: 978-624-5553-76-1

Also, findings of the Fornell–Lucker criteria indicated that the square root of the AVE for each variable surpassed its maximum correlation with any other variable. The reflective measurement model's significant results demonstrate the measures' high reliability and validity. Discriminant validity is also confirmed across all constructs using HTMT (Refer to annexure 4 and 5). The findings of the measurement model implied that all outer loadings surpassed 0.7, excluding items that were deleted because of their low loading (Appendix 6).

Table 05: Structural model results

Hypothesis	Relationship	β	R^2	t-statistics	p-value	effect
H1 (A)	Financial literacy → Debt-trap	-0.549	0.760	7.151	0.008	Negative
H2 (A)	Financial literacy → Financial decision making	0.872	0.32	5.793	0.000	Positive
H3 (A)	Financial literacy → Financial decision making → Debt-trap	–0.362	0.316	6.104	0.000	Negative

Note: *p<0.05, **p<0.01, ***p<0.001, n.s= not significant;(two tailed test), (R) = Rejected; (A) = Accepted

Source: Survey data (SmartPLS)

Direct Effects

The path coefficient from financial literacy to Debt-trap was significant and negative (β = -0.549, p < 0.01). This suggests that individuals with higher levels of financial literacy are less likely to get into a debt trap. Similarly, the direct effect of financial literacy on financial decision-making is also strong and positive (β = 0.872, p < 0.001), indicating that financially literate individuals are more capable of making sound financial decisions. This finding aligns with previous literature that confirmed financial literacy as a critical determinant of rational and informed decision-making (Lusardi & Mitchell, 2012). The direct effect of financial decision-making on debt-trap was also negative and significant (β = -0.415, p < 0.001), confirming that individuals who make more informed and rational financial decisions are less likely to experience high debt-related difficulties.

ISBN: 978-624-5553-76-1

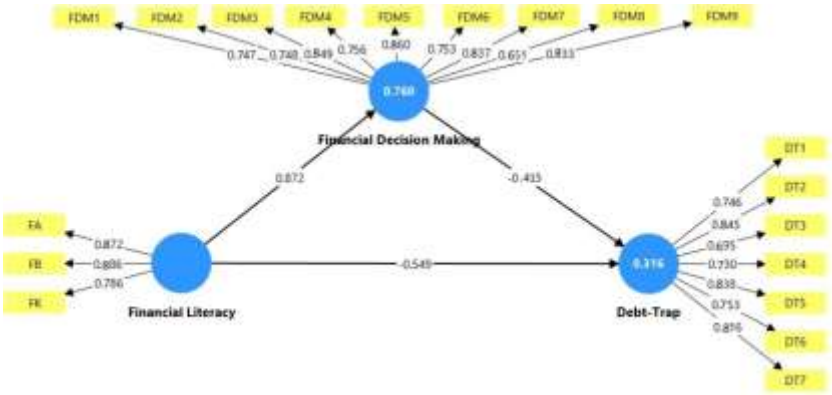

Figure 02: Final Model loadings, R^2, and β Mediator Analysis

Mediation Analysis

The mediation analysis supported a significant indirect effect of financial literacy on debt-trap through financial decision-making (β = -0.362, p < 0.001). This implies that part of the effect of financial literacy on the debt-trap is transmitted through enhanced decision-making. This finding highlights that financial literacy not only directly affects the debt-trap but also empowers MSMEs to make better financial choices. Therefore, financial decision-making is a mediating variable influencing financial literacy and reducing debt-traps. This is partial mediation as both the direct and indirect effects are significant.

Table 06: Mediator Analysis

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values
Financial Decision Making → Debt-Trap	-0.415	-0.016	0.042	7.151	0.008
Financial Literacy → Debt-Trap	-0.549	-0.549	0.095	5.793	0.000
Financial Literacy → Financial Decision Making	0.872	0.872	0.017	5.811	0.000

Source: Survey data (SmartPLS)

The model (Figure 2) accounted for a substantial proportion of variance in the debt-trap construct (R^2 = 0.76), indicating that 76% of the variation in debt-trap is explained by financial literacy and financial decision-making. The R^2 value for financial decision-making was 0.32,

ISBN: 978-624-5553-76-1

suggesting that approximately one-third of its variance is explained by financial literacy. Even though previous studies had mixed evidence on the association between financial literacy and financial outcomes, this study highlights a strong and significant connection between financial literacy and the debt trap. Further studies also determined that owners' financial literacy level substantially impacts business decisions (Fatoki, 2014).

Conclusion

The key objective of this study is to identify how the degree of financial literacy of MSME entrepreneurs in the Northern Province of Sri Lanka influences their businesses' debt trap. As per the survey results, the level of financial literacy was lower than the average rate in Sri Lanka (57.9% in 2021) among the Northern provinces entrepreneurs, ranging between 25% and 32%. The results of this study provide strong evidence supporting the theoretical framework. The significant negative relationship between financial literacy and debt-trap indicates that individuals with financial knowledge, attitudes, and behaviour are better equipped to avoid excessive debt. The partial mediation effect of financial decision-making sheds light on the underlying process by which financial literacy influences debt levels. This suggests that financial literacy directly impacts individuals' ability to prevent a debt trap; its influence is also significantly applied through financial decisions. Hence, decision-making serves as a behavioural agent, translating knowledge and attitudes into concrete financial outcomes. This study contributes to the financial behaviour literature by confirming that cognitive factors (e.g., knowledge and understanding) and behavioural competencies (e.g., decision-making ability) are interconnected in shaping financial resilience.

While the findings of this study offer valuable insights into the relationship between financial literacy, decision-making, and the debt trap, the following limitations must be acknowledged. The study used a cross-sectional survey design, capturing responses simultaneously. Data was collected through self-administered questionnaires, which may be subject to social desirability and recall biases. Respondents might have overestimated the financial knowledge or underestimated the financial struggles of the entity. The sample was drawn from a specific population, which may limit the generalizability of the findings to broader or international contexts. Future studies could explore longitudinal designs to test causal relationships over time, particularly how improvements in financial literacy influence debt patterns. Examining how socio-demographic variables moderate the relationship between financial literacy and debt outcomes would also be beneficial.

Focusing on the implications of this study, the findings advance theoretical understanding of financial behaviour by empirically validating the mediating role of decision-making, which bridges the gap between knowledge and behavioural outcomes. The study provides a multidimensional view of financial literacy, reinforcing that it includes knowledge, attitudes,

and behaviour, which interact dynamically. The results carry important implications for policymakers, educators, and financial institutions. Financial literacy programs should be designed to go beyond knowledge dissemination and incorporate decision-making simulations. A significant consequence of this research is that it provides current and prospective investors in the Northern Province with an understanding of the debt trap of MSMEs. This will assist the potential growth of MSMEs in these regions to reduce regional growth gaps and eventually improve the Sri Lankan economy.

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ISBN: 978-624-5553-76-1

ISBN: 978-624-5553-76-1

Influence of Green Entrepreneurship on the Sustainability of SMEs in a Green Economy: Concerning the Southern Province, Sri Lanka

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Abstract

Green entrepreneurship is an increasingly valuable approach for aligning business growth with environmental sustainability. This study investigates the influence of green entrepreneurship on the sustainability of SMEs in the Southern province in Sri Lanka, a region reliant on agriculture, fisheries, tourism, and manufacturing. Amid global environmental concerns, green entrepreneurship integrates economic growth with ecological responsibility, offering SMEs a pathway to enhance competitiveness and resilience in a green economy. The research examines how green practices such as green innovation, energy efficiency, sustainable marketing and so on, impact SMEs' economic and environmental performance, while identifying barriers like financial constraints and limited policy support. Using a convenience sampling method, data were collected from 349 SMEs across Galle, Matara, and Hambantota districts through structured online surveys. The data were analysed using correlation, ANOVA, and multiple regression analysis. The results indicate that green innovation, knowledge, socio-environmental concerns, and marketing significantly contribute to SME sustainability. However, perceived green values and green energy and resource use showed no significant impact. The study highlights opportunities like cost reduction and market appeal, alongside challenges such as high initial cost and inadequate funding. It underscores the need for policy incentives and technical support to foster green practices, positioning SMEs as key contributors to Sri Lanka's sustainable development goals.

Keywords: *Green Entrepreneurship, SMEs sustainability, Green Economy, Green Innovation*

Introduction

The global rise in environmental concerns has led to a paradigm shift in businesses' operations, with sustainability becoming a core principle in corporate strategies (Sidhoum & Serra, 2017).

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ISBN: 978-624-5553-76-1

Moreover, the increasing environmental challenges, such as climate change, deforestation, and pollution, have put immense pressure on industries globally, making it essential for businesses to adopt sustainable and green practices (Mondal, 2023). Therefore, Green entrepreneurship, which combines economic growth with environmental responsibility, has emerged as a crucial approach for business sustainability within this paradigm (Naruetharadhol et al., 2024).

SMEs in Sri Lanka constitute the economic pillar of the country, with more than 75% of total businesses and play an essential role in employment, alleviating poverty, and regional development (UNDP, 2023). Nevertheless, structural barriers like scarce green finance access, technology and information often limit the capacity of SMEs to shift to sustainable operations. Despite these constraints, SMEs possess the flexibility and local embeddedness needed to drive green transformation at the grassroots level.

The Southern Province of Sri Lanka, which includes the Galle, Matara, and Hambantota districts, has a favorable environment of green entrepreneurship, as it has rich natural resources, and whose SME sector is diversified, in terms of both agriculture, fisheries, tourism and light manufacturing (Pathiranage et al., 2018). However, green practices are not widely embraced in this area. Most SMEs still perform traditional and resource-intensive practices due to the low levels of awareness, poor enforcement of policies and poor institutional support (Kariyawasam et al., 2015).

While green entrepreneurship is gaining global recognition as a catalyst for sustainable development, empirical research exploring its impact at sub-national levels in developing economies remains scarce. In Sri Lanka, most existing studies adopt a national or sectoral lens, with minimal attention to how green entrepreneurial activities influence SME sustainability in specific regions. This represents a critical research gap, especially in the context of regionally tailored policy interventions and development planning.

Accordingly, this study seeks to address this gap by examining the influence of green entrepreneurship on the sustainability of SMEs in the Southern Province. It aims to generate region-specific insights into how green innovation, marketing, and knowledge practices affect the economic, environmental, and social dimensions of SME performance. In doing so, the study contributes to both academic understanding and practical policymaking for inclusive and environmentally responsible economic growth.

Despite growing interest in sustainable business practices, there is limited empirical evidence on how green entrepreneurship impacts SME sustainability at the regional level in Sri Lanka. SMEs in developing economies face both unique opportunities and persistent barriers when attempting to integrate environmental goals into their operations (Chien et al., 2021). In regions like the Southern Province, where industries are closely tied to natural resources, the transition to greener business models is both urgent and challenging.

Green entrepreneurship is a potential approach to obtain a competitive advantage, environmental stewardship, and socio-economic resilience among SMEs (Rathnayaka et al., 2022). Nevertheless, some challenges associated with local businesses include initial cost, inexperience in technical knowledge, limited accessibility to green finance, and difficulty sustaining a green market image under the growing competition (Krara et al., 2025).

Therefore, this study is driven by the core research question: "To what extent do green entrepreneurial activities influence the sustainability and competitiveness of SMEs in the green economy of Sri Lanka's Southern Province?"

By answering this question, the study seeks to illuminate how regionally embedded SMEs can leverage green entrepreneurship as a strategic tool for achieving sustainability goals, while also identifying the key enablers and barriers that shape this transformation.

Research Questions

Main research Question

- How does green entrepreneurship influence the sustainability of SMEs in the context of a green economy in the Southern Province of Sri Lanka?

Sub Research Questions:

- To what extent do SMEs in the Southern Province of Sri Lanka implement green entrepreneurial practices?
- How does green entrepreneurship impact SMEs' environmental, social, and economic sustainability in the Southern Province?
- What are the barriers and opportunities for SMEs in the Southern Province to adopt green entrepreneurship practices to enhance sustainability in a green economy?

Research Objectives

Main Research Objective

- To examine the influence of green entrepreneurship on the sustainability of small and medium-sized enterprises (SMEs) within the green economy in the Southern Province of Sri Lanka.

Sub Research Objectives:

- To assess the extent to which SMEs in the Southern Province of Sri Lanka implement green entrepreneurial practices.
- To evaluate the impact of green entrepreneurship on the environmental, social, and economic sustainability of SMEs in the Southern Province.
- To identify the barriers and opportunities for SMEs in the Southern Province to adopt green entrepreneurship to enhance sustainability within a green economy.

Literature Review

Concept of Green Entrepreneurship

Green entrepreneurship is based on incorporating environmental sustainability into an organisation's business model as a reaction to the environmental crisis that emerged in the late 20th century. Green entrepreneurship involves designing new sustainable processes and/or products that positively impact our environment while maximising environmental, economic and societal benefits (Prokopenko et al., 2024; Silajdžić et al., 2014). Green entrepreneurs aim to work towards two sets of goals: profit expectations and environmental intention. This is an active area of change and transformation within their sector to advance innovations and towards sustainability (Hall et al., 2010; Meirun et al., 2020). Regarding the economic landscape of the Southern Province of Sri Lanka that is rooted in agriculture and tourism, green entrepreneurship is the local use of sustainable resources: organic farming, eco-tourism and other sustainable resources on a local community level, which enables incorporation of sustainable processes and practices while building more sustainable forms of economic resilience. Research has shown that green entrepreneurship facilitates sustainable consumption trends by presenting sustainable alternatives that give consumers choices, shifting behaviours towards green consumerism (Rahman et al., 2020). Green entrepreneurship also adds to the market options, and ways to pivot from a market that demands sustainable practices - a common global and local trend and behaviour that visitors worldwide are placing on the tourism-investment model within the Southern Province. Rooting ecological principles and values into local business models align with the same objectives of the national and global sustainability agenda; therefore, it can be seen as an important implementing tool that could be applied for more sustainable regional development in Southern Province of Sri Lanka (Silajdžić et al., 2015; Vasilescu et al., 2022).

Sustainability of Small and Medium Enterprises (SMEs)

SMEs are vital to economic development, especially in developing countries such as Sri Lanka, where they represent a crucial portion of employment and GDP. For instance, in Southern Province, SMEs in fisheries, handicrafts, and tourism are important in cultivating poverty reduction and regional equity (Deyshappriya & Nawarathna, 2020). SME sustainability is influenced by several factors, including their access to finance, the entrepreneurs' ability (or lack of ability) to adapt through the establishment of skills and knowledge, and market adaptability that may communicate an inability to be successful (Ayyagari et al., 2011). Furthermore, a study in Northern Province, Sri Lanka has found that financial literacy and access to capital will fuel SME growth; these findings can apply to the resource-constrained SMEs of Southern Province (Pushpanathan, 2016). Sustainability for SMEs means maintaining competitiveness through innovative approaches and higher resource use efficiency. SMEs in Southern Province face challenges in innovation and uptake of new technology while also being

ISBN: 978-624-5553-76-1

constrained by an environment of unnecessary and burdensome regulations. However, SMEs can take advantage of proximity to collections of natural resources for sustainable practices (Deyshappriya, 2019). By adopting green strategies, SMEs could seek possibilities for long-term sustainability that align with the national government policies, wherein they promote or highlight the development of SMEs as engines of economic growth.

Green Strategies for Enterprises

Green strategies are practices that align with fewer environmental impacts while ensuring business performance is improved. Green strategies can use renewable sourced resources, lower waste, and innovate environmental focus in new processes (Bartolacci et al., 2019). For the SMEs of the Southern Province on the island of Sri Lanka, green strategies like sustainable packaging within the tea industry, or energy-efficient fishing practices, may be assessed on how these strategies may address environmental challenges and, in turn, help in taking advantage of the expanding world and local eco-conscious buying opportunities. Hamdoun et al. (2022) highlight the benefits of green innovation as it allows firms, specifically SMEs, to react quickly to environmental and market challenges and offers greater flexibility. Green entrepreneurship established the relationship of green strategies with environmental knowledge and awareness attached to economic goals and products. For Sri Lanka, eco-system-based SMEs with environmental sensitivity can implement green practices that may reduce ecological degradation while providing economic rewards (Muo & Azeez, 2019; Rahman et al., 2020). For the SME economy within the Southern Province, being part of a tourism-dependent economy, green or sustainable strategies can contribute to their competitiveness while embracing aligned global patterns (Hamdoun et al., 2022).

Sustainable Development and Green Economy

Sustainable development is about meeting our needs throughout this generation while preserving additional resources for future generations. It balances economic, social and environmental responsibilities (Mensah, 2019). The green economy works with sustainable practices to create trade and business policy that promotes ecological sustainable practices and economic growth with limited natural resources (Rai et al., 2018). In Sri Lanka, the green economy aligns with national goals such as net zero emissions by 2070 by supporting small- and medium-sized enterprises (SMEs) in the provinces, through areas like sustainable tourism and renewable energy (Wijesinghe et al., 2023). Research supports that a green economy enables and reduces strain on the ecosystem while creating employment and more resilient economies (Rathnayaka et al., 2022). In the Sri Lanka context, SMEs evolving and transitioning to greener practices and operating with increased solar production or operations, electric vehicles, or waste that are recycled in their business could support sustainable

development while being responsible for local resources, and they can exist and operate in sustainability complex of today (Mensah, 2019).

Influence of Green Entrepreneurship on SME Sustainability in the Southern Province

Green entrepreneurship increases SME sustainability by integrating environmental stewardship into business operations, a fundamental aspect of the Southern Province's resource-driven economy. Green entrepreneurship encourages alternative innovations such as biodegradable packaging, energy efficiencies, lowered costs, and environmental harm (Hamdoun et al., 2022). The Southern province contains SMEs in the tourism and agricultural sectors, and many of these areas depend on green practices that enhance consumers' desires for sustainability as an essential offering for competitiveness (Deyshappriya, 2019). Green entrepreneurship supports the capacity and capabilities of SMEs for expansion, resilience, and establishing a green economy in line with Sri Lanka's sustainable development direction. Green entrepreneurship underpins a way to do this, at an intersection of economic development and environmental depreciation, that can also position SMEs in the Southern Province of Sri Lanka as drivers of a sustainable future (Rathnayaka et al., 2022).

Methodology

This study adopted a quantitative, cross-sectional survey design to examine green entrepreneurial practices' influence on SMEs' sustainability in Sri Lanka's Southern Province. The conceptual framework, developed from prior theoretical and empirical studies, identifies six core dimensions of green entrepreneurship: green innovation, green knowledge, socio-environmental concerns, perceived green values, green energy and resource use, and green marketing. These constructs guided the development of hypotheses and data collection instruments (see Figure 1).

Population and Sampling Strategy

The study population included approximately 20,450 SMEs registered across 47 divisional secretariats in Galle, Matara, and Hambantota (Department of Census and Statistics, 2024). These SMEs operate in diverse sectors such as food processing, textiles, batik, wood products, handmade crafts, tourism, hospitality, and other services. Given the wide geographical distribution and practical constraints, a convenience sampling technique was used. This approach was appropriate due to limited access to a complete SME database, the broad regional spread, and the need to collect data efficiently from willing participants. 349 SMEs were selected across districts using a non-proportionate sample allocation, as summarised in Table 01.

Table 01: Sample allocation

Districts	Number of Divisional Secretariats	Number of enterprises	Sample enterprises
Galle	19	7012	100
Matara	16	7418	149
Hambanthota	12	6020	100
Total	47	20450	349

Data Collection

Primary data were collected through a structured questionnaire targeting SME owners or managers. The survey was distributed online via email, Facebook, WhatsApp, Instagram, and other platforms to ensure wide reach. Secondary data from government reports, academic literature, and SME databases were also used for context and verification.

Instrument Validation

The questionnaire was adapted from existing validated tools and reviewed by five experts in entrepreneurship and sustainability. A pilot study involving 20 SMEs helped refine the wording. Cronbach's alpha values exceeded 0.70 for all constructs, indicating strong internal reliability. Confirmatory Factor Analysis (CFA) confirmed construct validity.

Ethical Considerations

Participation in the study was voluntary, with respondents informed of the purpose, data use, and privacy protections. Informed consent was obtained electronically, and data confidentiality was maintained throughout.

Conceptual Framework

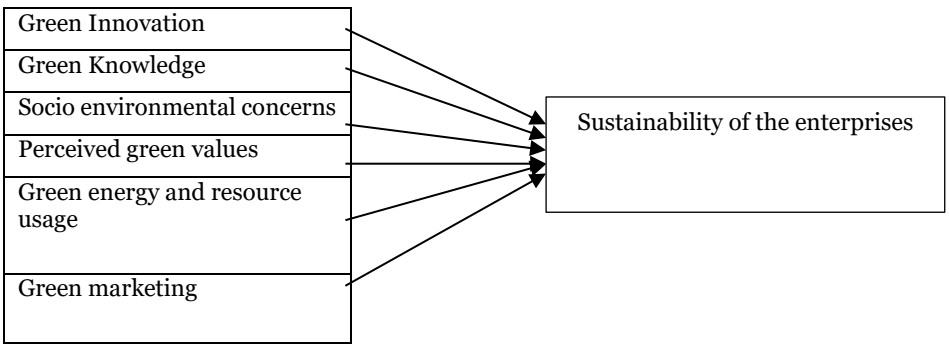

Figure01: Conceptual Framework

Development of Hypothesis

Based on the summary of the mentioned literature and the general observation, six basic hypotheses are used to explore the influence of the factors on sustaining enterprises.

H1: Green innovation positively impacts the sustainability of enterprises

ISBN: 978-624-5553-76-1

H2: Green knowledge positively impacts the sustainability of enterprises

H3: Socio-environmental concerns positively impact the sustainability of the enterprises

H4: Perceived green values positively impact the sustainability of the enterprises

H5: Green energy and resource usage positively impact the sustainability of the enterprises

H6: Green marketing positively impacts the sustainability of enterprises

Results and Discussion

Table 02: Demographic characteristics

Characteristic	Category	Frequency	Percentage (%)
District	Galle	100	28.7%
	Matara	149	42.7%
	Hambantota	100	28.7%
Business Sector	Manufacturing	160	45.8%
	Services	189	54.2%
Years in Operation	Less than 5 years	94	26.9%
	5–10 years	158	45.3%
	Over 10 years	97	27.8%
Number of Employees	Fewer than 10	120	34.4%
	10–20	158	45.3%
	Over 20	71	20.3%

The study collected responses from 349 SMEs operating across the Southern Province of Sri Lanka, covering the districts of Galle, Matara, and Hambantota. The respondents represent various industries, including manufacturing and service sectors, with subcategories such as food processing, textiles, batik, wood products, handmade crafts and souvenirs, tourism, hospitality, and other services. Most businesses have been operating for 5 to 10 years, and the sectoral distribution shows a relatively even representation between manufacturing and services.

Table 03: Descriptive Statistics

Variable	Mean	Standard Deviation
Green Innovation (GI)	3.92	0.68
Green Knowledge (GK)	4.01	0.61
Socio-Environmental Concerns (SEC)	3.89	0.64
Perceived Green Values (PGV)	3.60	0.72
Green Energy & Resource Use (GER)	3.41	0.66
Green Marketing (GM)	4.05	0.59
Sustainability of Enterprise (SUST)	4.10	0.57

Descriptive statistics were calculated to assess central tendency and dispersion across the six green entrepreneurial dimensions and the outcome variable (sustainability of the enterprise). All variables recorded moderate to high mean scores, indicating a positive tendency toward green practices among regional SMEs.

Table 04: Correlation Analysis

	Sustainability of Enterprises	GI	GK	SEC	PGV	GER	GM
Sustainability of Enterprises	1						
GI	.754**	1					
GK	.754**	.692**	1				
SEC	.751**	.588**	.588**	1			
PGV	.743**	.692**	.384**	.280**	1		
GER	.728**	.588**	.280**	.376**	.280**	1	
GM	.754**	.428**	.692**	.588**	.692**	.588**	1

The Pearson correlation coefficients were calculated to examine the strength and direction of the linear relationships between green entrepreneurial variables and the sustainability of SMEs. All six independent variables: green innovation (GI), green knowledge (GK), socio-environmental concerns (SEC), perceived green values (PGV), green energy and resources (GER), and green marketing (GM)—were positively and significantly correlated with the dependent variable, sustainability of enterprises, at the 0.01 significance level (2-tailed).

Table 05: Model summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.78	0.61	0.60	0.18

The Model Summary table shows the overall fit of the regression model. The R value of 0.78 indicates a strong correlation between the independent variables and the dependent variable, sustainability of enterprises. The R Square value of 0.61 suggests that approximately 61% of the variance in the sustainability of enterprises is explained by the six green entrepreneurial practices included in the model.

Table 06: ANOVA

Model		Sum of squares	df	Mean Square	F	Sig.
1	Regression	15.109	5	3.022	97.370	.000b
	Residual	10.645	343	.031		
	Total	25.754	348			

a. Dependent Variable: Sustainability of enterprises

According to the ANOVA, Table 03, the F ratio tests whether the overall regression model fits the data well. If the significance is less than 0.0005, the regression model fits the data well. Furthermore, Statistical significance is determined using an ANOVA. If a value's significance is greater than 0.005, there is insignificance in the model; if it is less than 0.05, there is significance. The table indicates that the value's significance is less than 0.05 (0.000). Moreover, consider the F ratio in the ANOVA table, which 03 tests whether the overall

regression model fits the data well. The table 03 Shows that the independent variables (green innovation, green knowledge, social environmental concerns, perceived green values, green energy and resources, and green marketing) statistically significantly predict the dependent variable of sustainability of enterprise, So, the value of; F (5,343) = 97.370, P < .0005 mean the regression model is a good fit of the data.

Table 07: Coefficient

Model	Unstandardized Coefficients (B)	Std. Error	Standardised Coefficients (Beta)	t	Sig.
(Constant)	1.855	.234	–	5.573	.000
Green Innovation (GI)	.214	.075	.145	2.853	.005
Green Knowledge (GK)	.275	.080	.198	3.438	.001
Socio-Environmental Concerns (SEC)	.208	.072	.154	2.889	.004
Perceived Green Values (PGV)	-.057	.087	-.042	-.655	.513
Green Energy & Resource Use (GER)	-.087	.070	-.068	–1.243	.215
Green Marketing (GM)	.173	.063	.193	2.746	.006

The regression analysis revealed that among the six green entrepreneurial practices, green innovation (B = 0.214, p = .005), green knowledge (B = 0.275, p = .001), socio-environmental concerns (B = 0.208, p = .004), and green marketing (B = 0.173, p = .006) had a statistically significant positive impact on SME sustainability. These results suggest that adopting innovative eco-friendly practices, enhancing environmental knowledge, being socially and environmentally responsible, and implementing green marketing strategies contribute meaningfully to sustainable business performance. In contrast, perceived green values (B = –0.057, p = .513) and green energy and resource use (B = –0.087, p = .215) were not statistically significant. This indicates that while entrepreneurs may hold pro-environmental values and attempt to use sustainable energy and resources, these factors alone may not yet yield measurable improvements in SME sustainability, possibly due to implementation barriers, resource limitations, or cost-related constraints. Multicollinearity diagnostics were conducted using VIF values, all below the acceptable threshold, indicating no significant multicollinearity among predictors.

Table 08: Hypothesis Testing

Code	Hypothesis	Result
H1	Green innovation of the entrepreneurs has a positive impact on the sustainability of the enterprises	accepted

ISBN: 978-624-5553-76-1

H2	Green knowledge of the entrepreneurs positively impacts the sustainability of the enterprises	accepted
H3	Socio-Environmental concerns of the entrepreneurs positively impact the sustainability of the enterprises	accepted
H4	Perceived green values of the entrepreneurs positively impact the sustainability of the enterprises	rejected
H5	Entrepreneurs' use of green energy and resources positively impacts their sustainability.	rejected
H6	Green marketing of the product of entrepreneurs has a positive impact on the sustainability of the enterprises	accepted

Discussion

This study examined how various green entrepreneurial practices influence the sustainability of SMEs in the Southern Province of Sri Lanka, focusing on six dimensions: green innovation, green knowledge, socio-environmental concerns, perceived green values, green energy and resource use, and green marketing. Drawing on data from 349 SMEs across Galle, Matara, and Hambantota, the results offer valuable insights into how green entrepreneurship functions in a developing economy context, where structural constraints and evolving policy frameworks shape business behaviour.

The first objective explored the impact of green innovation on enterprise sustainability. The findings support Hypothesis 1, revealing a significant positive relationship (B = 0.214, p = .005). As Schrank & Kijkasiwat. (2024) mentions this aligns with global research and suggests that SMEs in the Southern Province benefit from introducing eco-friendly products, cleaner production processes, and low-waste technologies (Mubarak et al., 2021; Zheng et al.,2022). Local examples from Sri Lanka's textile, tourism, and food processing industries increasingly show innovation driven by customer demand for sustainable products, government pressure to reduce environmental impact, and international buyer requirements, especially in export-oriented SMEs.

The second objective focused on green knowledge, which was also significantly and positively associated with sustainability (B = 0.275, p = .001), confirming Hypothesis 2. In the Sri Lankan context, this finding underscores the growing importance of environmental awareness among entrepreneurs, particularly as sustainability becomes a strategic necessity rather than a compliance issue (Wanniarachchi et al., 2020). As SMEs access training programs from institutions like the Sri Lanka Export Development Board (EDB), Industrial Development Board (IDB), and National Cleaner Production Centre (NCPC), they are more likely to adopt sustainable practices that enhance operational efficiency and reduce environmental risks. (Wanniarachchi et al., 2020)

Hypothesis 3, related to socio-environmental concerns, was also supported (B = 0.208, p = .004). SMEs in the region appear increasingly sensitive to their social and ecological footprint, especially in sectors like eco-tourism, agriculture, and handicrafts, which are closely tied to

community well-being and natural resources. (Sousa and Gómez, 2020) This is consistent with Sharma and Henriques (2005), highlighting a cultural dimension where family-owned local businesses feel a social responsibility to protect their communities and natural surroundings. (Wasiq et al., 2023).

In contrast, Hypothesis 4 on perceived green values was rejected (B = −0.057, p = .513). This suggests that while SME owners in Southern Sri Lanka may personally value sustainability, such values do not automatically translate into action unless supported by resources, incentives, or pressure from the market or regulators. This gap between intention and behaviour has been noted in similar developing economies (Cantele & Zardini, 2019; Durrani et al., 2024), where resource limitations, lack of technical know-how, and short-term survival priorities often take precedence.

Similarly, Hypothesis 5, which posited a positive relationship between green energy and resource use and sustainability, was not supported (B = −0.087, p = .215). This may reflect the high initial costs and limited access to renewable energy technologies for small businesses in Southern Sri Lanka. While national-level policies promote solar energy and sustainable resource use, these initiatives often fail to reach SMEs in rural and semi-urban areas due to bureaucratic hurdles, limited financing, or insufficient awareness. These findings echo the structural challenges identified in Sri Lankan SME development reports, which highlight access to technology and infrastructure as persistent bottlenecks (Levy, 1993; Usman et al., 2024; Zhang et al., 2024)

Finally, Hypothesis 6 regarding green marketing was accepted (B = 0.173, p = .006). This finding is consistent with international (Papadas et al., 2017) and local observations. Many SMEs in the region, particularly in tourism and wellness sectors, have leveraged eco-labelling, sustainable branding, and digital storytelling to appeal to environmentally conscious consumers, both local and foreign. This reflects the growing influence of sustainability as a competitive advantage, especially as Sri Lanka positions itself as a sustainable tourism and organic agriculture destination.

Overall, the regression model explains 61% of the variance in enterprise sustainability (R^2 = 0.61), indicating a strong model fit. Multicollinearity diagnostics using the Variance Inflation Factor (VIF) confirmed the robustness of the model, with all predictors falling below the critical threshold, suggesting no multicollinearity concerns.

These findings hold several implications for policy and practice in Sri Lanka. First, promoting entrepreneurial education and green training programs at the provincial level, primarily through regional chambers of commerce and vocational institutions, can amplify the impact of green knowledge. Second, financial incentives and subsidies targeted at clean technology adoption (e.g., solar panels, energy-efficient equipment) can help convert pro-environmental values into practice. Third, enhancing access to green certification and marketing platforms

can enable SMEs to better communicate their sustainability efforts to domestic and global markets.

The study confirms that green entrepreneurship has strong potential to advance SME sustainability in Southern Sri Lanka. However, the effectiveness of this transformation depends not only on individual attitudes or firm-level actions but also on supportive ecosystems, access to resources, and enabling policies tailored to the unique challenges of regional SMEs.

Conclusion

This research was undertaken to determine the impacts of green entrepreneurial activities on the sustainability of SMEs in the Southern Province of Sri Lanka. These results reveal that green innovation, green knowledge, socio-environmental issues, and green marketing strongly influence the sustainability of SMEs. However, the perceived green values and the use of green energy display no significant effects. These findings encourage the need to provide practical support to aid SMEs in translating pro-environmental on-attitude practices into action, which includes access to training, financing, and green marketing tools. These are the areas that can be improved in order to make the business sustainable and help Sri Lanka become a green economy.

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Faculty of Management and Finance, University of Ruhuna, Sri Lanka. July – 2025
ISBN: 978-624-5553-76-1

Finance

ICME 2025 "Entrepreneurial Bricolage: Steering Volatile Markets through Improvised Strategies and Innovative Thinking"
Proceedings of 14th International Conference on Management and Economics

Impact of Firm-Specific Factors on Financial Stability: An Analysis Using the CARAMEL Framework in the Life Insurance Industry of Bangladesh

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Abstract

The study uses the CARAMELS framework to find the impact of firm-specific factors on the financial stability of life insurance companies in Bangladesh. This research addresses a notable gap in the existing literature by focusing on the life insurance sector, an essential but under-researched part of Bangladesh's financial soundness and financial stability. The model consists of capital adequacy, asset quality, management soundness, liquidity, reinsurance & actuarial issues, and earnings & profitability as independent variables, where financial stability was measured through Return on Assets (ROA) as a dependent variable. The secondary data was extracted from annual financial reports and statements from 2014 to 2023, including 13 life insurance firms. Descriptive statistics and regression models, including fixed and random effects tests, were used to evaluate the performance of life insurance companies. The results show that a significant impact exists from asset quality (AQ1), earnings & profitability (EP1), earnings & profitability (EP3), liquidity(L) on return on assets. These findings highlight the need for strategic asset management and operational efficiency to enhance financial soundness in the life insurance industry. They point out strong linkages that should control for effectiveness in strategic asset management and prudent financial management for stability. The research makes essential recommendations for regulatory authorities and insurance companies, emphasising the importance of implementing sound financial practices and policies to maintain stability and promote growth in the sector.

***Keywords*:** CARAMELS Framework, Financial Soundness, Firm-Specific Factors, Life Insurance, Return on Assets (ROA)

Introduction

The Companies' financial stability in the life insurance industry is fundamental, especially in dynamic and evolving markets like Bangladesh, where firm-specific factors are crucial in

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ISBN: 978-624-5553-76-1

determining these companies' financial stability and performance (Cummins & Phillips, 2009; Mueller, 2018). The factors that impact financial well-being are essential for stakeholders, regulators, and investors to make accurate decisions (Rahman, 2018). Worldly scholars widely accept the CARAMELS framework to evaluate financial soundness, which is popular among regulators and analysts. The CARAMELS framework indicates six key dimensions: capital adequacy, asset quality, management soundness, liquidity, reinsurance & actuarial issues, and earnings & profitability. Independent variables include capital adequacy, which assesses the firm's ability to absorb losses (Harrington & Niehaus, 2004); Asset quality, which measures the health of the company's asset portfolio; earnings and profitability reflect the underwriting and operational issues of the companies, liquidity also reflect the company's profitability and operating efficiency (Harrington & Niehaus, 2004). The dependent variable for this study is Return on Assets (ROA), a widely accepted measure of a firm's profitability and efficiency in using its assets to generate earnings (Gründl et al., 2016).

The life insurance industry in Bangladesh is a significant component of the financial services sector, with a growing market presence and an increasing number of the performance of this sector directly affects the financial well-being of many individuals and families who depend on life insurance for financial security. Second, the life insurance industry is subject to unique risk and regulatory requirements that require a specialised evaluation framework such as CARAMELS. By analysing these firm-specific factors through the CARAMELS model, this research aims to provide insight into the drivers of financial stability of the life insurance industry in Bangladesh. Further, it will prove that the CARAMELS approach is suitable for explaining the financial soundness of the companies and any impact on the ROA (financial stability) of life insurance firms. These findings will contribute to strategic decision-making, risk management practices, and overall performance improvement within the sector.

Reasearch Problem

The life insurance sector in Bangladesh plays a crucial role in fostering economic development by providing financial security, managing risks, and facilitating long-term capital accumulation (Swiss Re Institute, 2017). Nevertheless, a thorough analysis of the sector's financial health, mainly through firm-specific factors and the CARAMELS framework, has not yet been tested. In Bangladesh, there has been a steady growth of total premium income for life insurance from 2009 to 2019. The sector has grown at a compound annual growth rate (CAGR) of approximately 6.6%, reflecting its increasing importance and role in the country's economy as per the IDRA Report (Insurance Development & Regulatory Authority, 2020). The growing trend further portrays the idea of investigating what kind of firm-specific factors (CARAMELS) model significantly impacts the financial stability of the Bandelsh life insurance firms. The average capital adequacy ratio (CAR) of Bangladeshi life insurers is still below the 10%

statutory standard, per the Financial Stability Report-2022 of the Bangladesh Insurance Company. This is important since it shows that there are not enough reserves to cover unforeseen losses. The non-life insurance market, on the other hand, showed excellent financial stability with a CAR of more than 12%. The importance of this research is underscored by its economic implications, as the financial stability of life insurance companies is essential for broader economic stability and growth. Furthermore, the findings of this study will offer valuable regulatory and managerial insights aimed at improving the overall stability and performance of the sector, in line with previous studies conducted by Charumathi (2012) and Das et al. (2003).

Research Question

- How do capital adequacy, asset quality, management soundness, liquidity, reinsurance & actuarial issues, earnings & profitability, and financial stability of life insurance companies be measured by Return on Assets (ROA) in Bangladesh?

Research Objective

- To identify the impact of the CARAMEL model on the financial stability (ROA) of Life Insurance companies in Bangladesh

Literature Review

Assessing financial soundness is challenging and entails examining several financial measurements and indicators. Several techniques have been developed to evaluate insurance firms' financial health comprehensively. The International Monetary Fund's (IMF) Financial Soundness Indicators (FSIs) framework is frequently utilised. FSI is a collection of fundamental and recommended indicators highlighting several areas of an insurer's financial status, such as capital sufficiency, asset quality, profitability, and earnings. For instance, asset quality indicators evaluate the riskiness of an insurer's investment portfolio, whereas capital adequacy ratios gauge the insurer's capacity to withstand losses (IMF, 2006). Another strategy uses rating systems from Standard & Poor's, Moody's, and Fitch Ratings. These organisations assess insurance businesses' creditworthiness and financial stability using various qualitative and quantitative criteria. Their ratings assist policyholders and investors in determining the stability and dependability of insurers (IMF, 2006).

Ali et al. (2019) mentioned that the study was carried out to identify the relations of firm-specific factors with the financial soundness indicators of the CARAMELS framework for the non-life insurance industry by using a panel data set of 22 NLP companies of Pakistan from 2007 to 2016. The study identifies relations between firm-specific factors and financial soundness indicators. Three factors have significant relations; seven factors have insignificant relations.

Sumesara (2020) argued the financial performance of the General Insurance Corporation of

India and the Bajaj alliance with special reference to the CARAMELS analysis model. Analysing using the CARAMEL framework and statistical tools for efficiency assessment. Further, it stated a comparative analysis of the General Insurance Company of India and The Bajaj Allianz General Insurance Co. Ltd., depicting the overall results using the financial indicators of the CARAMEL Framework based on Ratio analysis and statistical tools like the Independent Samples T-test. Rani and Ramesh (2022) study the Caramel Model in the Indian context. Based on the CARAMEL model, the results stated that the LIC of India's performance reveals that the organisation demonstrates robust solvency, profitability, and customer satisfaction. However, it encounters difficulties related to efficiency and market penetration. An analysis of LIC's strengths and weaknesses has been conducted. Ghimire and Kumar (2014), Testing of Financial Performance of Nepalese Life Insurance Companies by CARAMEL Parameters. In this article, the authors assess the financial performance and soundness of life insurance companies in Nepal based on CARAMEL parameters from 2007/08 to 2011/2012 and provide a detailed summary of the financial performance of each company for 2011/12 and brief and aggregate overview over the five years under the different dimensions: Capital adequacy, assets quality, Reinsurance and Actuarial issues, management soundness, earnings and profitability and liquidity.

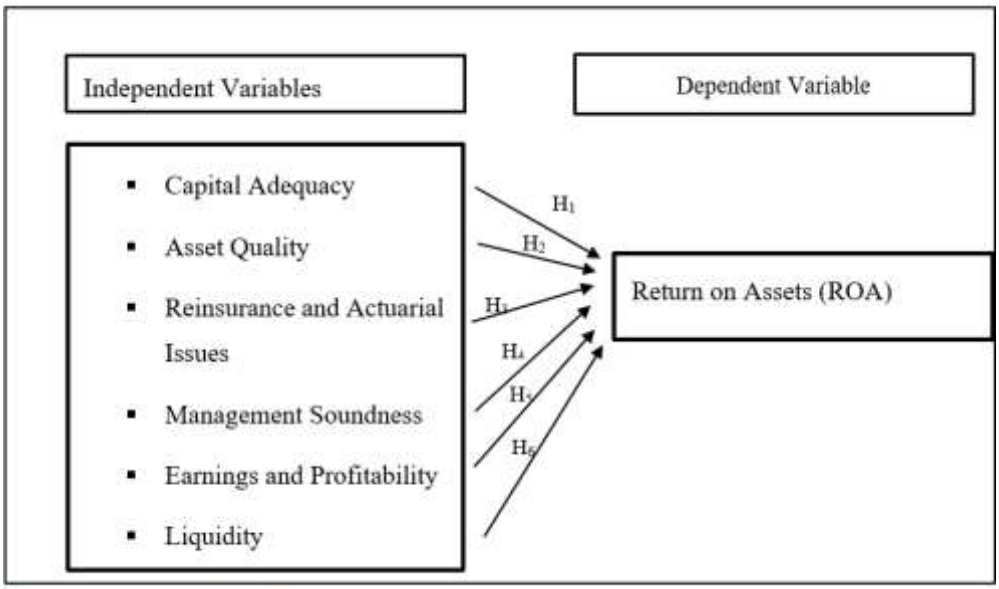
Return on Assets (ROA) is a crucial financial indicator used to evaluate the effectiveness and performance of businesses, particularly those in the life insurance sector. A company's net income is divided by its average total assets to determine ROA. This ratio demonstrates how well a business uses its resources to turn a profit (Chen & Wong, 2004). One dependent variable that represents overall efficiency in your study on the financial stability of life insurance businesses in Bangladesh is ROA. Because it offers a more thorough assessment of the insurer's effectiveness in using all of its assets, not just equity, return on assets (ROA) is chosen as the dependent variable in this study over return on equity (ROE). The return on shareholders' equity, or ROE, is the main emphasis and can impact the business's financial leverage. ROA provides a more comprehensive view of overall operating performance and resource utilisation since it encompasses the complete asset base (Bodie, Kane, & Marcus, 2014). This study assesses firm-specific criteria like capital adequacy by looking at ROA. Several factors, including asset quality, underwriting procedures, managerial soundness, earnings dynamics, and liquidity management, influence the financial performance and soundness of life insurance firms in Bangladesh. This method offers insightful information on the factors contributing to financial performance and areas where the industry needs improvement.

Methodology

This chapter outlines the research approach used to use the CARAMELS framework to investigate how firm-specific factors affect the financial stability of life insurance businesses in

Bangladesh. This study adopts the Positivist philosophy. Positivism emphasises observable, empirical data and objective reality. It supports the use of scientific and quantitative methods to explain phenomena, making it suitable for analysing financial performance metrics of insurance companies. The study follows a Deductive approach. Hypotheses are formulated based on established theories and previous empirical findings, which are then tested using real-world data from life insurance companies in Bangladesh. A Quantitative research approach is employed, using numerical data and statistical techniques to investigate the relationship between internal financial indicators (CARAMELS) and firm performance (ROA). Secondary data is used for the analysis, and the study utilises annual reports and financial statements from life insurance companies, which provide comprehensive and consistent financial information. The study applies Panel Data Regression Analysis to assess the impact of the CARAMELS variables on the performance (ROA). Panel data analysis helps control unobserved heterogeneity and improve the robustness of the results. The population is considered to be all life insurance companies operating in Bangladesh. The population for this study consists of all life insurance companies operating in Bangladesh.

Conceptual Framework



Source – Author Compiled (2024)

Figure 01 - Conceptual Framework

According to the latest data from the Insurance Development and Regulatory Authority (IDRA), the country hosts 81 insurance companies, comprising 35 life insurance companies. The life insurance sector in Bangladesh has seen significant growth over the years, making it a critical industry to examine for financial fitness. The companies with continuous operations from 2014 to 2023 are included, which ensures that the analysis captures long-term trends and

performance rather than transient fluctuations. Only a sample of 13 life insurance companies operating continuously was selected based on market capitalisation from 2014 to 2023. The companies with complete financial statements and annual reports for the entire research period were chosen to facilitate the accurate calculation of CARAMELS indices and to perform a full financial analysis.

This study is based on the CARAMELS framework, a well-established tool for evaluating insurance companies' financial stability. The framework includes essential indicators: capital adequacy, asset quality, Reinsurance and Actuarial Issues, management soundness, earnings and profitability, and liquidity. These indicators act as independent variables, while return on assets (ROA) is used as the dependent variable to assess financial performance. The conceptual framework is given below.

Based on the conceptual framework, the following hypotheses were developed for the study.

H1:Capital adequacy significantly impacts the financial soundness(ROA) of life insurance companies in Bangladesh.

H2: Asset Quality significantly impacts the financial soundness(ROA) of life insurance companies in Bangladesh.

H3: Reinsurance and Actuarial Issues significantly impact the financial soundness(ROA) of life insurance companies in Bangladesh.

H4: Management Soundness significantly impacts the financial soundness(ROA) of life insurance companies in Bangladesh.

H5: Earnings & Profitability significantly impact the financial soundness(ROA) of life insurance companies in Bangladesh.

H6: Liquidity significantly impacts the financial soundness (ROA) of life insurance companies in Bangladesh.

The operationalisation table is given below.

Operationalization Table

Table 01: Operationalisation of Variables

Types of Variables	Names of the Variables	Measurement
Independent Variables	Capital Adequacy	• Net Premium to Capital • Capital to Total Assets
	Asset Quality	• Gross Premium and Reinsurance Recoveries • Equities to Total Assets
	Reinsurance and Actuarial Issues	• Net Premium/Gross Premium
	Management Soundness	• Operating Expenses/Gross Premium

ISBN: 978-624-5553-76-1

	Earnings and Profitability	• Expense Ratio • Investment Income to Investment Assets • Return on Equity
	Liquidity	• Liquid Assets/Current Liabilities
Dependent Variables	ROA	• Net Income/ Average Total Assets

Source: Author compiled based on IMF Working Paper (2003)

The regression model is formulated based on the above variables and the conceptual framework.

$ROA_{it}=\beta_0+\beta_1 CA_{it}+\beta_2 AQ_{it}+\beta_3 RAI_{it}+\beta_4 MS_{it}+\beta_5 EP_{it}+\beta_6 LQ+\epsilon_i$

Findings and Discussion

Descriptive Statistics

Skewness values for most variables fall within the range ±2, while kurtosis values remain below 5, indicating that the data set is close to normal. For example, Return on Assets (ROA) shows a curve of -1.698, reflecting a moderate left bias; however, the kurtosis value of 9.057 indicates the presence of occasional outliers that may affect the distribution of profitability. The Management soundness (MS) and earning Profitability (EP2) variables also show a more pronounced right skew (exceeding 1), suggesting a long right tail. Certain companies demonstrate exceptional performance in managerial efficiency and profitability. Assessment of the normality of this data set, as indicated by variance and kurtosis, reveals that the variables are predominantly symmetrically distributed, with some variability in the distribution tails. As the assumptions of normality are largely satisfied, these properties provide a strong basis for further regression analysis as they ensure the validity of subsequent statistical inferences on the determinants of financial soundness of the life insurance sector in Bangladesh.

Table 02: Descriptive Statistics

Variables	Obs	Mean	Std. Dev.	Min	Max	p1	p99	Skew.	Kurt.
ROA w	130	1.647	8.798	-36.921	25.176	-36.921	25.176	-1.698	9.057
CA1	130	92.875	3.186	86.26	96.669	86.26	96.669	-.836	2.673
CA2	130	31.004	17.077	14.759	72.094	14.759	72.094	.982	2.959
AQ1	130	53.628	45.788	2.714	189.747	2.714	189.747	.436	2.326
AQ2	130	4.72	4.187	1.113	16.455	1.113	16.455	1.384	4.072
RI	130	99.216	.592	98.078	99.931	98.078	99.931	-.504	2.02
MS	130	17.604	6.077	11.984	32.979	11.984	32.979	1.111	3.194
EP1	130	35.831	9.12	27.501	55.412	27.501	55.412	.957	2.773
EP2	130	12.33	5.838	.861	48.119	1.612	29.559	1.985	9.904
EP3	130	7.777	31.307	-144.20	64.464	-99.576	51.197	-1.52	7.48
L	130	1347.4	842.985	225.674	3253.482	225.674	3253.48	.628	2.721

(Source – STATA Output 2024)

ISBN: 978-624-5553-76-1

Hausman Specification Test

The Hausman Specification Test was performed to identify the most suitable model between fixed and random effects frameworks. This test assesses whether the individual effects correlate with the explanatory variables present in the model. The null hypothesis asserts that the random effects model is valid, assuming no systematic coefficient differences exist. In contrast, the alternative hypothesis indicates that the fixed effects model is more suitable, suggesting the presence of systematic differences in the coefficients. In this instance, the test results indicate a chi-squared statistic of 0.00 and a p-value (Prob > chi2) of 1.000, significantly exceeding the conventional significance level of 0.05. This elevated p-value leads us to fail to reject the null hypothesis. The random effects model is more appropriate for this analysis because the test does not provide sufficient evidence against the null hypothesis. This finding implies that the individual effects do not correlate significantly with the explanatory variables, rendering the random effects model a statistically valid option.

Table 03: Hausman Test

	Coef.
Chi-square test value	0.18
P-value	0.9993

(Source – STATA Output 2024)

Table 04: Random Effect Model

ROA_w	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
CA1	-.411	.2	-2.05	.04	-.803	-.018	**
CA2	.09	.035	2.58	.01	.022	.159	***
AQ1	.084	.014	5.96	0	.056	.111	***
AQ2	.156	.119	1.32	.188	-.076	.389	
RI	-1.359	.814	-1.67	.095	-2.955	.236	*
MS	.026	.122	0.21	.83	-.213	.265	
EP1	-.326	.093	-3.51	0	-.508	-.144	***
EP2	.007	.08	0.09	.929	-.149	.163	
EP3	.231	.018	12.77	0	.195	.266	***
L	.001	.001	2.32	.021	0	.002	**
Constant	174.127	79.209	2.20	.028	18.879	329.375	**
Mean dependent var		1.647	SD dependent var		8.798		

Overall r-squared	0.741	Number of obs	130
Chi-square	341.148	Prob > chi2	0.000
R-squared within	0.715	R-squared between	0.802

(Source – STATA Output 2024)

The random effects model regression analysis elucidates the relationship between Return on Assets (ROA) and various firm-specific factors within Bangladesh's life insurance sector, as demonstrated by the coefficients, standard errors, z-values, and statistical significance. Capital Adequacy (CA1) exhibits a negative and statistically significant coefficient of -0.4106 (p = 0.040), indicating that an increase in capital adequacy correlates with a decrease in ROA. Conversely, CA2 presents a positive and statistically significant effect, with a coefficient of 0.0903 (p = 0.010). Among the Asset Quality variables, AQ1 reveals a significant positive correlation with ROA, reflected in a coefficient of 0.0839 (p = 0.000), while AQ2 does not demonstrate statistical significance. Reinsurance and Actuarial Issues (RI) negatively affect ROA, albeit marginally insignificant (p = 0.095), with a coefficient of -1.3594. Management Soundness (MS) does not significantly influence ROA, as indicated by its coefficient of 0.0261 (p = 0.830). Earnings and Profitability (EP1) reveals a significant negative relationship with ROA, with a coefficient of -0.3257 (p = 0.000), suggesting that higher profitability metrics may adversely affect ROA. EP3, on the other hand, has a significant positive effect on ROA, with a substantial coefficient of 0.2306 (p = 0.000), while EP2 does not exhibit any significant correlation. Liquidity (L) is positively related to ROA, with a coefficient of 0.0015 (p = 0.021), indicating that enhanced liquidity positively influences financial stability.

The R-squared values (within = 0.7152, between = 0.8020, overall = 0.7414) suggest that the model accounts for a considerable portion of the variability in ROA. The Wald chi-square test produces a statistic of 341.15 (p = 0.000), affirming the overall statistical significance of the model. The constant term, with a coefficient of 174.127 (p = 0.028), signifies the anticipated ROA value when all independent variables are held at zero. The findings underscore the intricate and diverse influences of firm-specific factors on the financial stability of Bangladesh's life insurance industry, with critical variables including AQ1, CA2, EP1, EP3, and liquidity exhibiting a notable impact.

Multicollinearity

To evaluate the degree of multicollinearity among the independent variables, namely, Capital Adequacy (CA), Asset Quality (AQ), Reinsurance and Actuarial Issues (RI), Management Soundness (MS), Earnings and Profitability (EP), and Liquidity (L) and computed the Variance Inflation Factor (VIF) for each variable. The VIF measures the extent to which the variance of an estimated regression coefficient is increased due to multicollinearity. Generally, VIF values exceeding 10 indicate significant multicollinearity concerns in large samples, necessitating

further examination or corrective measures. Conversely, VIF values above 5 in smaller samples may also raise alarms.

Table 05: VIF Test

Variable	VIF	1/VIF
EP1	4.260	0.235
MS	3.270	0.306
AQ1	2.470	0.405
CA1	2.420	0.413
CA2	2.120	0.472
EP3	1.900	0.526
AQ2	1.470	0.682
L	1.440	0.694
RI	1.380	0.724
EP2	1.280	0.780
Mean VIF	2.200	

(Source – STATA Output 2024)

The average Variance Inflation Factor (VIF) is 2.20, with none of the variables surpassing the commonly accepted threshold of 10. The table indicates that multicollinearity is not a significant issue within this model. The highest VIF recorded is for EP1 at 4.26, which remains comfortably below the critical limit, suggesting that the independent variables can be incorporated into the model without a considerable risk of multicollinearity distortion. This finding indicates that each component of the CARAMELS framework provides unique insights, thereby validating its inclusion in the regression analysis without necessitating any corrective actions.

Heteroscedasticity

Heteroskedasticity denotes a condition where the variance of the residuals in a regression model is not uniform. This situation contravenes one of the fundamental assumptions of Ordinary Least Squares (OLS) regression, which can result in inefficient parameter estimates and underestimated standard errors, affecting the statistical significance of the predictor variables.

This study utilises the Breusch-Pagan/Cook-Weisberg test to assess the presence of heteroskedasticity. The null hypothesis (H0) for this test posits that the variance of the residuals remains constant (homoskedasticity), whereas the alternative hypothesis indicates the existence of heteroskedasticity.

The Breusch-Pagan/Cook-Weisberg test output is as follows:

Table 06: Breusch-Pagan/Cook-Weisberg Test

Chi-squared value	(χ^2): 10.20
P-value:	0.0014

(Source – STATA Output 2024)

ISBN: 978-624-5553-76-1

Given that the p-value (0.0014) is less than the standard significance threshold of 0.05, we reject the null hypothesis of constant variance. This finding suggests that heteroskedasticity exists within the model, indicating that the variance of the residuals is not uniform across observations. To solve the issue, a robust standard error was employed to eliminate the heteroscedasticity. Consequently, the assumption of homoscedasticity is upheld.

Autocorrelation

Autocorrelation arises when the residuals of a regression model exhibit correlation over time or among different entities, potentially breaching the assumption of independent errors in ordinary least squares (OLS) regression. In the context of panel data analysis, autocorrelation can result in inefficient estimates and a reduction in the accuracy of standard errors, thereby compromising the dependability of the model's outcomes. The Wooldridge test, specifically designed for panel data, was utilised to assess the presence of autocorrelation. This test's null hypothesis ($H0$) posits an absence of first-order autocorrelation.

Table 07: Wooldridge Test

Test summary	F (1,12)	Prob>F
Wooldridge test	2.946	0.1118

(Source – STATA Output 2024)

A p-value of 0.1118, exceeding the conventional significance threshold of 0.05, leads us to fail to reject the null hypothesis concerning the absence of first-order autocorrelation. This finding indicates that there is no substantial autocorrelation present in the model's residuals.

Hypotheses

The summary of the hypothesis test results is given below.

Table 08: Hypothesis Test

Hypothesis	Outcome	Coefficient	P-Value
H1: Capital Adequacy (CA1) significantly impacts return on assets (ROA).	Rejected	-0.4106	0.092
H2: Capital Adequacy (CA2) significantly impacts return on assets (ROA).	Rejected	+0.0903	0.128
H3: Asset Quality (AQ1) significantly impacts Return on Assets (ROA).	Accepted	+0.0838	0.000
H4: Asset Quality (AQ2) significantly impacts Return on Assets (ROA).	Rejected	+0.1561	0.200
H5: Reinsurance and Actuarial Issues (RI) significantly impact return on assets (ROA).	Rejected	-1.3594	0.256
H6: Management Soundness (MS) significantly impacts return on assets (ROA).	Rejected	+0.0261	0.847

H7: Earnings and Profitability (EP1) significantly impact return on assets (ROA).	Accepted	-0.3256	0.001
H8: Earnings and Profitability (EP2) significantly impact return on assets (ROA).	Rejected	+0.0071	0.952
H9: Earnings and Profitability (EP3) significantly impact return on assets (ROA).	Accepted	+0.2306	0.000
H10: Liquidity (L) significantly impacts return on assets (ROA).	Accepted	+0.0014	0.008

(Source – STATA Output 2024)

Discussion

The results of this research offer an in-depth understanding of the interplay between firm-specific elements and financial stability within the life insurance sector in Bangladesh. This analysis, conducted for 10 years using the CARAMELS framework, thoroughly evaluates the industry's financial performance. The conclusions drawn from this study align with and build upon existing literature regarding the determinants of financial performance in the insurance sector. Research by Kumar and Ghimire (2013) emphasises the significance of capital adequacy and asset quality as critical factors affecting financial soundness, indicating that a well-balanced capital structure and high asset quality contribute positively to profitability. Furthermore, the impact of liquidity on financial performance has been widely examined. Ayele (2012) reported a negative correlation between liquidity and profitability in Ethiopian insurance companies. Charumathi (2012) found a positive relationship in India, underscoring the necessity of effective liquidity management for enhancing operational efficiency and profitability. The relationship between earnings and profitability indicators, such as expense ratios, is complex. For example, Firmansyah et al. (2020) observed that elevated expense ratios adversely affected profitability in Indonesian insurance firms, a pattern also noted in European studies by Kozak (2011). These insights underscore the importance of implementing effective cost-management strategies to improve financial results. Additionally, macroeconomic variables, particularly inflation, have been identified as significant factors influencing profitability.

Conclusion

The results indicate that certain firm-specific factors significantly impact the financial stability of life insurance companies in Bangladesh. For example, Asset Quality and specific profitability metrics (such as the Earnings and Profitability Indicator EP1) exhibited notable correlations with ROA, underscoring the importance of maintaining strong asset portfolios and efficient operational practices. In contrast, factors like reinsurance, contractual issues, and management soundness did not significantly impact financial performance, indicating variability in their influence among firms within this sector. The regression analysis established

that the random effects model was the most appropriate for this investigation, as confirmed by the Hausman test results. This model accounted for a substantial portion of the variability in ROA, emphasising the significance of firm-specific factors in determining the financial stability of life insurers.

Additionally, this study highlights the critical nature of effective liquidity management, as liquidity was found to have a positive correlation with ROA. These findings suggest that life insurance companies in Bangladesh should prioritise liquidity and asset quality to improve profitability and ensure long-term financial stability. In summary, this research significantly contributes to the existing literature regarding financial stability within the life insurance industry, especially in emerging markets such as Bangladesh. It presents evidence-based suggestions for policymakers, regulators, and industry professionals, emphasising the necessity for focused strategies to enhance financial performance. Key recommendations include the enhancement of asset management practices, the refinement of profitability indicators, and the assurance of adequate liquidity levels. Furthermore, the study establishes a foundation for additional investigation into the complex interactions of firm-specific elements and opens avenues for comparative analyses in other insurance markets.

Limitations of the Study

This research presents several limitations that warrant consideration. Firstly, it is confined to the life insurance industry in Bangladesh, which may restrict the applicability of the results to other sectors or geographical areas. The analysis utilised secondary data from 13 life insurance firms over a decade (2014–2023), which may not adequately reflect long-term trends or the effects of recent changes within the insurance sector. Moreover, the dependence on publicly accessible financial statements and annual reports raises concerns regarding the accuracy and completeness of the data, potentially influencing the reliability of the findings.

Suggestions for Further Research

This study identifies multiple avenues for future investigation to enhance the findings and address existing gaps. Subsequent research could broaden the application of the CARAMELS framework to additional sectors within the insurance industry, such as non-life insurance firms, to assess their financial stability compared to the life insurance sector. Furthermore, the framework could be evaluated in various geographic settings, including other developing nations or regions with unique regulatory frameworks, to determine its applicability and effectiveness across diverse markets.

Additional studies might utilise primary and secondary data collection techniques, such as surveys or interviews with industry participants, to obtain insights into operational difficulties, management integrity, and decision-making processes that influence financial performance. Research could also investigate emerging risks related to climate change, digital

transformation, or global economic fluctuations and their implications for financial stability within the insurance sector.

Moreover, future inquiries could consider alternative dependent variables, such as Return on Equity (ROE) or Net Premium Income (NPI), to capture further aspects of financial performance. Sophisticated econometric models, including dynamic panel data models or machine learning approaches, could be utilised to examine non-linear relationships and predict financial outcomes with greater precision.

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ISBN: 978-624-5553-76-1

ICME 2025 "Entrepreneurial Bricolage: Steering Volatile Markets through Improvised Strategies and Innovative Thinking"
Proceedings of 14th International Conference on Management and Economics

The Impact of Intellectual Capital on Firm Value and The Mediating Effect of Financial Performance of Banking Sector in Sri Lanka

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Abstract

This study attempts to identify the effect of Intellectual Capital on firm value with the mediating effect of Financial performance, with special reference to the banking sector in Sri Lanka. Primary data was gathered by using a well-structured questionnaire to achieve this goal. Managers and executives at banks listed on the Colombo Stock Exchange were the source of 306 responses. The study adopted the mediation analysis from the methodology proposed by Baron & Kenny in 1986. Based on the primary data analysis, the findings show a strong positive impact of human and customer capital on the financial performance and firm value of listed banks. Further findings suggested the complementary partial mediation role of financial performance in the association between intellectual capital and the firm value of banks. The present investigation will be crucial in determining the empirical knowledge regarding the impact of intellectual capital on the firm value mediated by the financial performance of listed banks in the Colombo Stock Exchange.

Keywords: Financial Performance, Firm Value, Intellectual Capital

Introduction

Since the 18th century, the shift from traditional industries to an information-based and now knowledge-driven economy has led organizations to create value that goes beyond just financial figures. Intellectual Capital (IC) can be identified as a value-enhancing platform for an organization. Bassi and Laurie (1997) state that IC is created through managing knowledge. Many scholars suggest various definitions for IC (Bassi & Laurie, 1997; Kaplan & Norton, 2001). Intellectual Capital is one of the intangible assets that supports an organization's performance towards reaching high earnings (Kaplan & Norton, 2001). To adapt to the contemporary dynamic and rigorous business environment, firms must also use intangible assets to power their operations (Dharmakeerthi & Ranjani, 2022). An organization's financial success reflects the effective and efficient progression of its funding,

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ISBN: 978-624-5553-76-1

investment, and operational policies (Sudiyanto, 2010). According to Mohamud (2018), how the business resources are utilized to generate organizational profits is indicated by the financial performance. Further, it is expressed through revenues and profitability indicators over a certain period. Hence, financial performance is a crucial factor in organizational success. Investors rely more on firm value because it depicts the organization's status in the market. According to Awan, Lodhin, and Hussain (2018), the firm value indicates the total wealth of the investors and shareholders. Hence, as a mechanism for long-term organizational stability, strong firm value creation is very critical to an organization. As the banks hold the leading power in the financial sector, they are vital for the financial system of Sri Lanka. Banks play a decisive role as financial mediators, and they operate to generate money by lending to borrowers and accepting related deposits to represent the balance sheet of banks (Aithal, 2016). The banking sector experienced a knowledge shift in the last three decades due to the advancement in communication and information technology, globalization, and financial operation expansion (Seelanatha, 2010). According to Ahamad and Ahamad (2016), the efficient deployment of intellectual capital is significant for the operations of banks in the Sri Lankan context. Hence, it is critical to investigate whether this Intellectual Capital impacts banks' firm value and financial performance. Hence, it is deemed that this study will be significant for enhancing the existing literature on Intellectual Capital. Understanding the significant findings of this study may help banks attain economic benefits in terms of identifying and being engaged in building a corporate image as a bank with ample public spirit to captivate socially induced clients and increase firm value by addressing intellectual capital mechanisms.

Research Problem

In recent years, “Intellectual capital” has become an increasingly prominent concept in the current business environment because it creates a platform for attaining a competitive advantage. Banking institutions are crucial in creating an effective and efficient monetary system. Hence, the modern banking system updates its traditional banking operations with Intellectual capital mechanisms to attain a competitive advantage. Investing in Intellectual Capital is an emerging trend in the Sri Lankan context. Meanwhile, many research studies have been undertaken on intellectual capital. However, empirical studies on intellectual capital are limited in the Sri Lankan context. Hence, through this study, the researcher aims to contribute to expanding the existing literature on Intellectual Capital and, more importantly, address several gaps in the available studies. Reviewing the existing empirical studies, the researcher spotted three main gaps in prior studies and literature on intellectual capital. Firstly, the investigator detected an empirical gap in the prior research. There seems to be a scarcity of rigorous research on intellectual capital in the prior literature. These core topics, namely intellectual capital, financial performance, firm value, and brain drain, which

this thesis investigates, are conspicuous by the absence of research that has been carried out till now. No investigations to date have explicitly attempted to empirically evaluate the mediating role of financial performance and the controlling effect of brain drain in the association related to intellectual capital and firm value. What is even more important is that very few empirical investigations into these topics have been done in the Sri Lankan context. Second, the scholar noticed a noticeable theoretical gap in the previous research on intellectual capital. The intellectual capital theory used in the previous research is somewhat outdated, and contemporary research reflects this theoretical gap. Some of the prior theories that appear fundamental are worthy of recognition. However, an inquiry into intellectual capital and theoretical development is necessary to study Intellectual Capital comprehensively. Furthermore, the theoretical models used in previous works must embrace contemporary research in intellectual capital and the fields related to it to provide a stronger theoretical basis for the studies. Previous research has focused chiefly on the impact of intellectual capital on performance measurements. Previous researchers have emphasized the need for an extensive analysis of the effect of Intellectual Capital, with the effect of mediator or moderator being more needed to consider in investigations (Dharmakeerthi & Ranjani, 2022). Thirdly, the researcher recognized a methodological gap in the prior research concerning Intellectual capital, firm value, and financial performance. Many of the local and international studies used secondary data for their studies, and they tend to use ratio analysis such as Value Added Intellectual Capital, Tobin Q, and Market to Book value to get final results (Ahamad, 2024; Dharmakeerthi & Ranjani, 2022; Nguyen & Doan, 2020). Given this critical methodological Gap in the research on intellectual capital, the researcher uses primary data by administering a well-structured questionnaire and SPSS AMOS for analysis.

In this paper, we present a novel investigation of the mediating role of financial Performance in the impact of Intellectual Capital on Firm Value performance by addressing the abovementioned gaps. Note that the commercial bank's annual report from 2019 – 2023 points to the listed bank's concern with intellectual capital, which had been increasing yearly. As a result of this increase in the investment in intellectual capital, the listed banks' drive to increase their financial performance and firm value. By considering the above-mentioned gaps, this study defines its main research problem as investigating the mediating effect of financial performance on the relationship between intellectual capital and the firm value of executive-level employees in the banking sector in Sri Lanka.

Literature Review

Empirical Review

This section is consistent with the directions of the existing investigations related to Intellectual Capital. This provides a critical assessment of the existing research. The study of

ISBN: 978-624-5553-76-1

Nuryaman (2015) examines how Intellectual capital affects the firm value through the financial performance of the organization. Nuryman attests that Intellectual Capital and Firm value are positively related, and profitability functions as an intervening variable between Intellectual Capital and Firm value. A comparative study conducted by Dharmakeerthi and Ranjani (2022) indicates that Intellectual capital and Firm Value are positively related variables in both the consumer service sector and the capital goods sector of the firms listed in CSE. The empirical investigation into the Intellectual Capital and company value of listed companies by Berzkalne and Elvira (2014) provides mixed results for the association between Intellectual Capital and Company value. Dimitrios et al. (2011) examined the influence of Intellectual Capital on the market value of firms and financial performance in 96 Greek listed companies, and they used panel data from 2006 to 2008. The results significantly failed to support their hypothesis, and they only found that the efficiency of human capital and financial performance have a positive relationship. Hence, those research results contradict the findings of other researchers related to intellectual capital. Recently, an Indonesian researcher, namely, Malikah & Nandiroh (2024), conducted a systematic literature review about intellectual capital and firm value, and the research findings highlighted that a positive relationship exists between the intellectual capital variable and firm value. It further states that intellectual capital is an improvement platform for competitive advantage, financial performance, and commercial value for companies. Aidha (2024) conducted a research study on the influence of Intellectual Capital on the Financial performance of the Banking Sector in Indonesia, and they used Corporate Governance as the moderating variable. They applied a multiple linear regression analysis mechanism. The ultimate findings showed that Intellectual Capital positively affects Financial Performance and Corporate Governance. Corporate governance does not moderate the relationship between intellectual capital and financial performance. Ali (2022) researched intellectual capital and financial performance related to Indian and Pakistani companies. They have used the ratios for the calculations of the Return on Assets (ROA) ratio, the Return on Equity (ROE) ratio, and the Modified Value-Added Intellectual Coefficient. The findings were shown as positive and significant. Hamdan (2017) investigated the impact of intellectual capital through two measures of performance: accounting measures and market-based measurement, as a comparison between 171 firms in the Kingdom of Saudi Arabia and 27 in Bahrain. The results showed that the accounting-based traditional measures have a relationship with intellectual capital and firm performance, and there is no relationship between intellectual capital and market-based performance. According to existing literature, most scholars consider the variables significant and critical in a company's value-generating process.

Methodological Review

This section considers the methodological assessment of the prior literature related to intellectual capital, financial performance, and firm value. According to past researchers who investigated the area of Intellectual capital, they mainly considered the financial statement data as data. Further, they used the ratio analysis mechanism for data analysis. The research study of Dharmakeerthi and Ranjani (2022) utilized secondary data. They used the annual report data from 2015 to 2020 and conducted a comparative study of the consumer service and capital goods sectors. The study used the value-added intellectual coefficient to measure the independent variable, intellectual capital, and the dependent variable, firm value, which was measured using the market-to-book value ratio. Lastly, they drew their final results from correlation analysis and regression analysis. Nguyen and Doan (2020) studied the impact of Intellectual Capital on Firm Value in Vietnam. This investigation was carried out using a secondary data source. The Value Added Intellectual Capital mechanism was used to measure the Intellectual Capital variable, while the Tobin Q ratio was used to measure the firm value. The researchers used regression coefficients obtained from the Random Effects Model, Ordinary Least Squares, and Fixed Effects Model to get the final result. Further, a study carried out by Berzkalne and Zelgalve (2014) used financial data from financial statements for their analysis, and the analysis was done using the correlation method.

A research study was conducted by Sang, Cheboi, and David (2024) on the intellectual capital disclosure, financial performance, and firm value of 39 organizations listed in Kenya. The relevant data was collected from these annual audited financial reports from 2010 to 2022. The study used an even panel data strategy for analysis, depending on the inclusion and exclusion criteria. Ahamad (2024) studied the association between intellectual capital, bankruptcy risk, financial stability, firm performance, and market value in Pakistan. They employed the system generalized method of moments for their study using secondary data. The review of existing literature shows that most of the studies use secondary data based on the published annual reports for their studies, and further analysis was carried out using correlation and regression methods.

Knowledge Based Theory

Sound knowledge of an organization is the base of the sustainable competitive advantage (Hunter, 2002). The ability of an organization to create, differentiate, adapt, and share its knowledge base is a key component of competitive advantage. An organization's knowledge base is a vital resource that can be used to develop and preserve the core competencies, which, if used effectively, can help it thrive in a cutthroat market. According to the knowledge-based theory, knowledge is a differentiating and competitive advantage-creating resource that is challenging to duplicate. The knowledge-based perspective is in which

ISBN: 978-624-5553-76-1

original knowledge is generated, disseminated throughout the organization, and promptly converted into unique products. To maintain information value, enterprises are free to adopt various institutional frameworks because intellectual property rights are poorly regulated and costly to propose and implement. Therefore, businesses have a variety of strategies to stop the expropriation of knowledge and hide knowledge and its goods from view to prevent imitation. Firms' learning potential should be consistent with the learning and information system for developing and enhancing core knowledge. The most crucial knowledge can only be acquired from a methodical and repeated comparison of the procedures and core competencies of "world-class" rivals operating in the same industry.

Stakeholder Theory

Edward Freeman (1984) from the University of Virginia is the leading proponent of expressing the stakeholder theory. According to Freeman, shareholders are among the many stakeholders in an association. Freeman suggested that an organization's sustainable success depends on fulfilling all stakeholder needs beyond profit from shares. The stakeholder theory states that the stakeholders are either internal or external parties who impact the company and its operations. Friedman's view shows that for sustainable positive growth of companies and the satisfaction of their shareholders, companies tend to earn profit from their operations. Accordingly, the decisions taken by the association may affect the interests of the firm's stakeholders. Ideally, the core premise of stakeholder theory is to manage and integrate the relationship and well-being of shareholders, employees, suppliers, customers, and other groups to guarantee the organization's sustainable development. The employees are also one of the crucial stakeholders of the organization, and their knowledge, capabilities, skills, and experience enhance the organization's value. As this study used human capital and customer capital as components of the Intellectual capital in the conceptual model, this stakeholder theory provides the theoretical basis for the study. The Knowledge-Based View recognizes the strategic value of knowledge assets and learning skills for organizations. Organizations can acquire a competitive edge by efficiently managing knowledge resources, fostering innovation, and generating value. Long-term worth. The Knowledge-Based View helps organizations establish knowledge-based skills for adapting to changing circumstances, improving performance, and achieving long-term success. The resource-based and knowledge-based views provide theoretical foundations for understanding how intellectual capital can create competitive advantage and contribute to superior firm performance.

Research Hypothesis Development

Several investigations have explored the correspondence between intellectual capital and financial performance in the banking sector in the local and international contexts. Kehelwalatenna (2012) shows a positive association between intellectual capital and financial

results in commercial banks. They found that banks with a higher focus on intellectual capital were more likely to achieve higher profitability with operational efficiency. This aligns with the idea that a skilled workforce and effective knowledge management can improve financial outcomes. Similarly, in their study, Tarigan (2019) found evidence for a critical positive effect of intellectual capital on financial performance. Their study highlighted the role of human capital, including customer relationship management and employee expertise, in enhancing financial results. These findings underscore the significance of human capital development and the nurturing of customer relationships as essential components of intellectual capital. Intellectual capital is also intimately linked to the overall firm value in the banking sector. The intellectual assets that the bank possesses, such as a strong brand reputation and customer trust, contribute to the overall perception of the bank's value by stakeholders and investors. Additionally, intellectual capital can influence a bank's capability to embrace changing market conditions and innovatively promote factors that investors consider when assessing firm value (Kehelwalatenna, 2012). Subramaniam and Youndt (2005) explore how the innovative capabilities of a firm are influenced by various dimensions of intellectual capital, including human capital, structural capital, and relational capital. The study reveals that a well-managed intellectual capital portfolio positively impacts firms' innovative capability, affecting firm performance. Another study examines the link between intellectual capital and firm performance, particularly regarding perceived value in the market and financial performance. It concludes that intellectual capital positively affects market value and financial performance (Chen, Cheng, & Hwang, 2005). Researchers explored the relationship between intellectual capital and business performance in the Malaysian context. They found a positive association between intellectual capital and firm performance across different industries in Malaysia (Bontis, Keow, & Richardson, 2000). Based on the information discussed above, the following hypothesis has been formulated;

H6: Financial Performance mediates the relationship between Intellectual Capital and Firm Value of Executive Level Employees in the Banking Sector in Sri Lanka.

Concerning the theoretical background, the investigator developed the following conceptual model to examine the impact of Intellectual Capital towards Firm Value via the Financial Performance of executive-level employees of the banking Sector in Sri Lanka, which was done by reviewing prior literature and existing conceptual frameworks.

This research study investigates the impact of Intellectual Capital on Firm Value and the Mediating Effect of the Financial Performance of executive-level employees in the Banking Sector in Sri Lanka. After examining all related literature, this study presents its conceptual framework and hypotheses.

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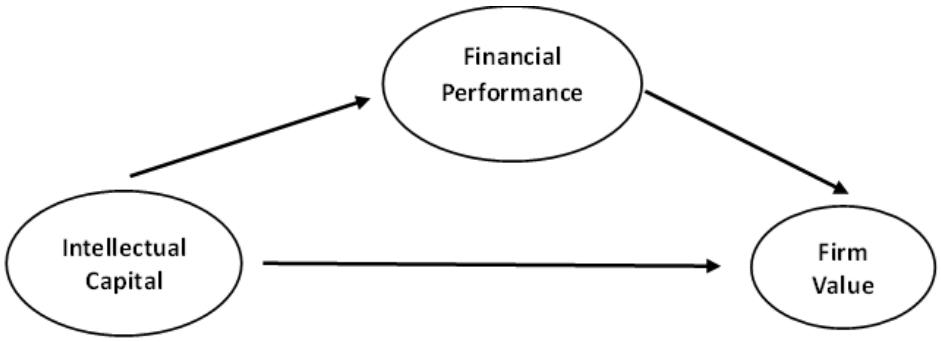

Figure 1: Conceptual Model of the Study

Methodology

For this study, researchers adopt the quantitative analytical technique to gather data because it relates to the deductive research approach. According to Wilson (2010), based on existing theories, a hypothesis will be proposed and tested based on the research strategy adopted. Moreover, the research strategy used in the study is a survey, as it fits with the deductive research approach. The initial primary data were gathered from the Managerial and executive-level employees. The data were acquired using a self-administered questionnaire developed by the researcher based on the standard measure, which the early observers validated. The investigation was carried out based on the questionnaire data gathered previously. This study consists of 44 questions, of which seven are used to gather employees' general information, 28 are used to measure Intellectual Capital, 4 to measure Firm Value, and 5 to measure Financial Performance. These questions were quantified by using a Five-Point Likert scale. SPSS - Amos 23rd version served as the selected tool for data analysis based on the features of the gathered data.

In this study, firm value is conceptualized by incorporating intangible factors influenced by intellectual capital. While firm value is often assessed using objective financial indicators, such as Return on Assets (ROA), Return on Equity (ROE), and Tobin's Q, these measures may not fully capture the influence of intangible resources, including human expertise, organizational systems, and customer relationships—key components of intellectual capital. Therefore, this study employs a subjective measurement approach, utilizing a structured questionnaire, which captures managerial perceptions and strategic impacts that may not be fully reflected in financial statements. The selection of questionnaire items is grounded in the Resource-Based View (RBV) and Stakeholder Theory, which argues that firms derive sustainable value from unique internal resources, including intellectual capital. Further, the Value Added Intellectual Coefficient (VAIC) model (Pulic, 2000) emphasizes that human, structural, and relational capital directly contributes to firm value creation, particularly in knowledge-intensive sectors like banking. Moreover, the Balanced Scorecard framework

(Kaplan & Norton, 1996) supports a multidimensional view of firm performance by integrating both financial and non-financial performance indicators, reinforcing the need to include items that reflect both tangible outcomes and intangible contributions to value. Using questionnaire items based on theory and supported by empirical studies, this research captures a holistic view of firm value that includes financial outcomes and the strategic benefits of intellectual capital. This approach is particularly appropriate in the banking sector, where intangible assets are critical in achieving sustainable competitive advantage and long-term performance.

The researcher conducted this study using 12 banks listed on the Colombo Stock Exchange. The selected banks have 1577 bank branches, and the researcher applied the Morgan Table to determine 306 units as the survey sample. The study addressed one general objective.

The principal objective of this exploratory study is to investigate the mediating effect of Financial Performance on the relationship between Intellectual Capital and the Firm value of executive-level employees in the Banking Sector in Sri Lanka.

The target research question of this study is to investigate "Whether Intellectual Capital affects the Firm Value through the financial performance of Executive level employees in the Banking Sector in Sri Lanka?". The Hypothesis of the study

H_1: Financial Performance mediates the relationship between Intellectual Capital and Firm Value.

Data Analysis

The Cronbach's alpha value exceeds 0.7 for every variable in the research, thus showing their suitability for additional analysis. The study adopted the mediation analysis from the methodology proposed by Baron & Kenny (1986). He proposed an approach with four steps to examine the mediation analysis, in which the numerous regression analyses and the significance of the coefficients are assessed in each step.

Table 1: Reliability Analysis Results of the Variables

Variable	Cronbach's Alpha	Decision Attribute
Intellectual Capital	0.817	Good Reliability
Financial Performance	0.746	Acceptable Reliability
Firm Value	0.790	Acceptable Reliability

Source: Survey Data, 2024, n=306

The follow-up steps are noted below, and those steps are performed using the collected data in the current study.

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Step 01: Investigate simple regression analysis with the independent variable predicting the dependent variable.
Step 02: Investigate simple regression analysis with the independent variable predicting the mediating variable.
Step 03: Investigate simple regression analysis with a mediating variable predicting the dependent variable.
Step 04: Investigate multiple regression analysis with Independent and mediating variables predicting the dependent variable.

Step 01: Simple Regression of Intellectual Capital and Firm Value.

Table 2: Standardized Regression Weights

			Estimate
Firm_Value	<---	Intellectual_Capital	.237

Source: Survey Data, 2024, n=306

In compliance with Table 2, the model outline indicates that the value of simple regression shows that R is 0.237 as the correlation coefficient value among Intellectual Capital and Firm Value.

Table 3: Squared Multiple Correlations

	Estimate
Firm_Value	.056

Source: Survey Data, 2024, n=306

According to Table 3, the R-squared indication value is 0.056. Therefore, it can be concluded that the Intellectual Capital Variable explained a 5.6% changeability in Firm Value. The rest of the variation of Firm Value was affected by other variables.

Table 4: Regression Weights

			Estimate	S.E.	C.R.	P	Label
Firm_Value	<---	Intellectual_Capital	.366	.086	4.259	***	

Source: Survey Data, 2024, n=306

Table 5: Intercepts

	Estimate	S.E.	C.R.	P	Label
Firm_Value	.746	.362	7.588	***	

Source: Survey Data, 2024, n=306

Here, the p-value mentioned in Table 5 is 0.000. The chosen regression model is more

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suitable for the data (p<0.01).

The β coefficient notation of Intellectual Capital is 0.366. The β coefficient indicates that growing Intellectual Capital results in a growth in Firm Value of 0.366 units. The p-value (0.000) exceeds the chosen alpha level (0.05). It highlighted that the β value for Intellectual Capital was statistically significant and noteworthy for making decisions.

Step 02: Simple Regression of Intellectual Capital and Financial Performance.

Table 6: Standardized Regression Weights

			Estimate
Financial_Performance	<---	Intellectual_Capital	.197

Source: Survey Data, 2024, n=306

In accordance with Table 6, the model synopsis determination of simple regression shows that R is 0.197 as the correlation coefficient value among Intellectual Capital and Financial Performance variables.

Table 7: Squared Multiple Correlations

	Estimate
Financial_Performance	.039

Source: Survey Data, 2024, n=306

Based on Table 7, the R square is 0.039. Therefore, it can be justified that the Intellectual Capital Variable expresses a 3.9% variation in Financial Performance. Moreover, 96.1% of the variation in Financial Performance was affected by other variables.

Table 8: Regression Weights

			Estimate	S.E.	C.R.	P	Label
Financial Performance	<---	Intellectual Capital	.261	.074	3.504	***	

Source: Survey Data, 2024, n=306

Table 9: Intercepts

	Estimate	S.E.	C.R.	P	Label
Financial_Performance	.243	.313	10.352	***	

Source: Survey Data, 2024, n=306

Accordingly, the p-value is 0.000 as represented in Table 9. Based on the conclusion drawn, it can be highlighted that the selected regression model has a strong model fit (p<0.01) for the data. The β coefficient notation for Intellectual Capital is 0.261. The β coefficient value

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indicates that for each unit of climb in Intellectual Capital, there is an increment of Financial Performance of 0.261 units. The p-value (0.000) is stated as higher compared to the chosen alpha level (0.05). It reflects that the β value for Financial Performance was numerically critical and remarkable to make management decisions.

Step 03: Simple Regression of Financial Performance and Firm Value.

Table 10: Standardized Regression Weights

			Estimate
Firm _Value	<---	Financial_Performance	.815

Source: Survey Data, 2024, n=306

In conformity with Table 10, the model summarization results represent of simple regression value, showing that R is 0.815 as the correlation coefficient value between Financial Performance and Firm Value. It signifies that it possesses a significant positive association across Financial Performance and Firm Value.

Table 11: Squared Multiple Correlations

	Estimate
Firm_Value	.665

Source: Survey Data, 2024, n=306

According to Table 11, R-squared is 0.665. Hence, the Financial Performance Variable determines a 66.5% variation in Firm Value. Moreover, 33.5% of the variation of Firm Value was affected by other undiscovered variables.

Table 12: Regression Weights

			Estimate	S.E.	C.R.	P
Firm_Value	<---	Financial_Performance	.950	.039	24.594	***

Source: Survey Data, 2024, n=306

Table 13: Intercepts

	Estimate	S.E.	C.R.	P	Label
Firm_Value	.159	.169	.942	.346	

Source: Survey Data, 2024, n=306

Here, the p-value or the significance notation in Table 13 is 0.000. Thus, we can report that the selected regression model possesses a high model fit ($p<0.01$) for the data.

The β coefficient indication value of Financial Performance is 0.950. The β coefficient indicates that every unit gain in financial performance leads to a higher firm value by 0.950 units. The p-value (0.000) is comparatively higher than the chosen alpha level (0.05).

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Accordingly, it responds that the β value for Financial Performance was statistically critical and vital in the decision-making process.

Step 04: Multiple Regression of Intellectual Capital, Financial Performance, and Firm Value.

Table 14: Standardized Regression Weights

			Estimate
Firm_Value	<---	Intellectual_Capital Financial _Performance	.819

Source: Survey Data, 2024, n=306

In compliance with Table 14, the model summarization data of multiple regression indicates that the R-value is 0.819 as the correlation coefficient value between Intellectual Capital, Financial Performance, and Firm Value. Further, it expresses that there was a well-built positive correlation between variables.

Table 15: Squared Multiple Correlations

	Estimate
Firm_Value	.671

Source: Survey Data, 2024, n=306

According to the survey results, Table 15 presents the R-squared indication of 0.671. Hence, it can be concluded that there were intellectual capital and financial performance variables, which described a 67.1% variation in firm value. Moreover, 32.9% of the variation in firm value was affected by other variables.

Table 16: Regression Weights

			Estimate	S.E.	C.R.	P
Firm_Value	<---	Intellectual_Capital	.123	.052	2.376	.017
Firm_Value	<---	Financial_Performance	.932	.039	23.869	***

Source: Survey Data, 2024, n=306

Table 17: Intercepts

	Estimate	S.E.	C.R.	P	Label
Firm_Value	.277	.248	-1.116	.264	

Source: Survey Data, 2024, n=306

Accordingly, the significant value in Table 17 is 0.000. Thus, we can conclude that the selected regression model has a strong model suitability ($p<0.01$) for the data.

The β coefficient value of Financial Performance is 0.932. The β coefficient indicates that for every unit of Financial Performance, there is an increment in Firm Value of 0.932 units. The

β coefficient indication of Intellectual Capital is 0.123. This explains that for each unit gain in Intellectual Capital, there is an increment of Firm Value in 0.123 units. The p-value (0.000) exceeds the chosen alpha level (0.05). It reflects that the β indication for Intellectual Capital and Financial Performance was statistically significant in making decisions.

Summarized results of the Structural Equation Modelling test are displayed in the following table.

Table 18: Summary of Regression Models

Detail	Model 1	Model 2	Model 3	Model 4
R	0.237	0.197	0.815	0.819
R Square	0.056	0.039	0.665	0.671
Significance	0.000	0.000	0.000	0.000
Constant	0.746	0.243	0.159	0.277
β coefficient				
Intellectual Capital	0.366	0.261		0.123
Financial Performance			0.950	0.932

Source: Survey Data, 2024, n=306

Four models were considered for the mediation calculation to pinpoint the mediating influence of Financial Performance.

Model 1, which is stated in column 1, summarizes the relationship between Intellectual Capital on Firm Value. The correlation coefficient indication of model 1 shows the value as 0.237, indicating a positive association among the concepts. R Square is 0.056. Hence, it can be decided that the Intellectual Capital mechanism accounts for 5.6% of the variation in the firm value of listed banks. As per the result, the p-value (0.000) was similar in comparison with the chosen alpha level (0.05). Hence, Intellectual Capital defines the variability of firm value. The coefficient result as per the above summary table 18, expressed when each unit is higher in Intellectual Capital, there is an increase of 0.366 units individually.

Model 2, in column 2, summarizes the relationship between Intellectual Capital on Financial Performance. The correlation Coefficient indicating value is stated as 0.197 in Model 2, and there is a complementary association. R Square is 0.039. Therefore, it is shown that 3.9% of the variability in the financial performance of listed banks is accounted for by intellectual capital. As per the result, the p-value (0.000) was similar to the target alpha level (0.05). Coefficient results indicate that for every unit of increase in Intellectual Capital, there is an increment in financial Performance of 0.261 units independently.

Model 3, which is in column 3, summarizes the relationship between financial Performance on the firm's Value. It shows that the Correlation Coefficient value of Model 3 is 0.815, indicating a high positive association. R Square value is 0.665. Hence, it can be concluded that 66.5% of the variation in the Firm Value of listed banks is accounted for by financial

performance individually, without considering Intellectual Capital. According to the result, the p-value (0.000) was similar to the target Alpha level (0.05). Hence, Financial Performance determines the variation of Firm Value individually. The coefficient result provides evidence that for each additional unit of increase in Financial Performance, there is an increment of Firm Value of 0.950 units individually.

Model 4, which is represented in column 4, summarises the association of both Intellectual Capital and Financial Performance with Firm Value. Based on the results, the Correlation Coefficient of Model 4 is stated as 0.819, indicating a considerably high positive relationship. R Square is 0.671. Hence, it is suggested that a combination of Intellectual Capital and Financial Performance accounts for 67.1% of the variation in the Firm Value of listed banks. As per the result, the p-value or the significance level (0.000) was similar to the chosen Alpha level (0.05). Hence, Intellectual Capital and Financial Performance jointly explain the variation of Firm Value. The coefficient result indicates that every unit of increase in intellectual capital increases by 0.123 units in firm value jointly. As for every unit of increase in financial performance, there is an increase in firm value of 0.932 units jointly.

Along with the results presented above, it can be inferred that financial performance partially mediates the relationship between Intellectual Capital and the Firm Value of listed banks.

Results and Discussion

To analyze whether Financial Performance mediates the relationship between Intellectual Capital and Firm Value, the following hypothesis is formulated.

H_1: Financial Performance mediates the relationship between Intellectual Capital and Firm Value.

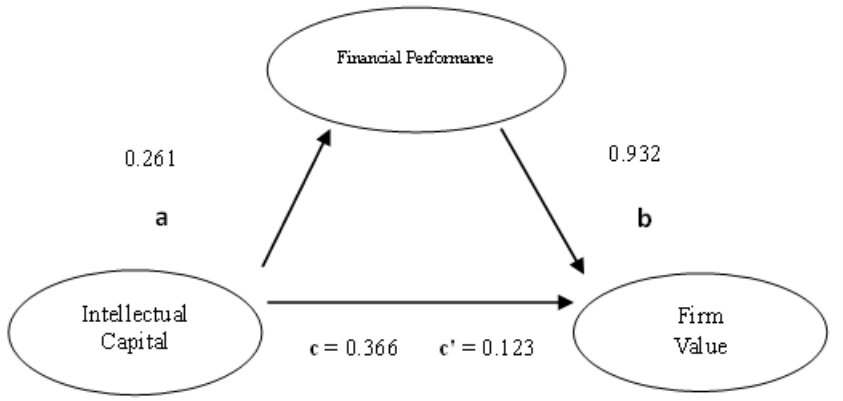

Figure 2: Coefficient Path of Variables

The current model can be recognized as a causal model, as Intellectual Capital on Firm Value

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is mediated by Financial Performance, as illustrated in Figure 2.

Here,

- A - Regression weight on Intellectual Capital when predicting Financial Performance.
- **b and c'**- are the regression weights on Financial Performance and Intellectual Capital, respectively, when both are used together to predict Firm Value.
- **c** – Regression weight on Intellectual Capital when predicting Firm Value.

The deviation between c and c' represents the mediation influence. This difference equals the product of the pathways to and from the mediator. Thus, **c–c'** = **ab**. The total effect of X on Y can be decomposed into a direct component (**c'**) and an indirect component (**ab**), **c** = **c' + ab**.

The investigator conducted the regression analysis to find the beta coefficient values of a, b, c, and c'. The regression analysis results obtained from Table 2 are indicated in Figure 2.

Table 2 provides an unstandardized regression weight of 0.366 for Intellectual Capital in predicting Firm Value; thus, **c = 0.366**. Table 4.39 represents an unstandardized regression weight of 0.261 for Intellectual Capital in predicting Financial Performance; thus, **a = 0.261**. Table 2 indicates the unstandardized regression weight of 0.932 for Financial Performance in predicting Firm Value when controlling for Intellectual Capital; thus, **b =0.932**. According to these findings, the three conditions required for the mediation have been satisfied.

To attain a complete mediation influence, it is necessary to ensure that the effect of Intellectual Capital on Firm Value is zero when controlling for Financial Performance (path **c'** in the causal model in Figure 2) to show that it is zero.

Table 2 indicates the unstandardized regression weight of 0.123 for Intellectual Capital in predicting Firm Value when controlling for Financial Performance. Hence**, c' = 0.123**. However, to attain mediation, the coefficient needs to be shown to be zero. If the entire effect of the intellectual capital operates through the mediator, the regression weight **c'** needs to be zero. If **c'** is smaller than the regression weight **c** in the first model, then Financial Performance is said to 'partially mediate' the relationship between Intellectual Capital on Firm Value.
The mediation effect can be measured by deducting the regression weight for Intellectual Capital on Firm Value when Financial Performance is included: **c – c'** = **(0.366) – (0.123) = 0.25** alternatively and equivalently (within rounding error) the mediation effect can be calculated as the multiplication of the indirect paths from Intellectual Capital to Firm Value

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through Financial Performance: **a*b = 0.261*(0.932) = 0.25**. Thus, it is equal to zero.

a*b = c–c'

0.261*(0.932) = **(**0.366) – (0.123)

The total effect is equal to the direct effect plus the indirect effect:

(0.366) = (0.123) + 0.261*(0.932) in the notation of mediation analysis: **c = c' + a*b**

As the difference is equal to zero per the mediation decision criteria, it could be concluded that Financial Performance is mediating. Further, as the indirect and direct effects are significant and point in the same direction, they possess complementary partial mediation. Moreover, this study accepted the formulated hypothesis:

Financial Performance mediates the relationship between Intellectual Capital and Firm Value.

With this finding general research objective was confirmed by accepting hypothesis H_1, financial performance mediates the association between intellectual capital and firm value.

This study's discussion so far suggests that the link between intellectual capital and firm value is mediated by financial performance, as shown in Figure 2. About the decision criteria, it can be determined that financial performance plays a mediating role. Therefore, it can be concluded that the listed banks in CSE would provide greater impulsion towards the firm value, with the intellectual capital mediating the financial performance. The research conducted by Iranmahn et al. (2014), Nuryaman (2015), and Alisufli and Safaiee (2015 showed a positive influence of intellectual capital on firm value. This contradicted the work of Bemby et al. (2015), who found a negative relationship between intellectual capital and firm value, with managerial ownership as a moderating variable.

As no past studies could be found relevant to the mediating role of financial performance in the relationship between intellectual capital and firm value, it can be concluded that this study may be the first research study concerning the mediation role of financial performance. Hence, the literature support for the mediation role of financial performance is limited in the current context.

Conclusion

The investigation outcomes indicate that Intellectual Capital has a considerable beneficial effect on Firm Value as measured by the financial performance of Sri Lanka's banking sector. In this relationship, financial performance serves a complementary, partial mediating role in the listed banks in CSE. Therefore, maintaining a considerable level of intellectual capital in Sri Lankan banks will be beneficial in boosting financial performance and ensuring the firm value of banks. Accordingly, the investigator proposes the following strategies and recommendations. The researcher proposes the following managerial consequences for the

future advancement of Intellectual Capital platforms within the banking sector. Banks should be more concerned with investing in research and development activities related to intellectual capital, which will be a future value addition for the Sri Lankan banking sector. The findings highlight that Customer capital substantially influences financial performance and business value. It is recommended that customer awareness sessions on the importance of banks be conducted, and the products of banks be promoted among customers. These strategies may enhance the firm value of the banks. Further, the study shows that financial performance plays a complementary partial mediating role in the association between intellectual capital and firm value. Therefore, the study recommends more financial investment in generating intellectual capital mechanisms.

The investigation suggests that bank leaders should exploit their knowledge acquisition and creative capabilities to boost financial performance and company value. The study found that policymakers should prioritize human and customer capital as the most significant intellectual capital for improving financial performance and business value. Stakeholders, including owners, must optimize the use of intellectual capital to enhance their commercial performance.

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ISBN: 978-624-5553-76-1

ICME 2025 "Entrepreneurial Bricolage: Steering Volatile Markets through Improvised Strategies and Innovative Thinking"
Proceedings of 14th International Conference on Management and Economics

Impact of Corporate Transparency on Firm Value: Evidence of Listed Financial Institutions in Sri Lanka

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Abstract

Transparency is an important aspect of corporate governance since it decreases information asymmetry and allows stakeholders to make more informed decisions. On the other hand, increased disclosure may also bring about various risks, such as leaking of confidential information to rival businesses. An investigation into the relationship between corporate transparency and the firm value of financial institutions that are listed on the Colombo Stock Exchange (CSE) is the focus of this research. The research makes use of Tobin's Q as a method for determining the worth of a company, and it employs financial, governance, operational, and social transparency indices as independent variables. A sample of 61 publicly listed financial companies between the years 2021 and 2023 were considered. The procedures utilized were panel data regression. While the findings indicate that social transparency has a large and favourable impact on Tobin's Q, the results also indicate that financial transparency, governance transparency, and operational transparency do not exhibit a statistically significant effect. This study contributes to the existing body of literature on corporate governance by drawing attention to the role of social transparency in the process of growing company value. Additionally, it suggests implications for policymakers and corporate stakeholders.

Keywords: Corporate Transparency, Social Transparency, Firm Value, Corporate Governance, Transparency and Disclosure Index

Introduction

Transparency is defined as ensuring accurate and timely information is given to stakeholders. Past scholars have given different definitions of corporate transparency. Availability of information is essential to minimize the information asymmetry between insiders and outsiders and to allow general investors to assess company performance (Cheung et al., 2010). Corporate transparency has been defined as the availability of firm-specific information to those outside publicly traded firms (Bushman et al., 2004). Good Transparency and disclosure practices will increase reliability, customer loyalty, improved decision making, greater

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ISBN: 978-624-5553-76-1

employee trust and better company alignment. Weak transparency may slow the organizational process, information may be misunderstood and may leave the organization open to attack.

Transparency and disclosure (T&D) procedures are crucial for stakeholders to evaluate corporate performance, allocate resources effectively, and cultivate market confidence (Fung, 2014). Nonetheless, excessive disclosure might jeopardize organizations by exposing sensitive information that may erode their competitive edge (Chahine & Filatotchev, 2008). This paradox underscores the necessity of comprehending the intricate relationship between corporate transparency and firm value, as companies must achieve a balance between sufficient disclosures and the protection of proprietary information.

Transparency and disclosure (T&D) procedures allow stakeholders to evaluate corporate performance, allocate resources efficiently, and bolster market confidence (Fung, 2014). Nonetheless, excessive transparency may compromise a firm's competitive edge (Chahine & Filatotchev, 2008).

Sri Lanka has placed heightened focus on enhancing corporate governance processes, particularly in the wake of financial crises that have highlighted the necessity for reform. In Sri Lanka, financial tragedies, such as the failures of Pramukha Savings and Development Bank and the Central Bank bond scam, have heightened apprehensions over corporate transparency (Kalainathan & Kaliaperumal, 2014). Nevertheless, the current literature regarding the relationship between corporate transparency and firm value in Sri Lanka is limited and predominantly subjective. Although research has explored the overall correlation between corporate transparency and firm value (Niruja & Balasundaram, 2020), little studies have concentrated on financial institutions—an integral sector of Sri Lanka's economy characterized by its distinct regulatory environment and governance procedures. The current study has primarily focused on broad corporate governance indices, failing to differentiate among various forms of transparency, including financial, operational, governance, and social openness.

The deficiency in current research highlights the necessity for a more focused examination of corporate transparency procedures within the Sri Lankan financial industry. Recent research, including that of Ratnayake and Rajakulanajagam (2022), examined the correlation between corporate governance and corporate transparency in Sri Lankan publicly listed firms. The study identified that audit firm size and female directorship affect corporate transparency; however, it did not particularly investigate financial institutions or consider the multifaceted dimensions of transparency (financial, operational, governance, and social) and their direct influence on company value. This disparity underscores the necessity for additional research concentrating on the unique regulatory and operational dynamics of financial institutions in Sri Lanka.

The Transparency in Corporate Reporting (TRAC) report by Transparency International Sri Lanka (2023) indicated a modest enhancement in corporate transparency among companies listed on the Colombo Stock Exchange (CSE); however, a significant deficiency in research

regarding financial institutions persists (TISL, 2023). This study aims to address this gap by analyzing the impact of diverse transparency practices: financial, governance, operational, and social on firm value within the context of Sri Lankan financial institutions listed on the Colombo Stock Exchange. The research seeks to furnish empirical information that aids policymakers, corporate executives, and investors in comprehending the significance of transparency in improving firm value inside a developing market economy.

Literature Review

Transparency is characterized by the prompt and precise dissemination of company-specific information to external stakeholders (Bushman et al., 2004). Previous studies have yielded inconclusive findings about the correlation between transparency and corporate value. Certain research indicate a beneficial effect (Chao et al., 2010; Stiglbauer, 2010), but others reveal a detrimental or negligible correlation (Kim et al., 2013; Siagian et al., 2013).

Empirical Review

Numerous scholars have examined corporate transparency from various perspectives. Bushman et al. (2004) asserted that transparency diminishes the information disparity between investors and management, facilitating improved resource allocation. Cheung et al. (2010) examined the significance of transparency as a fundamental element of investor protection, guaranteeing that financial statements accurately represent a company's performance. Vishwanath and Kaufmann (2001) contended that enhanced disclosure methods enhance market efficiency by reducing the likelihood of disinformation. Research has discovered the factors influencing corporate transparency. Patel et al. (2002) emphasized that corporate size, ownership structure, and regulatory mandates significantly influence disclosure procedures. Conversely, Fung (2014) contended that despite rigorous rules, companies might selectively reveal information to conform to managerial goals. Schulte et al. (2005) indicated that openness is associated with business reputation and consumer trust, which eventually influence firm performance. Yu et al. (2020) found that social responsibility disclosures significantly enhance firm reputation and investor sentiment in emerging markets. These findings support the conclusion that corporate transparency's effect on firm value varies based on regulatory environments and market expectations. The empirical correlation between corporate transparency and firm value has produced incongruous outcomes. Stiglbauer (2010) discovered that companies demonstrating superior transparency procedures achieved elevated market valuations in Germany. Wanjau et al. (2018) similarly established that financial and governance transparency positively influenced firm value in East African marketplaces. Kim et al. (2013) discovered that financial transparency adversely affected firm value in Korea because of the risk of revealing confidential information. Li et al. (2019) investigated Chinese corporations

ISBN: 978-624-5553-76-1

and found a negative moderating effect of corporate transparency on the financial performance of state-owned firms, indicating that excessive disclosure may not always be advantageous. Niruja and Balasundaram (2020) examined the influence of corporate transparency on firm value within the context of Sri Lanka's listed companies on the CSE. Their findings indicated a substantial correlation between overall transparency and firm value, albeit financial companies were removed from their sample. This study seeks to fill this vacuum by concentrating primarily on publicly listed financial institutions, which are governed by unique legal requirements and governance frameworks.

The literature highlights the intricacy of the relationship between transparency and firm value. Although openness often bolsters investor trust and market efficiency, its effect on firm value may differ based on industry dynamics, regulatory environments, and firm-specific attributes. This study enhances the ongoing discourse by analyzing the Sri Lankan financial sector, offering insights into the impact of transparency standards on firm value within an emerging market context.

Theoretical Review

Many researchers and scholars have tried to determine the best way to describe corporate transparency and various theories and propositions have been adapted. In Agency theory, the primary challenge of CG and the problem of principal and agent relationship are same. Jensen & Meckling (1976) argue that managers (agents) should share useful information with shareholders (principles). This help them minimize the information asymmetry between intrinsic and extrinsic stakeholders. Managers do not always work for the shareholders' interest; they also work for their own interests at the opportunity cost of the shareholders' interest. Agency costs are raised when managers and shareholders work for their own interests, and that hamper firm performance and T&D practices. The enhanced level of shareholders' rights on information may reduce the agency cost and increase the firm value (Chi, 2005).

A good sound of CG mechanisms has greater performance. When shareholders and managers have own interest, the managers can feel free to disclose useful information to the shareholders to make decisions. Jensen & Meckling (1976) found that ownership control and agency conflicts had strong associations with them. The objective of agency theory is to reduce the information asymmetry problem between agent and principle (Williams et al., 2006). Corporate governance had a positive association with the elimination of agency cost (Conyon & Schwalbach, 2000).

Thus, to reduce the asymmetry problem, companies need better T&D practices.

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Methodology

This study employs a quantitative research approach, utilizing secondary data from annual reports of 61 listed financial institutions in the CSE for the period 2021–2023. Financial institutions must adhere to rigorous disclosure and regulatory compliance standards (e.g., Basel III, CBSL norms), which directly affects their degree of corporate transparency. This renders them optimal for examining practices connected to transparency.

Conceptualization

The conceptual framework was developed to test the relationship between corporate transparency and firm value. Based on the extensive literature review presented above, it was identified that corporate transparency was the independent variable while firm value was the dependent variable. Figure 1 shows the developed conceptual framework.

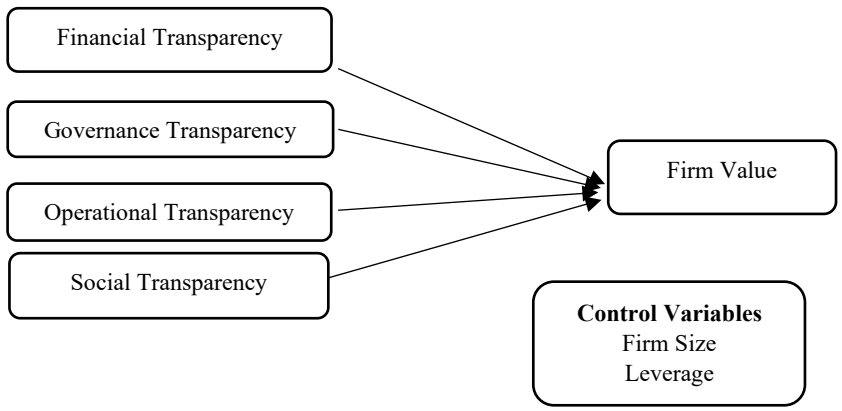

Figure 01: Conceptual framework for corporate transparency and firm value

Data Collection

The sample for the study was selected from listed financial institutions in the CSE, excluding missing data companies. Accordingly, a final sample was composed of 12 banks, 10 insurance companies and 39 finance companies listed on the CSE.

Table 01: The sample selection

	2021	2022	2023	Pooled
Banks	12	12	12	36
Insurance Companies	10	10	10	30
Financial Companies	45	45	45	135
Less: Missing data	(06)	(06)	(06)	(18)
Final sample	61	61	61	183

Note: Data collected by author in Colombo Stock exchange

Operationalization of Variables

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The corporate transparency index is constructed based on the framework proposed by Kim et al. (2013) and the 2017 Sri Lanka Code of Best Practice on CG. Tobin's Q is used as the dependent variable, while transparency indices (financial, governance, operational, and social) serve as independent variables. Firm size and leverage are included as control variables.

Table 02: Operationalization of variables

Key Concept	Variables	Measurement	Evidence
Independent Variables (Corporate Transparency)	Financial Transparency	Allocate one for each disclosed information and zero for non-disclosed information	Kim et al. (2013)
	Governance Transparency	Allocate one for each disclosed information and zero for non-disclosed information	Kim et al. (2013)
	Operational Transparency	Allocate one for each disclosed information and zero for non-disclosed information	Kim et al. (2013)
	Social Transparency	Allocate one for each disclosed information and zero for non-disclosed information	Kim et al. (2013)
Dependent Variable (Firm Value)	Tobin's Q	$\frac{\text{Market value + Total debt}}{\text{Total asset}}$	Kim et al. (2013)
Control Variable	Firm Size	Natural logarithm of total asset of firm	Kim et al. (2013)
	Leverage	Total debt / Total asset	Kim et al. (2013)

Note: Developed from the literature

$$\text{Tobin's } Q_{i,t} = \alpha + \beta\, FT_{i,t} + \beta\, GT_{i,t} + \beta\, OT_{i,t} + \beta\, ST_{i,t} + \beta\, FSIZE_{i,t} + \beta\, LEV_{i,t} + \varepsilon_{i,t}$$

α = Constant / Intercept β

$FT_{i,t}$ = Financial Transparency

$\beta\, GT_{i,t}$ = Governance Transparency

$\beta\, OT_{i,t}$ = Operational Transparency

$\beta\, ST_{i,t}$ = Social Transparency

$\beta\, LEV_{i,t}$ = leverage

$\beta\, FSIZE_{i,t}$ = Firm Size

$\varepsilon_{i,t}$ = Error term

Results and Discussion

Table 3 illustrates the descriptive statistics for the Corporate Transparency proxies such as FT, GT, OT and ST, Tobin's Q, Firm size and leverage. The Tobin's Q indicates the mean value

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of 0.998 (Std.Dev= 0.277).The CT shows the average value of 51.383 with standard deviation of 7.921. The average value explains 51% (approximately) of information disclosed by the firms.

While overlooking the sub-indices, the FT describes the average value of 50.819 with standard deviation of 5.681 and it varies among the companies from 40 to 62.5. The average value describes 51% (approximately) of FT information are disclosed by the companies. Mean value of GT is 58.864 with standard deviation 7.409. It clearly shows that most of the companies have a high disclosure rate under the GT. The OT shows the mean value of 42.584 with standard deviation of 11.619. Mean value of ST is 32.396 with standard deviation 18.27.

Table 03: Descriptive Statistics

	Observation	Mean	Maximum	Minimum	Std.Dev
Tobin's Q	183	0.998	2.109	0.385	0.277
CT	183	51.383	63.800	34.360	7.921
FT	183	50.819	62.500	40.000	5.681
GT	183	58.864	70.370	41.980	7.409
OT	183	42.584	57.140	14.290	11.619
ST	183	32.396	61.900	0.000	18.270
Firm Size	183	23.755	28.180	20.280	1.946
Leverage	183	0.619	0.955	0.000	0.327

Note: Results from the Descriptive analysis

The correlation analysis of all variables included in the study is shown in Table 4. There is statistically an insignificant relationship exists between Tobin's Q and independent variables FT and GT as the p values (0.468 and 0.492) are greater than the significance level 0.05 (p values>0.05). The correlation coefficient values indicate that there is a moderate positive relationship exists between Tobin's Q and the independent variables FT and GT as the r values of 0.066 and 0.062 respectively. There is a weak positive relationship exists OT and ST with Tobin's Q as the r value is 0.208 and 0.200 respectively. Further, the probability values show that there is statistically a significant association exists between Tobin's Q and each of the independent variables OT and ST at 2% and 2.6% respectively. Therefore, if the OT and ST disclosures increase, the Tobin's Q will be increase slightly as there is a positive relationship.

Table 04: Correlation Matrix

Note: Results from the Correlation analysis

	Tobin's Q	FT	GT	OT	ST
Tobin's Q	1.000 -----				
FT	0.0666	1.000			
	0.468	-----			
GT	0.062	0.540	1.000		
	0.492	0.000	-----		
OT	0.208	0.486	0.736	1.000	
	0.020	0.000	0.000	-----	
ST	0.200	0.524	0.832	0.836	1.000
	0.026	0.000	0.000	0.000	-----

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Hausman Test

Through the Hausman test it was identified which model fit for the analysis. Hypothesis are,

H_1: Estimators of Fixed Effect and Random Effect do not yield identical results

The results of the Hausman test are as follows,

Table 05: Hausman test

Test Summary Cross-section	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
random	0.0000	8	1.000

Note: Results from the **Hausman** analysis

The table show the results of the hausman test, the p-value is higher than 5%. There were insufficient reason to reject null hypothesis. Thus, null hypothesis is accepted. Thus, random effect model is fit for this study.

Table 06: Regression Results

Variable	Coefficient	Std. Error	t-Statistic	p-Value
Financial Transparency	0.012	0.014	0.85	0.398
Governance Transparency	0.021	0.018	1.16	0.251
Operational Transparency	0.008	0.013	0.62	0.537
Social Transparency	0.075	0.022	3.41	0.002
Firm Size	0.029	0.015	1.93	0.068
Leverage	-0.014	0.012	-1.17	0.245

Note: Results from the Regression analysis

Social transparency shows a significant positive impact on Tobin's Q indicating that firms with higher levels of social transparency tend to have higher firm value. This suggests that companies engaging in transparent corporate social responsibility (CSR) activities and ethical business practices are perceived as more valuable by investors and stakeholders. The strong relationship aligns with the signaling theory, where firms signal credibility and long-term commitment through social transparency, attracting investor confidence.

The coefficient for financial transparency (β = 0.012, p = 0.398) is positive but statistically insignificant, indicating that financial disclosure alone does not significantly impact firm value. This may be due to the mandatory nature of financial disclosures, meaning investors already expect this level of transparency, reducing its incremental effect on valuation. Additionally, excessive financial disclosure could expose firms to competitive risks, limiting its direct benefit to firm value. Governance transparency has a coefficient of 0.021 (p = 0.251), indicating a positive but statistically insignificant relationship with firm value. While governance transparency strengthens investor trust and reduces agency conflicts, the lack of a strong direct

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effect could suggest that other governance mechanisms, such as board structure and shareholder rights, may play a more dominant role in influencing firm value.

The regression results show that operational transparency (β = 0.008, p = 0.537) does not have a statistically significant impact on firm value. Since operational transparency relates to business processes, product offerings, and customer relations, its limited impact may stem from the fact that investors prioritize financial and governance information over operational disclosures. However, operational transparency may still contribute indirectly to firm value through improved customer perceptions and long-term brand equity.

Firm size has a positive coefficient (β = 0.029, p = 0.068), indicating that larger firms tend to have higher Tobin's Q. Although marginally insignificant, this suggests that economies of scale, market dominance, and enhanced investor confidence in larger firms contribute to their higher valuation. The negative coefficient for leverage (β = -0.014, p = 0.245) suggests that highly leveraged firms tend to have lower firm value, though this effect is not statistically significant. This aligns with the idea that higher debt levels may introduce financial risk, potentially lowering investor confidence in firm sustainability.

Conclusion

This study provides crucial empirical evidence on how corporate transparency impact the Sri Lanka's financial sector's firm value. Social transparency is a substantial and positive indicator of firm value across financial, governance, operational, and social transparency. Corporate Social Responsibility (CSR) and ethical disclosures are increasingly important in stakeholder views and market credibility.

Contrary to popular belief, financial, governance, and operational transparency usually required by law, did not directly affect a firm's value. This shows that regulatory transparency is necessary for fundamental accountability but not enough for investors and stakeholders to value the firm. Focusing on voluntary disclosures, especially in ethical and social areas, boosts a company's credibility.

These findings support Agency Theory (Jensen & Meckling, 1976) by showing that social transparency reduces knowledge asymmetry and manager-shareholder disputes. Signaling Theory (Spence, 1973) states that firms that fully disclose their CSR efforts and ethical commitments send credible and beneficial signals to the market, increasing investor trust and market value.

The findings show that regulators and standard-setters must go beyond financial reporting laws to require or incentivize CSR and sustainability reporting. Social transparency's strategic importance requires governance reform. This will ensure corporations follow regulations and show social responsibility.

The analysis convinces investors to include CSR performance criteria in addition to financial and governance disclosures. Social initiatives like employee welfare, environmental

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sustainability, and ethical company practices should not be considered mandatory. They should see them as revenue-generating. Financial and other companies must realize the importance of social transparency in building brand equity, engaging stakeholders, and gaining a competitive edge. Integrating corporate social responsibility into a company's strategy and communicating these initiatives to the public in a clear and credible manner can boost reputation and financial performance.

Further research is needed on the effects of transparency characteristics across industries, especially in non-financial sectors where CSR efforts differ. Qualitative insights from regulators, investors, and employees may help us understand how transparency strategies are perceived and valued across organizational contexts. This study shows that social transparency is a key factor in a firm's value in the present investing landscape, where people are more aware of social and economic issues.

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ISBN: 978-624-5553-76-1

The Impact of Data Infrastructure, Management, and Technology on Business Analytics Usage in the Sri Lankan Banking Sector

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Abstract

Business analytics has become a powerful tool worldwide for data-driven decision making. However, the banking sector of Sri Lanka is still adapting to advanced analytical tools and is facing several challenges. Additionally, it is rare to find studies from the Sri Lankan context that attempt to identify the relationship between the technological context and business analytics usage (BAU). Thus, this research was conducted to investigate the interplay between BAU and three key technological dimensions in the form of Data-Related Infrastructure Capabilities (DIC), Data Management Challenges (DMC), and Technology Supporting Infrastructure (TSI). To achieve this objective, a quantitative method with a deductive approach is employed. A structured questionnaire with five-point Likert scale items was distributed among a sample of 220 bank employees in Sri Lanka. Structural Equation Modeling (SEM) was employed as the primary analysis technique. The findings reveal that DIC, DMC, and TSI all positively and significantly impact BAU. DMC emerged as the most influential factor, followed by TSI. These insights provide valuable implications for managerial decision-makers in the banking industry, guiding them to implement business analytics tools within their organizations. This study offers the basis for further studies to examine the broader frameworks of technological adoptions in financial institutions in Sri Lanka, in which they can consider technological dimensions as moderators or mediators.

Keywords: *Business Analytics, Data Management Challenges, Data-related infrastructure Capabilities, Sri Lankan Banking Sector, Technology supporting infrastructure*

Introduction

Today, Business Analytics (BA) has played a game-changer. This makes banking operations more efficient and improves the experience of the customers. There has been growing focus on how BA is effective, because the effectiveness of BA is directly linked to the technological infrastructure and data management practices, as noted by financial institutions (Armbrust et

al, 2010). Banks implement analytics tools within these technological contexts to adapt quickly to real-time information changes and to make intelligent decisions (Chen et al., 2012). Some banks have invested in advanced IT systems and staff, while others continue to lag as they use outmoded technologies (Gangwar, 2020). There is a substantial difference in the adoption of BA between successful and unsuccessful banks; this difference raises some vital questions: Why have some banks successfully adopted BA while others have not? What role does using data infrastructure and management practices play in exploiting the power of BA? Thus, this research aimed to understand the impact of data infrastructure capabilities, technology supporting infrastructure, and data management challenges on business analytics usage.

In general, this research makes several contributions. It theoretically investigates the association between BA adoption and technological contexts in Sri Lanka. It contributes to the literature of banking analytics, addressing an untouched area in the Sri Lankan context. Findings provide managerially valuable insights for banking practitioners to optimize their technological capabilities and enhance BA practices. Commercial banks can use advanced analytics to better respond to the changing customer needs and improve risk management strategies. This study aims to direct Sri Lankan banks to formulate efficient strategies under industry technological developments.

Although recent research describes critical success factors in business analytics (BA) and intelligent systems, a significant gap in analysis depth is observed regarding the technological context underpinning the success factors. More specifically, there is a lack of empirical studies on BA in emerging economies, including Sri Lanka (Kaluarachchi, 2024). The current study has filled this gap by considering the use of business intelligence (BI) in the banking sector of Sri Lanka. Despite the presence of 24 licensed commercial banks in Sri Lanka, only 22 institutions have been able to incorporate BA fully throughout their business operations. However, due to this limited adoption, banks cannot improve operational efficiency and customer experience (Mohammad et al., 2022; Rodrigo et al., 2024). Although most people recognize the value of BA, many banks struggle to use data to make strategic decisions, which makes them eventually underperform and become less competitive (Dilusha, 2024). Big data technologies have not yet been widely introduced to the financial industry of Sri Lanka, and it was discovered that the lack of modern technological infrastructure and regulatory frameworks creates barriers to adopting innovative software and analytics tools (Surangi & Sellathurai, 2022). Past BA and BI deployment studies have mainly concentrated on establishing critical success factors and operational issues. However, none of these studies have considered the importance of technological context and its attributes. Furthermore, much of the existing literature focuses on data infrastructure and technology in isolation, with no specific combined impact on the BAU (Chen & Siau, 2020). Moreover, there is still no large-scale comparative research between banking institutions in Sri Lanka, which would provide information on good practices and the most frequent obstacles (Jayasinghe, 2022). The study seeks to determine

how technological context affects the implementation of business analytics (BA) in the banking industry of Sri Lanka, given that technology is paramount in streamlining operations and customer experience. In particular, the study focuses on the lack of empirical research on how banks can successfully utilize technological capabilities to optimize BA practices and enhance the overall performance in a competitive environment.

Literature review

Business Analytics Usage

Banks can use analytics to process vast quantities of data and gain actionable insights, which will result in more enlightened strategic decisions (He et al., 2022). In addition, analytics offers the process of continuous performance monitoring, and therefore, banks are capable of identifying the potential for improvement and promptly responding to market changes (Klatt et al., 2011). For instance, customer analytics may enhance personalized banking experiences, thereby enhancing customer loyalty and satisfaction (Rodrigo et al., 2024).

Technological Context

The technological context covers the infrastructure and the capabilities to collect, store, process, and analyze data. The adoption and effectiveness of BA are strongly dependent on the technological context (Mohammad et al., 2022). The role of the technological context in the banking sector is a key factor in the adoption and effectiveness of BAU (Rajapaksha et al., 2022). That includes integrating the advanced analytics tools that support real-time data processing and generation of insights. Second, managing and maintaining high-quality data is essential because effective BA initiatives cannot be started without high-quality data. With technological advancements in this fast-evolving digital landscape, banks are now able to speed up operational efficiency, improve customer experience, and stay competitive in the market (Mohammad et al., 2022). Results from studies indicate that a good technological environment facilitates the adoption and effectiveness of analytics in banking (Rahman, 2023). For example, banks with a sound data management system can better use analytics in strategic decision-making. On the other hand, poor infrastructure can lead to missed opportunities and poor analytics utilization (Mohammad et al., 2022).

The technological context comprises several critical dimensions that impact BAU.

Data-related infrastructure capabilities

Data-related infrastructure capabilities encompass the systems that facilitate data storage, security, and quality. In banking, where data integrity is paramount, a robust data infrastructure is crucial (Mohammad et al., 2022). Effective data management ensures that the data utilized for analytics is accurate and reliable, directly impacting the quality of insights derived from BA (Hopkins et al., 2010). Research indicates that banks with strong data

ISBN: 978-624-5553-76-1

infrastructure are better positioned to leverage analytics for strategic decision-making, thereby improving customer service and trust (Rahman, 2023).

H_1: There is a significant impact of DIC on the BAU.

Technology supporting infrastructure

The technology-supporting infrastructure consists of essential systems and technologies that enable seamless data sharing and integration, along with the analysis of different banking operations, which could help to enhance decision-making and operational efficiency (Bandaranayake & Jayasinghe, 2013). The studies have shown that organizations with a well-developed technological infrastructure have a higher level of analytics adoption, and they generally translate their performance metrics (Klatt et al., 2011). The analysis of the Sri Lankan context reveals that banks that invest in modern IT systems are more likely to utilize analytics for marketing and operational improvement (Rahman, 2023).

H_2: There is a significant impact of TSI on the BAU.

Data management challenges

Difficulties hamper the performance of many banks in managing data, such as data integration, quality, and governance (He et al, 2022). These challenges can impair the effective use of analytics and, in turn, be detrimental to employing them for better performance and customer satisfaction (Mohammad et al., 2022). One example is if banks utilize fragmented data systems, they may find their data of poor quality, and cannot see a comprehensive picture of their customer across the bank. Banks must address these challenges to enhance their analytics capability further and achieve good outcomes (Hopkins et al., 2010).

H_3: There is a significant impact of DMC on the BAU.

Methods

In this research, a quantitative, cross-sectional method of investigation was used to determine the factors that influence BAU in the Sri Lankan banking sector. This approach is grounded in positivism and permits a statistical description of the population and the sample characteristics without alterations of variables (Ishtiaq, 2019). The population comprises all licensed commercial banks in Sri Lanka (Rahman, 2023). The sample unit of the study is banks, and the study's sample covers the entire population since 22 banks out of 24 have been considered for data collection. Two banks were excluded due to non-engagement in BA. Participants were selected using a purposive sampling technique with a background of having relevant expertise in BA. The methodology of this study was selected to guarantee that the respondents possessed the knowledge to provide valuable insights on banking operations. A representative sample of managerial-level employees was approached across departments such as Information Technology, Operations, Finance, and Customer Services. 264 questionnaires were distributed, and 220 responses were collected, providing a response rate of about 83.3%. The questionnaire

was designed to capture data on two main areas: BAU in the technological context. The questionnaire involved closed-ended and 5-point Likert scale questions. Before undertaking the main data collection, a pilot test with 108 respondents from the same background was performed to refine the questionnaire. Adjustments were made to the wording of questions based on feedback from the pilot test to refine for clarity and relevancy. Cronbach's alpha was used to assess reliability, which means the constructs were consistent and reliable.

Before data collection, ethical approval was obtained and informed consent was secured from all participants. The research process was confidential, and participants were assured it would be voluntary. Structural Equation Modeling (SEM) is used to analyze data in testing such complex relationships between observed variables and one or more latent variables to test the predetermined hypotheses (Bandaranayake & Jayasinghe, 2013). SEM is more appropriate than traditional regression analysis in a framework with multidimensional variables. The Smart-PLS software was used to generate graphical output of the structural model, and the relation among latent variables is shown through outer loadings for each item. Additionally, this analytical tool allowed the bootstrapping of the sample size of 220 participants to establish validity and reliability in the measurement model and to test significance.

Table 01: Operationalization of Variables

Independent Variables	Definition of the Variable	Dimension	Source
DIC	The level of automation of banking systems and the effective use of data to solve problematic issues and support decision-making.	• System automation • Problem solving • Use of data in decision making • Flexibility of the data analysis process	(Mohammad et al., 2022)
TSI	The structure of the technological resources and capabilities that facilitate the effective running of banking operations	• Human Qualifications • Security • Availability of Digital technology • Enhancement of Information flow • System Compatibility.	(Mohammad et al., 2022)
DMC	The challenges and constraints facing the proper management of data and information systems in the bank	• Satisfaction of beneficiary requirements • Technological conformance • Administrative competence • Effectiveness in performance • Effective communication	(Mohammad et al., 2022)
Dependent Variable	Definition of the Variable	Dimension	Source
BA	The degree of the use of the business	• BA program efficacy	(Mohammad et al., 2022)

ISBN: 978-624-5553-76-1

	analytics programs to improve the decision-making process, the effectiveness of operations, and data management in the bank.	• Data-driven decision-making • BA tool Satisfaction • Data modeling methods

Source: Authors' Compilation

Descriptive Statistics

Descriptive statistics for the constructs, with means, standard deviations, and ranges, are shown in Table 02. BA has the highest mean value (3.92), and TSI has the lowest (3.47). All constructs have standard deviations within the same range (0.81 to 0.89), indicating consistent variability. All constructs have minimum and maximum values of 1 and 5, respectively, to ensure the accuracy of the dataset.

Table 02: Descriptive Statistics Table

Variable	Mean	Standard Deviation	Minimum	Maximum
BA	3.92	0.81	1	5
DIC	3.60	0.86	1	5
TSI	3.47	0.89	1	5
DMC	3.62	0.87	1	5

Source: Survey Data, 2025

Results and Discussion

The findings of this research were illustrated as part of the measurement and structural models through value outcomes derived from Smart PLS by applying SEM to perform analysis. The results show a positive outcome, thus validating and confirming the tested hypotheses.

Measurement Model

Factor Loadings and Construct Reliability and Validity

The application of latent variables and correlations to observed indicators is called outer loadings in Smart PLS. The analysis results showed that all four variables passed the necessary thresholds, thus allowing for the integrity of the methodology. Moreover, Cronbach's alpha and Average Variance Extracted (AVE) were used to evaluate the reliability of such values.

Table 03: Factor Loadings and Construct Reliability & Validity

Construct	Items	Outer Loadings	Cronbach's alpha	Average Variance Extracted (AVE)	Convergent Validity
BA	BA_1	0.853	0.921	0.716	Established
	BA_2	0.903			
	BA_3	0.880			
	BA_4	0.816			
	BA_5	0.813			
	BA_6	0.808			

DIC	DIC_1	0.873	0.916	0.799	Established
	DIC_2	0.909			
	DIC_3	0.887			
	DIC_4	0.906			
DMC	DMC_1	0.823	0.926	0.772	Established
	DMC_2	0.871			
	DMC_3	0.891			
	DMC_4	0.897			
	DMC_5	0.910			
TSI	TSI_1	0.842	0.910	0.735	Established
	TSI_2	0.884			
	TSI_3	0.763			
	TSI_4	0.896			
	TSI_5	0.894			

Source: Results from Smart PLS.

The most commonly used reliability measurement technique is Cronbach's alpha value. Cronbach's alpha value ≥ 0.6 is acceptable (Tavakol, 2017). The constructs are analyzed and revealed with strong internal consistency; all Cronbach's alpha values are greater than 0.9, which is considered good. Composite Reliability values support the robustness of these constructions. Nevertheless, some Average Variance Extracted (AVE) values fall slightly below the recommended threshold of 0.85. This suggests that although the constructions are reliable, the outer loadings shown in the table are robust. The outer loadings for all indicators are above the threshold of 0.70, which indicates BA, DIC, TSI, and DMC as strong measures. Overall, the outer loadings of these loadings show that all indicators measure respective latent variables and thus underline the validity of the path model.

Discriminant Validity

Table 04: HTMT Values

	BA	DIC	DMC	TSI
BA				
DIC	0.514			
DMC	0.531	0.826		
TSI	0.449	0.440	0.446	

Source: Results from Smart PLS.

The HTMT values provide insights into the relationships among the constructs. HTMT values from 0.440 to 0.826 are obtained. Despite these values being close to the 0.85 threshold, they remain within the acceptable range, indicating moderate discriminant validity. This implies that the constructs are sufficiently distinct from one another.

Model Fit

The results of the fit indices for the saturated and estimated models are summarized in Table 05 below.

Table 05: Model Fit Values

	Saturated model	Estimated model
SRMR	0.058	0.058
d_ULS	0.707	0.707
d_G	0.394	0.394
Chi-square	495.283	495.283
NFI	0.869	0.869

Source: Results from Smart PLS.

The fit indices indicate that the fitted model is nearly as good as the saturated model, and both cases have an acceptable fit to the data. Notably, the SRMR value of 0.058 represents a good fit, if a value of less than 0.08 is considered to be acceptable (Boumidouna, 2023). This is indicated by the Chi-square statistic value and the NFI value of 0.869, which is close to the acceptable threshold value of 0.90, a reasonably good value.

Structural Model

Variance- R-squared Values

The R-squared values indicate that the model explains a significant variance in the dependent variable, BA, with the independent variables. R-squared value of 0.318 shows that the independent variables included in the model explain a moderate amount of variance in BA, 31.8%. The model's effectiveness in professional practice is further supported by the adjusted R-squared value of 0.309.

F-square Values

The values of f-squared give information on the magnitude of the independent variables on BA. As presented in the matrix, the effect size of DIC on BA is 0.021, which is considered small. DMC exhibits a slightly higher effect size of 0.038. In contrast, TSI has a moderate effect size of 0.068, indicating that these constructs have a greater influence on enhancing BA utilization in the model.

Path Coefficient Results

The results presented in Table 06 provide valuable insights into the study context's relationships between independent and dependent variables. Based on the result obtained, hypothesis testing can be conducted as explained below.

Table 06: Value Path Coefficients

Hypothesis	Path	Original sample (O)	Sample mean (M)	Standard deviation	T statistics	P values	Significance / Decision
H_1	DIC →BA	0.188	0.189	0.080	2.340	0.019	Significant / Supported
H_2	TSI →BA	0.240	0.244	0.090	2.679	0.007	Significant / Supported

ISBN: 978-624-5553-76-1

H_3	DMC→BA	0.254	0.255	0.093	2.725	0.006	Significant / Supported

Source: Results from Smart PLS.

Based on the path coefficient analysis, results indicate that all three hypotheses were supported; the relationships were statistically significant. H_1 studied the impact of DIC on BA. As per Table 06 the results show that DIC (β=0.188; p < 0.05) have positive impact on BA. It proves the existence of a statistically significant positive impact of DIC on BA. Banks with better data infrastructure are better positioned to leverage analytics to drive decision-making. H2 studied the impact of TSI on BA. As per Table 06, the results show that TSI (β=0.240; p < 0.05) has a positive significant impact on BA. It proves the existence of a statistically significant positive impact of TSI on BA. Finally, H_3 studied the impact of DMC on BA. As per Table 06, DMC (β=0.254; p < 0.05) positively and significantly impacts BA. The implication is that the usage of analytics in the banking sector can be maximized if challenges in data management are resolved.

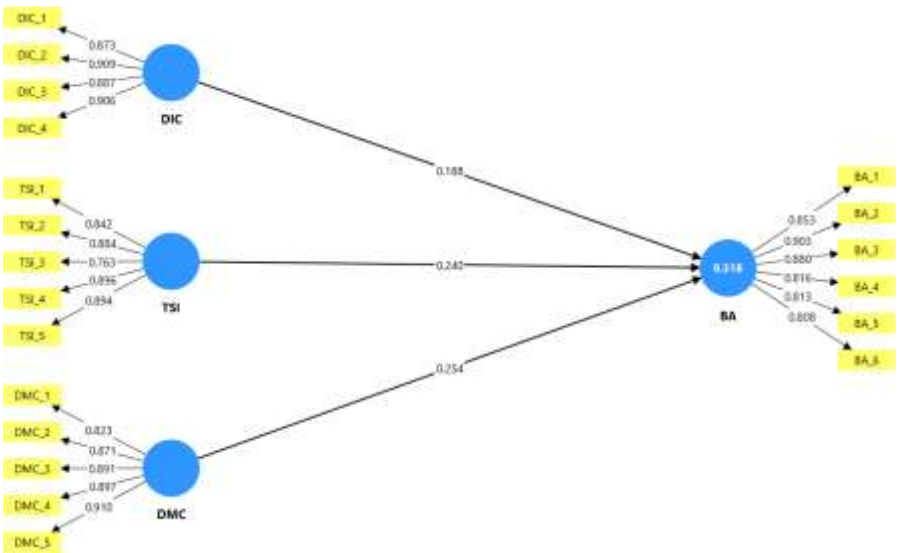

Figure 01: Structural Model

Discussion

Findings provide important insights into the factors that lead to the adoption of BA within the banking sector of Sri Lanka. However, tracking how various components contribute to practical analytics usage is essential as the banking industry transitions to realize analytics and make smarter operational decisions. In this study, three technological factors relevant to BAU were investigated, and it was found that in the study context, DMC is the most impactful factor on

the BA, with the highest significant path coefficient. This finding emphasizes the need to tackle data management issues, including data quality, integration, and accessibility, to optimize analytics. For instance, organizations that instigate well-defined data governance frameworks can easily achieve good data quality and consistency, resulting in better analytical outcomes. For this reason, banks could initiate staff training, implement advanced data management tools, etc. (Rodrigo et al., 2024). Additionally, researchers discovered several challenges behind the advanced analytics tools' usage, such as a lack of advanced technologies, privacy issues, and implementation issues in terms of cost and skills (Bose, 2009). Also, a study that focused on Jordan Arab Bank showed that DMC significantly impacts BAU (Klatt et al., 2011). The second most impactful attribute in a technological context is TSI, as per the findings of this study. IT-related infrastructure can especially handle advanced analytics tools and processes. Investment in systems upgrades and effective data governance facilitates better analytical capabilities and decision-making (Rajapaksha et al., 2022). Similarly, in the Jordanian banking industry, IT-related infrastructure has been identified as an important factor that influences the BI usage (Al-Okaily et al., 2022). Banks must continuously invest in technology-supporting infrastructure to be competitive in the fast-changing financial landscape. Banks can deliver both improved operational efficiency and innovative service offerings by using advanced analytics tools (Rajapaksha et al., 2022). The third most significant attribute for BA is the DIC in the Sri Lankan context. Thus, banks with stronger data infrastructure are likely to be able to use data analytics for enhanced informed decision-making. This capability creates value for improving customer satisfaction and creating loyalty. Hence, banks should invest more in their data infrastructure to fully utilize analytics. Impact of DIC on BAU was also investigated, and there is a positive and significant impact of DIC on BA in the context of the banking sector in Jordan (Klatt et al., 2011). The model developed for the big data analytics capabilities and the competitive performances discussed also showed a significant impact of DIC on BAU. Thus, it is clear how technology enables analytics for the betterment of the banking industry (Mikalef et al., 2020).

The study mainly provides implications for the decision makers in Sri Lanka's banking industry. For banks that are still adapting to BA and upgrading existing BA tools for cloud use, this finding is to ensure fruitful outcomes in future projects. This has found that banks should focus on the technological context, including DMC, TSI, and DIC. Further, Managers should understand that the importance of prioritizing and investing more in advanced technology and a data-driven culture by banks would help improve decision-making and operational efficiency.

Limitations and Future Research

The limitation of this study is that it focuses on the banking sector of Sri Lanka, which may decrease the generalizability of the findings to other industries or regions. Future research could test these findings in the context of different sectors and/or countries to understand the

role of data infrastructure and analytics. Furthermore, longitudinal studies can also give us valuable information about how these factors change over time and their long-term impact on business performance. In addition, exploring the organizational culture's role in adopting data analytics would give practitioners valuable insights.

Conclusion

This study focuses on the crucial contribution of DIC, DMC, and TSI in influencing the usage of the BAU in the Sri Lankan banking sector. Findings highlight that robust data infrastructure and technology support are required to implement analytics effectively. At the same time, data management issues must be tackled for data analytics to use data most efficiently. Given the progress of the banking sector in its evolution, these areas will become critical in driving innovation, improving customer experience, and retaining competitive advantage in the world of increased data. Future research may investigate the consequences of these technological investments on future overall banking performance and satisfaction.

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Financial Literacy and Financial Wellbeing - Empirical Evidence from Recent Graduates in Jaffna

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Abstract

Financial literacy and financial well-being are crucial aspects of individuals' economic empowerment and overall quality of life. The study aims to investigate the impact of financial literacy and its dimensions, namely financial knowledge, financial behaviour, and financial attitude, on financial well-being among recent graduates in the Jaffna district. In addition, the study examines whether there is a difference in financial literacy levels between graduates who have received personal financial education and those who have not. Stratified sampling was used to select the sample, and over 200 questionnaires were distributed via social media, resulting in 125 respondents. Utilizing correlation analysis and multiple regression analysis with SPSS, the study found a significant positive relationship between overall financial literacy and financial well-being. Additionally, financial knowledge, behaviour, and attitude each demonstrated a significant positive impact on financial well-being. Further, the research revealed that graduates lacking personal financial education exhibit lower financial literacy levels than their counterparts with such education. These findings underscore the importance of integrating personal finance courses into educational curricula to enhance financial literacy and well-being among graduates.

Keywords: *Behavioural economics, financial attitude, Financial behaviour, Financial knowledge, Financial literacy, Financial well-being*

Introduction

The global financial landscape has evolved dramatically over recent decades, shaped by technological innovation, consumer credit expansion, and growing economic uncertainty. These structural changes have introduced new opportunities for financial participation and imposed unprecedented cognitive and behavioural demands on individual decision-makers. In particular, young adults who are at a transitional life stage are increasingly required to independently manage borrowing, saving, investing, and retirement planning, often with

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ISBN: 978-624-5553-76-1

limited guidance or experience (Lusardi & Mitchell, 2014; Yakoboski et al., 2023; Goyal et al., 2023).

Successfully navigating this complex financial environment demands more than conventional education or stable income. It required individuals to access, interpret, and critically evaluate financial information and to exercise the confidence and self-discipline needed to make sound decisions in contexts marked by uncertainty, risk, and delayed outcomes (Yakoboski et al., 2023; OECD, 2023). This essential capacity, called financial literacy, has become a cornerstone of individual economic empowerment and resilience. While early definitions emphasized basic numeracy and budgeting, contemporary frameworks advance a multidimensional model that includes financial knowledge (what individuals know), financial behaviour (how individuals act), and financial attitude (what individuals feel about money) (OECD, 2023; Atkinson & Messy, 2012).

These three dimensions are now widely acknowledged as distinct but interrelated drivers of financial well-being. For instance, financial knowledge enables informed decisions, financial behaviour reflects the practical execution of those decisions, and financial attitude captures the motivational and psychological readiness to act (Goyal et al., 2023; Yakoboski et al., 2023). Empirical studies increasingly confirm that financial well-being is not determined solely by what individuals know but by the interplay of their habits and mindsets. Gangal et al. (2024) find that even modest financial education interventions can significantly improve budgeting, debt management, and future planning, especially among youth populations. These findings highlight that effective financial literacy policies and interventions must address all three dimensions holistically, rather than solely on knowledge transfer.

While global evidence affirms the multidimensional structure of financial literacy, its implications are significant in developing economies like Sri Lanka, where youth and recent graduates face heightened financial vulnerability. The economic disruptions following Sri Lanka's 2022 sovereign debt crisis, marked by currency devaluation, rising living costs and persistent underemployment, have increased pressures on young individuals to make independent financial decisions with limited institutional support (Central Bank of Sri Lanka, 2023). Although national strategies have improved access to financial services, gaps remain in the quality of financial decision-making, especially among those transitioning from an academic setting to economic independence, where they need to manage student loans, initiate saving, and make key investment decisions (Senarathna & Anuradha, 2024; Heenkenda, 2014). These challenges are further compounded in post-conflict regions where long-standing infrastructural deficits and lower financial inclusion hinder the development of financial capabilities. Empirical findings suggest that core competencies such as budgeting, saving, and debt management remain weak even among university graduates. For example, Senarathna and Anuradha (2024) found that many undergraduates lacked even basic knowledge of interest rates or repayment terms, and few exhibited proactive financial behaviours. Financial attitudes

such as confidence, self-control, and planning orientation were also found to be underdeveloped, particularly in rural or disadvantaged areas (GIZ, 2021; Thilakarathna et al., 2025).

Moreover, the growing availability of digital platforms has not been matched by improvements in digital financial literacy, resulting in a gap between access to financial tools and the competence to use them effectively. These contextual challenges necessitate a focused empirical investigation into how financial literacy, measured across its three core dimensions, affects financial well-being outcomes among young adults in this setting.

To better understand and address these challenges, scholars have proposed multidimensional models of financial literacy that go beyond basic economic knowledge. For example, Kimiyaghalam and Safari (2015) emphasize the importance of evaluating financial literacy through an integrated framework that includes conceptual understanding, personal finance management skills, decision-making ability, and confidence in planning for future financial needs. These dimensions are interrelated and jointly contribute to financial capacity, essential for managing financial demands in increasingly volatile socio-economic contexts.

Furthermore, financial literacy is closely tied to observable financial behaviour. Empirical research confirms that positive habits such as disciplined spending, regular saving, and prudent debt management are critical for long-term financial attitudes. Individuals' psychological orientations toward money, including self-control, planning horizon, and confidence, significantly shape financial outcomes (Bhushan & Medury, 2014). Fostering constructive financial attitudes has become a key focus in modern financial education initiatives.

Recent theoretical advances also position financial well-being as a composite outcome of knowledge, behaviour, and attitude. For instance, Brüggen et al. (2017) and Zemtsov and Osipova (2016) argue that financial well-being is not an objective state of economic sufficiency, but also a subjective perception of one's ability to meet current and future financial needs. This dualistic view acknowledges that even stable-income individuals may experience financial distress if they lack the behavioural tools or psychological resilience to manage uncertainty. Salignac et al. (2020) further suggest that financial well-being is dynamic and context-dependent, shaped by personal experiences, life stage, institutional factors, and broader socio-economic conditions.

Young adults worldwide continue to demonstrate substantial financial literacy gaps, which hinder their financial well-being. For instance, surveys have found that only about 27% of young adults can correctly answer basic questions on interest, inflation, and risk diversification (Mitchell et al., 2011) and incoming college freshmen have scored as low as 35% on average on financial knowledge tests (Robb & Sharpe, 2009). Such findings highlight that many recent graduates with inadequate personal finance knowledge enter the workforce. This lack of practical financial savvy has real consequences. Graduates often accumulate significant debt

early on, leaving college with an average of USD 20,000 in student loans and credit card debt. This burden can seriously strain their post-graduation finances. (Robb & Sharpe, 2009). Compounding the issue, many young people struggle with poor financial behaviours, for example, carrying high credit balances or missing payments, which further jeopardize their financial stability (Robb & Sharpe, 2009). These past patterns point to a persistent problem. Despite greater public attention to financial literacy in recent years, many emerging adults are not effectively translating financial knowledge into sound financial decision-making.

One response to this challenge has been to promote personal finance education in schools and universities. However, evidence of its effectiveness has been mixed. Early studies raised concerns that simply mandating financial education may not guarantee better outcomes. For example, a longitudinal USA study found that completing a high school personal fiancé course did not significantly improve students' financial behaviours or knowledge retention (Mandell, 2008). This suggests that existing curricula often fail to bridge the gap between theoretical knowledge and real-world financial competence, resulting in ongoing issues like poor debt management, insufficient savings, and limited planning for investment in young adulthood. On the other hand, more recent research offers a more optimistic perspective where meta-analyses of financial education programs indicate that well-designed programs can produce significant gains in participants' financial knowledge and behaviours (Kaiser & Menkhoff, 2017). In particular, programs timed at “teachable moments” (eg- before starting a job or graduating) and with sufficient intensity tend to yield positive outcomes behaviours (Kaiser & Menkhoff, 2017). This discrepancy in findings highlights the need to examine whether financial education is provided, how and when it is delivered, and what complementary factors (such as hands-on experience or mentoring) might be necessary to make financial literacy actionable for young people.

The issue of financial literacy is especially salient in developing economies and post-conflict regions. Recent graduates face a challenging economic landscape in countries like Sri Lanka that tests their financial capabilities. The aftermath of Sri Lanka’s 2022 sovereign debt crisis, marked by sharp currency devaluation, rising living costs, and high underemployment, has placed extraordinary pressure on young individuals’ finances. New graduates in the Jaffna district, a region recovering from prolonged conflict and enduring infrastructural deficits, are often forced to make complex financial decisions (such as managing student loan repayments, budgeting for living expenses, and beginning to save or invest) with limited institutional support and guidance. Preliminary evidence suggests that even university-educated students in Sri Lanka frequently lack basic financial knowledge and skills. For example, a recent survey of undergraduates found many could not correctly understand interest rates or repayment terms, and few demonstrated proactive behaviours like regular budgeting or saving (Senarathna & Anuradha, 2024). Important financial attitudes such as confidence in money management, self-control in spending, and future-oriented planning also appear

ISBN: 978-624-5553-76-1

underdeveloped among youths in rural and conflict-affected areas. This situation raises concerns that, without targeted interventions, today's graduates may remain ill-equipped to achieve financial stability and wellness in adulthood.

Given these challenges, there is a clear need for empirical research to assess whether improving financial literacy might enhance young adults' financial well-being and whether formal education in personal finance makes a measurable difference. It is important to investigate the case of recent graduates in Jaffna, a context where formal education in personal finance education opportunities has been relatively limited, yet where improving financial capabilities could have high payoffs for individual livelihoods and community development. Accordingly, this study focuses on two key research questions.

- Does financial literacy significantly influence the financial well-being of recent graduates in the Jaffna District?
- Is there a measurable difference in financial literacy levels between recent graduates receiving personal finance education and those not?

By addressing these questions, the study assesses whether higher financial literacy, including knowledge, prudent behaviour, and positive financial attitudes, translates into better financial outcomes for young people. The primary objective is to evaluate how financial literacy in its multiple dimensions facilitates practical financial resilience among recent graduates. In framing this inquiry, we draw on two complementary theories: Human capital theory (Becker, 1964) and the Behavioral life cycle theory (Shefrin & Thaler, 1988a) Together, they provide a multidimensional, behaviorally informed lens for understanding how financial knowledge and behaviors develop. Human capital theory views financial literacy as an investment in one's economic capability, such as education or skill training, that should enhance productivity and well-being over time. Meanwhile, the behavioural life-cycle hypothesis recognizes that individuals face psychological biases and self-control constraints, suggesting that financial literacy can help young adults navigate complex financial decisions.

Using these theoretical foundations, this study will contribute new evidence on how knowledge, behaviour, and attitudes together shape financial well-being and will inform educational policymakers, community-based financial education programs targeting young adults, and curriculum developers seeking to empower the next generation of graduates in Sri Lanka and similar emerging markets.

Literature Review

Theoretical Review

The foundation of financial literacy research is rooted in Human Capital Theory, introduced by Becker (1964). It highlights that individuals can enhance their productivity and well-being by investing in education and skill development. Financial literacy can be viewed in personal finance as a form of capital, a knowledge that individuals acquire to improve their decision-

making quality. By mastering budgeting, credit management, saving, and investing, a person effectively increases their ability to manage resources efficiently, avoid financial distress, and achieve long-term goals. The theory predicts that individuals who devote more effort to learning about their fiancé will enjoy better financial outcomes and greater economic security over their lifetime. In other words, financial literacy is an investment that yields a return in the form of wiser financial choices and improved financial health (eg: higher savings, prudent debt levels, and adequate preparation for retirement). This framework underpins the expectation in this study that graduates with higher financial literacy will exhibit greater financial well-being. Traditional economic models assume people behave entirely rationally, but Behavioral life cycle theory offers a more realistic psychological perspective on financial behaviour over one's life. (Shefrin & Thaler, 1988a). This suggests that individuals often deviate from purely rational behaviour due to cognitive biases, self-control problems, and mental accounting. For example, young adults may struggle to save for the future because of present bias (overvaluing present consumption) or incur excessive debt due to overoptimism and lack of self-control. This theory highlights the role of financial literacy in mitigating behavioural biases. With a better understanding of compound interest and the dangers of over-indebtedness, individuals are more likely to recognize the long-term consequences of short-sighted financial choices. A financially literate person, for instance, maybe more aware of how excessive credit card spending today can hamper future well-being and thus exercise greater discipline. Financial literacy is a cognitive tool that helps people align their behaviours with their long-term interests and overcome impulsive tendencies and decision-making traps. This perspective implies that increasing knowledge is insufficient; education must address attitudes and habits. This behaviorally oriented view informs this study's focus on financial behaviour, attitudes, and knowledge. By combining human capital theory and the behavioural life cycle approach, financial literacy improves well-being by adding valuable knowledge and shaping better financial behaviours and self-regulation.

Empirical Review

Financial Literacy and Financial Well-being

A growing body of empirical research strongly affirms a positive relationship between financial literacy and personal financial well-being across different populations. Recent evidence summarized by Lusardi and Messy (2023), concludes that *" in a nutshell, financial literacy improves financial wellbeing".* Higher financial literacy is associated with more informed financial decision-making and outcomes. For example, an analysis of USA survey data finds that individuals who correctly answered basic financial literacy questions were far more likely to engage in healthy financial behaviours. They were more likely to plan for retirement, less likely to be over-indebted on credit, and better able to cope with emergencies due to greater financial buffers (Lusardi & Streeter, 2023). These behaviours (retirement planning, controlled

debt, and emergency savings) are key indicators of financial well-being, suggesting that knowledge translates into tangible benefits. Likewise, cross-country and regional studies consistently report that people with financial literacy tend to experience lower financial stress and greater financial security, controlling for income and other factors. (Zhang & Chatterjee, 2023). For instance, both developed and emerging economies have found that financially knowledgeable individuals are more likely to budget effectively, invest wisely, and avoid financial scams or high-cost debt, all contributing to a better sense of financial wellness. (Lone & Bhat, 2024; Katnic et al., 2024).

It is important to note that financial literacy is a multidimensional construct, typically encompassing financial knowledge (cognitive understanding of financial concepts), financial behaviour (day-to-day money management practices), and financial attitude (mindset towards money and risk) (Organization for Economic Co-operation and Growth (OECD), 2023). These dimensions work in tandem to influence well-being. Knowing financial facts is beneficial, but knowledge alone is insufficient if not coupled with positive behaviours and attitudes. Empirical studies suggest that the effect of financial literacy on well-being is often mediated or reinforced by behaviour and psychological factors (Sabri et al., 2022). In other words, two individuals with similar financial knowledge may have very different well-being outcomes if one routinely saves and budgets (good financial behaviour) and does not, or if one feels confident and future-oriented about finances (healthy financial attitude). In contrast, the other feels anxious or myopic. For example, researchers have found that disciplined habits such as regular saving, prudent spending, and avoiding unnecessary debt are critical for long-term financial satisfaction. These habits typically stem from a solid foundation of knowledge combined with a conscientious attitude (Sabri et al., 2022). Positive financial attitudes such as self-control, frugality, and planning for the future significantly shape financial outcomes (de Almeida et al., 2021; Hernandez-Perez & Cruz Rambaud, 2025; Strömbäck et al., 2017). For example, a financial literacy survey showed that financial self-control and self-efficacy deficiencies significantly predicted financial hardship and reduced financial well-being (Hernandez-Perez & Cruz Rambaud, 2025). This is supported by a study showing that financial self-efficacy strongly predicts general life satisfaction, mediated by investment satisfaction and high personal standards (Hu et al., 2021). A comprehensive review further confirms that financial self-efficacy links beliefs and emotions to tangible financial behaviours and overall life satisfaction (Ahamed, 2025).

Another insight from the literature is that more financial literacy is not endlessly beneficial without context. Some studies caution about the potential pitfalls of overconfidence. As people become more financially knowledgeable, they might develop unwarranted confidence, leading them to take excessive risks. For instance, Chu et al. (2017) observe a paradox where individuals who perceive themselves as financially savvy sometimes engage in riskier investments or accumulate debt due to overconfidence, which can be detrimental due to

ISBN: 978-624-5553-76-1

ignorance. Thus, financial literacy initiatives should aim to produce informed humble, knowledgeable yet careful consumers. The consensus, however, remains that on balance, a higher level of financial literacy, coupled with sound behaviour, is a net positive for personal financial well-being. Indeed, international policy bodies like the OECD argue that improving financial literacy, especially among youth, can enhance financial inclusion and reduce vulnerabilities in the population (Lusardi & Messy, 2023).

The impact of financial education and personal finance training

Given the positive link between financial literacy and well-being, an important question is how to raise financial literacy levels effectively. This highlights the role of formal financial education (such as schools or university courses, workshops, or training programs in personal finance). Prior research offers mixed evidence on the efficacy of such education, making it an interesting subject of study. Mandell (2008) found little to no improvement in long-term financial outcomes for high school students who had taken a personal finance course. In this research, young adults who completed financial coursework did not perform much better in managing credit or savings than those with no such course, raising concerns that one-time or poorly implemented courses might not stick. Possible reasons include curricula that focus too much on rote knowledge, insufficient practical application, or the lack of immediate relevance to students' lives (leading to low retention of lessons). This initial scepticism led to a question of whether mandated financial education was worthwhile.

However, another study indicates that financial education can be effective. A meta-analysis encompassing 126 studies around the world concludes that financial education programs generally have positive causal effects on both financial knowledge and financial behaviour, with the most potent effects observed on improving knowledge (Kaiser & Menkhoff, 2017). These programs, on average, led to better budgeting, increased saving rates, and more innovative credit management among participants. Notably, the effectiveness tends to be higher for interventions that are longer in duration or tailored to moments when participants are making consequential financial decisions, such as starting a job or buying a home. There is also evidence that younger people and those in middle-income or high-income settings benefit more readily. In contrast, low-income populations may face external constraints that limit behavioural changes despite education. Overall, the weight of evidence suggests that well-crafted financial education that is interactive, relevant, and reinforced over time improves financial literacy meaningfully, which should eventually reflect better financial well-being.

Empirical studies focusing on university students and recent graduates further support the value of financial education. For example, a study of undergraduates in Albania found that students who had taken a personal finance course scored significantly higher on measures of financial knowledge and overall literacy than their peers who never taken such a course (Nano & Cani, 2020). This aligns with intuition and human capital theory, in which formal instruction

gives students a measurable edge in understanding financial concepts. Other research has documented similar findings in various countries; participants of personal finance seminars or courses often show improved budgeting behaviour and more confidence in financial decision-making compared to non-participants, though the effect can vary. It was also found that not all educational experiences are equal. The curriculum content, teaching methodology, and instructor expertise are likely key factors determining success (de Bruijn et al., 2022; Kaiser & Menkhoff, 2022; Kaiser & Menkhoff, 2017).

In the Sri Lankan context, formal personal finance education has not been uniformly integrated into higher education curricula, which means many graduates have no exposure to structured financial literacy training during their studies (Priyadarshani & Kumari, 2021). This creates an opportunity to examine differences between those who do acquire financial knowledge through elective courses or workshops and those who do not. The expectation, based on global literature (Kaiser & Menkhoff, 2022; Lusardi & Mitchell, 2014) and a small number of local studies (Senarathna & Anuradha, 2024), is that graduates who have received personal finance education will, on average, demonstrate higher financial literacy levels than those without such education. Indeed, beyond the classroom, even informal financial guidance from family or mentorship can yield higher literacy and better outcomes, but formal education provides a systematic way to cover essential topics. This study tests this proportion directly in the context of Jaffna's recent graduates, contributing evidence to whether integrating personal finance courses into university programs can uplift financial literacy and, by extension, the financial well-being of youth.

Development of Hypotheses

Building on the theoretical insights and empirical findings above, the study formulates the following hypotheses to address the research questions.

H1: Financial literacy positively and significantly influences the financial well-being of recent graduates in Jaffna. In particular, higher financial literacy graduates are expected to report greater financial well-being. This hypothesis stems from the observed correlation between literacy and well-being in prior studies (Goyal et al., 2023; Lusardi & Mitchell, 2014). It also reflects the notion from human capital theory that financial knowledge and skills improve one's ability to manage finance effectively, and the behavioral view that literacy helps individuals avoid pitfalls and adopt prudent financial behaviours. This can be further broken down into the general hypotheses and sub-hypotheses for each dimension of financial literacy.

H1a: Financial knowledge (understanding of personal finance concepts) positively affects financial well-being (Atkinson & Messy, 2012; Chu et al., 2017).

H1b: Financial behaviour (sound money management practices such as budgeting, saving, and responsible borrowing) positively affects financial well-being (Rahman et al., 2021; Abdurrahman & Adi, 2024).

H1c: Financial attitude (positive mindset and confidence in financial matters) positively affects financial well-being (Brüggen et al., 2017; Amoa-Gyarteng, 2021).

These dimensions are anticipated to contribute to better financial outcomes, consistent with multidimensional financial literacy models. For example, knowledge provides the what and why of sound financial practices, while behaviour implements those practices and attitude provides the motivation and discipline to sustain them. Prior empirical research suggests that all three aspects determine financial wellness. Hence, the following hypothesis is that recent graduates scoring higher in these areas will exhibit higher overall financial well-being, such as less financial stress, more satisfaction with their financial situation, and better objective outcomes.

H2: Graduates who have received personal finance education will exhibit higher financial literacy levels than graduates who have not received such education.

This hypothesis directly addresses the second research question by positing a significant difference between the two groups. This is grounded in evidence from both international studies and theories. Acquiring financial knowledge through coursework or training should elevate one's literacy and potentially influence behaviour, as suggested by the human capital investment argument. Empirically, numerous studies document that exposure to financial education correlates with higher literacy scores (Nano & Cani, 2020). Accordingly, the hypothesis will be tested statistically via an independent samples *t-test* to determine if mean literacy levels differ between the educated and non-educated groups. A significant finding favouring H2 would support calls to integrate personal finance topics more widely into university curricula. In contrast, a non-significant difference might suggest that mere coursework as currently delivered is not enough to create a competency gap, highlighting the need to improve the quality or practicability of financial education.

Together, H1 and H2 form the empirical core of the study. H1 examines the impact of financial literacy on an outcome (financial well-being), aligning with global evidence that better-informed individuals make better financial choices. H2 examines a key source of variation in financial literacy (educational experience), probing whether formal education effectively boosts literacy among youths. Confirming these hypotheses would contribute evidence that educating young people in personal finance can yield dividends in their financial health, thereby guiding educators and policymakers. Conversely, if the hypotheses are not supported, that would offer insights into potential gaps. For instance, if financial literacy does not translate into well-being in this context, it may indicate the presence of other binding constraints on well-being such as low incomes or lack of job opportunities, or if educated and non-educated graduates show no literacy gaps, this might indicate that current educational content is insufficient or that informal learning channels substitute for formal courses. In any outcome, the findings will enrich the ongoing discourse on how to foster financial well-being among the next generation of adults in emerging economies.

Methods

A quantitative survey design was adopted to examine the relationships between financial literacy and financial well-being. By using closed-ended items and Likert scales, the survey design ensures objective measurement of respondents' financial knowledge and well-being and addresses the research questions (Alqam & Hamshari, 2024). The target population comprised recent university graduates (class of 2022-2024) residing in the Jaffna district, Sri Lanka. This group was purposefully chosen because individuals recently left higher education and entered an important transitional stage of labour market entry and financial independence. In the Sri Lankan context, this transition is particularly challenging in post-conflict regions like Jaffna, where youth unemployment rates remain high relative to other districts. Graduates in this region face structural disadvantages, including limited access to formal employment, regional economic disparities, and weak financial guidance infrastructure (Borham, 2018). A stratified random sampling strategy was used to enhance representativeness. Data was collected via a structured online questionnaire. The survey instrument included multi-item scales to measure financial literacy (knowledge, skills, and attitudes) and financial well-being. Core survey items were adopted from the financial literacy and well-being instruments used by Orozco-Orozco et al. (2024) Which was validated in a comparable socio-economic context. Adapting an existing validated scale ensures content validity and allows comparison with prior research. The final questionnaire was deployed online and distributed via social media groups. The questionnaire comprised three sections. Part I captured demographic information, Part II assessed financial literacy, and Part III evaluated financial well-being. A five-point Likert scale (1 = strongly disagree to 5 = strongly agree) was employed. Data analysis included reliability testing, descriptive statistics, correlation, and regression to examine the relationship between financial literacy and financial well-being.

Conceptualization

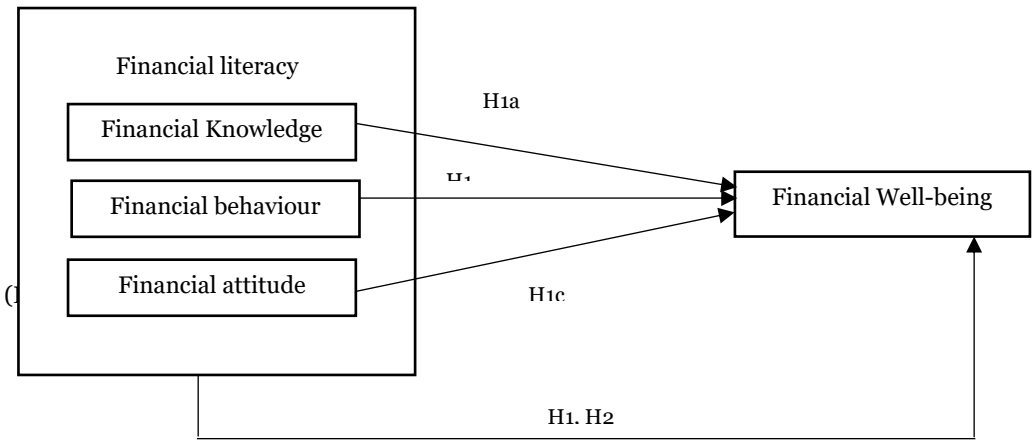

Figure 01: Conceptualization Model

ISBN: 978-624-5553-76-1

The above conceptual model is structured to address the two primary research questions.

RQ1: Does financial literacy significantly influence the financial well-being of recent graduates in the Jaffna District?

This is examined through,

H1: Financial literacy positively influences financial well-being.

H1a: Financial knowledge positively influences financial well-being.

H1b: Financial behaviour positively influences financial well-being.

H1c: Financial attitude positively influences financial well-being.

RQ2: Is there a measurable difference in financial literacy levels between recent graduates receiving personal finance education and those not?

This is addressed by,

H2: There is a significant difference in financial literacy levels between graduates who have received personal finance education and those who have not.

Operationalization

Table 01: Measurement of the Variables

Concepts	Variables	Indicators	Measurements
Financial literacy	Financial knowledge	• Interest rate, Savings, Loans • Inflation • Risk and return • Diversification	Questions 1-6
	Financial behaviour	• Evaluates careful spending • Future orientation • Satisfaction with consumption • Attitude towards risk • Propensity to spend instead of saving for the future • Reverse-coded	Questions 7-14
	Financial attitude	• Financial Planning • Timely payment obligations • Contingency preparedness	Questions 14-21
Financial wellbeing		• Satisfaction • Well-being perception • Ability to cover certain expenses • Worry and stress related to the financial situation	Questions 1-9

Source: Adapted from a Questionnaire prepared by Orozco-Orozco et al. (2024)

ISBN: 978-624-5553-76-1

Data Analysis and Discussion

The Profile of The Study's Respondents

Table 02: Demographic Characteristics of Recent Graduates

Demographic characteristics		Frequency	Per cent
Age	24	9	7.2
	25	10	8
	26	41	32.8
	27	51	40.8
	28	14	11.2
Gender	Male	43	34.4
	Female	82	65.6
Marital Status	Married	4	3.2
	Unmarried	121	96.8
Average Monthly Income	Below 30000	18	14.4
	30000-50000	35	28
	50000-100000	39	31.2
	100000-150000	20	16
	Over 150000	13	10.4
Personal Finance Course	Yes	61	48.8
	No	64	51.2

Source: Survey data (2024)

The demographic profile reveals that many respondents were 26-27, comprising over 73% of the sample, indicating a typical post-graduation age range. Female respondents comprised 65.6%, suggesting an actual enrollment pattern in local universities. Most participants (96.8%) were unmarried, consistent with the early career stage of the target group. Regarding income, 59.2% reported earnings between LKR 30,000 and 100,000 per month, reflecting modest early career earnings in the Jaffna context. Notably, 51.2% had not completed a personal finance course, highlighting a gap in formal financial education among recent graduates, an important contextual factor for interpreting financial literacy outcomes.

Reliability

The reliability of the measurement scales was assessed using Cronbach's alpha, a widely accepted indicator of internal consistency.

Table 03: Reliability – Cronbach's alpha (N=125)

Variables	No of items	Cronbach's Alpha
Financial knowledge	6	0.892
Financial behaviour	8	0.875
Financial attitude	7	0.876

Financial wellbeing	9	0.879
Financial literacy	21	0.850

Source: Survey data (2024)

As shown in Table 3, all constructs proved strong reliability, with alpha values exceeding the conventional threshold of 0.7 (Nunnally, 1978). Financial knowledge (α = 0.892), financial behaviour (α = 0.875), financial attitude (α = 0.876), and financial wellbeing (α = 0.879) each displayed high internal consistency, indicating that the items within each subscale measured cohesive constructs. The overall financial literacy scale, composed of 21 items, also yielded a satisfactory α value of 0.850, affirming the scale's suitability for further analysis.

Correlation Analysis

Pearson's correlation coefficient was employed to examine the strength and direction of the relationship between financial literacy and financial well-being.

Table 04: Correlation Matrix for Financial Literacy and Financial Well-being

		FW	FL
Financial well-being (FW)	Pearson Correlation	1	
	Sig. (2-tailed)		
Financial literacy (FL)	Pearson Correlation	.723**	1
	Sig. (2-tailed)	0.000	

Correlation is significant at the 0.01 level (2-tailed)
Source: Survey data (2024)

As shown in Table 4, the results indicate a strong positive correlation between the two variables (r = 0.723, p< 0.01). This statistically significant association suggests that higher levels of financial literacy are associated with greater financial well-being among recent graduates.

Table 05: Correlation Matrix for Dimensions of Financial Literacy and Financial Well-being

		FK	FB	FA	FW
Financial knowledge (FK)	Pearson Correlation	1			
	Sig. (2-tailed)				
Financial behaviour (FB)	Pearson Correlation	.543**	1		
	Sig. (2-tailed)	0.000			
Financial attitude (FA)	Pearson Correlation	.545**	.631**	1	
	Sig. (2-tailed)	0.000	0.000		
Financial wellbeing (FW)	Pearson Correlation	.577**	.636**	.625**	1
	Sig. (2-tailed)	0.000	0.000	0.000	

Correlation is significant at the 0.01 level (2-tailed)
Source: Survey data (2024)

As Table 5 represents the correlation matrix, the financial knowledge (r = 0.577, P < 0.01), financial behaviour (r = 0.636", P < 0.01), and financial attitude (r = 0.625, P < 0.01) have a significant relationship with financial well-being at a 99% confidence level. Hence, financial knowledge, behaviour, and attitude are positively correlated with the financial well-being of recent graduates.

Multiple Regression Analysis

Table 06: Regression Coefficients for Financial Literacy and Financial Well-being

Model	B	Std. Error	β	t	p	Tolerance	VIF
(Constant)	-0.416	0.358	-	-1.163	0.247	-	-
Financial literacy	1.135	0.098	0.723	11.602	0.000	1.000	1.000
R2 = 0.523	Adj R2= 0.519		F= 134.618	p=0.000			

Source: Survey data (2024)

As shown in Table 6, financial literacy emerged as a statistically significant predictor of financial well-being (B = 1.135, β = 0.723, p<0.001). The β indicates a strong positive influence, suggesting that higher financial literacy is associated with better perceived financial well-being. The overall model explained 52.3% of the variance in financial well-being (R^2 = 0.523, Adjusted R^2 = 0.519), which shows substantial explanatory power for the study (Cohen, 1988). The F statistic (F=134.618, p<0.001) further confirms the highly significant regression model. Multicollinearity diagnostics show a VIF of 1.000 and a tolerance of 1.000, indicating no multicollinearity issues. These findings reinforce the critical role of financial literacy in shaping young adults' financial outcomes, aligning with human capital theory (Becker, 1964) and recent empirical evidence (Lusardi & Mitchell, 2023; Orozco-Orozco et al., 2024), which emphasize that knowledge and capability in managing finances contribute meaningfully to individual wellbeing.

Table 07: Regression Coefficients for Dimensions of Financial Literacy and Financial Well-being

Model	B	Std. Error	Beta	t	p	Tolerance	VIF
(Constant)	0.42	0.288	-	1.449	0.150	-	-
Financial knowledge	0.22	0.071	0.25	3.130	0.002	0.638	1.568
Financial behaviour	0.32	0.085	0.32	3.788	0.000	0.546	1.832
Financial attitude	0.32	0.093	0.29	3.397	0.001	0.544	1.839
R2 = 0.526	Adj R2= 0.514		F= 44.724	P=0.000			

Source: Survey data (2024)

Table 7 above shows that all three dimensions significantly predicted financial well-being at the 5% level. Financial behaviour (β = 0.32, p < 0.001) emerged as the strongest predictor, followed by financial attitude (β = 0.29, p = 0.001) and financial knowledge (β = 0.25, p =

0.002). These standardized coefficients indicate that practical financial actions and attitudes toward money slightly influence well-being more than conceptual knowledge alone. This reinforces findings by Lusardi and Mitchell (2023) and supports the view that behavioural competencies and attitudes are critical determinants of financial outcomes in young adults. The model explained 52.6% of the variance in financial well-being ($R^2 = 0.526$, Adjusted $R^2 = 0.514$), indicating a strong fit for the study. The F statistic was also significant, confirming the model's overall validity. Moreover, multicollinearity diagnosis (VIF <2) confirmed that the predictors were sufficiently independent, ensuring the robustness of coefficient estimates. This highlights the importance of equipping graduates with knowledge and strong financial behaviours and attitudes.

Personal financial courses and financial literacy

Table 08: Independent Samples t-test between Personal Financial Courses and Dimensions of Financial Literacy

6. Have you completed any courses in personal finance, either as an elective or as part of your required curriculum?		N	Mean	Std. Deviation	Std. Error Mean
FL	Yes	61	3.7136	0.53124	0.06802
	No	64	3.5380	0.44379	0.05547
FKWG	Yes	61	4.2248	0.75524	0.09670
	No	64	3.7232	0.85103	0.10638
FBR	Yes	61	3.8761	0.85925	0.11002
	No	64	3.7257	0.63102	0.07888
FAT	Yes	61	3.7111	0.81571	0.10444
	No	64	3.6816	0.55943	0.06993

FL - Financial Literacy, FKWG - Financial Knowledge and General Awareness, FBR - Financial Behavior, FAT - Financial Attitude

Source: Survey data (2024)

Table 09: Independent Sample T-test

		Levene's Test for Equality of Variances		t-test for Equality of Means				
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
FL	Equal variances assumed	0.951	0.331	2.009	123	0.047	0.17558	0.08739
	Equal variances are not assumed.			2.000	117.046	0.048	0.17558	0.08777
FK	Equal variances assumed	5.166	0.025	3.479	123	0.001	0.50161	0.14417

ISBN: 978-624-5553-76-1

	Equal variances are not assumed.			3.489	122.387	0.001	0.50161	0.14376
FB	Equal variances assumed	7.235	0.008	1.119	123	0.265	0.15044	0.13439
	Equal variances are not assumed.			1.111	109.886	0.269	0.15044	0.13537
FA	Equal variances assumed	18.237	0.000	0.236	123	0.814	0.02942	0.12460
	Equal variances are not assumed.			0.234	105.635	0.815	0.02942	0.12569

Source: Survey data (2024)

The independent samples t-test determines whether a statistically significant difference exists between the means in two unrelated groups. This allows for determining whether completing a personal finance course significantly influences financial literacy and its sub-dimensions.

Levene's test confirmed the homogeneity of variances for overall financial literacy (p = 0.331), thus the assumption of equal variances was met. The test results revealed a statistically significant difference in overall financial literacy between graduates who had completed a personal finance course (M = 3.71, SD = 0.53) and those who had not (M = 3.54, SD = 0,44), t(123) = 2.009, p = 0.047. This suggests that formal financial education is associated with greater financial literacy among recent graduates.

Levene's test indicated unequal variances for the sub-dimensions, so unequal variance t-test tests were used. Financial knowledge showed a significant difference (p = 0.001), with course completers scoring higher. In contrast, financial behaviour (p = 0.269) and financial attitude (p = 0.815) did not show significant differences between the two groups. These results suggest that financial education improves conceptual understanding (knowledge) but may not directly influence behavioural or attitudinal aspects. This aligns with findings from Lusardi and Mitchell (2023), who argue that financial knowledge alone does not always translate into improved behaviour without supportive contextual and psychological reinforcement.

These findings suggest that while a personal finance course successfully imparts knowledge, it might not be sufficient to change a person's financial behaviour or attitudes in the short run. As a result, the overall financial literacy score, which is a combined measure of knowledge, behaviour, and attitudes, does not differ much between the two groups; the increase in knowledge for course takers could be offset by similar behaviour and attitude levels as the non-takers. In other words, improvements in one component (knowledge) were balanced by no changes in the other components, leading to no significant difference in the composite financial literacy score.

This interpretation is consistent with insights from behavioural economics theory, which argues that financial capability involves more than just knowledge. According to this perspective, having information and facts (cognitive knowledge) is only one part of the equation; psychological factors, habits, and attitudes often have an equal or greater influence on how people handle their finances. Thus, a graduate might learn about budgeting and the importance of saving in a class (knowledge gain). However, whether they follow a budget or start savings (behavioural change) depends on personal discipline, motivation, and other psychological factors. Likewise, their feelings of financial confidence or stress (attitude) may not shift immediately just because they took a course.

Hence, the study's results confirm that financial literacy significantly impacts recent graduates' financial well-being, especially its knowledge, behaviour, and attitude components. All three components independently contribute to better financial outcomes and mirror prior research findings. At the same time, taking a one-time personal finance course does not automatically translate into higher overall financial literacy or well-being. Education boosts knowledge significantly, but lasting improvements in financial well-being may also require changes in behaviour and attitude. This underscores the importance of educating individuals about finances and finding ways to influence habits and mindsets, such as practical financial experience and ongoing coaching so that knowledge gains lead to tangible improvements in financial well-being.

Implications

Theoretical Implications

The findings support established theories in human capital and behavioural economics. First, the positive impact of financial knowledge on graduates' financial well-being is consistent with Human Capital Theory, which posits that education and skill acquisition are investments that enhance an individual's productivity and economic potential (Kubota & Takehara, 2018). Financial literacy can be viewed as a form of human capital, the knowledge and skills to manage personal finances effectively. The results confirm that graduates with more financial knowledge tend to achieve higher financial well-being by making more informed decisions, like budgeting wisely and avoiding high-cost rent. This aligns with Becker's (1964) argument that investing in practical skills yields economic benefits. In the context of global evidence, financial education improves household financial management and stability. In short, the data reinforce that financial literacy is an economically valuable form of capital for individuals, improving their capability to attain financial security.

Moreover, the significance of financial behaviour (p=0.000) and attitude (p=0.001) in predicting well-being highlights the relevance of behavioural finance models, particularly the Behavioral Life Cycle hypotheses (Shefrin & Thaler, 1988b). This extends the traditional life cycle theory by incorporating psychological factors. It argues that individuals employ mental

accounting, self-control mechanisms, and framing strategies to make financial decisions over their life cycle (Griesdorn et al., 2014).

Together, these findings highlight that financial literacy is not merely a matter of knowledge acquisition, but also behavioural and attitudinal application. This study affirms that cognitive and psychological factors shape financial outcomes. This theoretical integration contributes to understanding the financial well-being of young adults, particularly in transitioning economies such as Sri Lanka.

Practical Implications

From an applied standpoint, the study provides several actionable insights for educational institutions, non-governmental organizations, and individuals. The data reveal significant financial literacy score differences between graduates with formal personal finance education and those without ($t = 2.009$, $p = 0.047$). This highlights the practical value of integrating personal financial management courses within university curricula. Such courses could cover foundational topics like budgeting, credit management, saving, and investment strategies. Institutions should also consider embedding financial literacy into general education or employability programs to prepare students for financial independence post-graduation.

Beyond curricular offerings, financial literacy workshops facilitated by NGOs, financial institutions, or alumni networks could serve as supplemental education. These programs should emphasize theoretical knowledge and behavioural practice through simulations, case studies, and real-life budgeting exercises. Since financial behaviour was found to be a stronger predictor of well-being than knowledge alone, programs should target habits and routines rather than purely content delivery.

Further, given the tech savviness of the target population, mobile budgeting apps, expense trackers, and online learning platforms can reinforce learning. These tools can aid in translating financial knowledge into habitual behaviour, fostering greater financial control and reduced stress among graduates entering the workforce.

Policy Implications

At the policy level, several strategic recommendations emerge. The Ministry of Education and higher education authorities in Sri Lanka should mandate or incentivize the inclusion of personal finance education at both secondary and tertiary levels. International evidence indicates that early financial education improves credit outcomes and reduces debt delinquency (Lusardi & Mitchell, 2023).

This study also reinforces the relevance of the Central Bank of Sri Lanka's financial literacy roadmap (2024-2028), which emphasizes building financial resilience. This finding affirms that higher financial literacy enhances financial well-being, thus supporting the roadmap's aim to instil prudent financial behaviours among the youth.

Also, government agencies can collaborate with private sector banks, fintech companies, and civil society organizations to deliver large-scale financial literacy programs. Financial institutions could provide free training as part of their CSR initiatives, targeting graduates in Sri Lanka. Furthermore, policymakers should invest in longitudinal tracking of financial literacy and well-being indicators among graduates. Incorporating financial well-being metrics in the labour force or household surveys can help monitor policy impact and ensure targeted interventions.

Hence, enhancing financial literacy through coordinated efforts across education, policy, and practice can improve individual welfare and contribute to broader economic stability. This study provides local empirical evidence supporting the integration of financial literacy into strategic youth and economic development agendas in Sri Lanka.

Conclusion

This study examines the impact of financial literacy on financial well-being among recent university graduates in the Jaffna district of Sri Lanka, specifically knowledge, behaviour, and attitudes. Grounded in human capital theory and behavioural life cycle hypothesis, the findings confirm that both cognitive and behavioural components of financial literacy significantly contribute to enhanced financial well-being. Financial knowledge was positively linked to prudent decision-making. At the same time, behavioural and attitudinal factors emerged as stronger predictors, highlighting the importance of self-control, future orientation, and mindset in financial outcomes. Although participants who had completed personal finance courses exhibited higher knowledge levels, these courses did not significantly influence their financial behaviour or attitudes. This suggests that formal education must complement experiential and habit-forming interventions to promote lasting behavioural change. However, studying is not without limitations. Using a cross-sectional design restricts causal inference, and reliance on self-reported data may introduce social desirability bias. Additionally, the sample was geographically limited to the Jaffna district, which may affect the generalizability of the results to other regions or demographic groups in Sri Lanka. Future research could adopt longitudinal or experimental designs to examine how financial behaviours evolve and assess the sustained impact of financial education programs. Comparative studies across multiple regions or among educational levels would also provide broader insights. Moreover, integrating qualitative methods could help unpack the psychological mechanisms and contextual barriers influencing financial decision-making among young adults. Hence, the findings highlight the need for integrated financial literacy strategies that address knowledge and behaviour. Strengthening these dimensions through targeted education and behavioural interventions can enhance financial resilience, particularly in economically vulnerable and post-conflict contexts like Jaffna.

The findings highlight a critical need for integrated financial literacy strategies that address knowledge and behaviour. Strengthening these dimensions through targeted education and behavioural interventions can enhance financial resilience, particularly in economically vulnerable and post-conflict contexts like Jaffna.

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Human Resource Management

AI Tools and Recruiter Satisfaction in Sri Lankan Organisations

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Abstract

Artificial intelligence (AI) integration into HR procedures has become crucial for increasing recruiting efficiency as technology transforms organisational activities. AI solutions such as chatbots, resume screeners, applicant tracking systems (ATS), and automated interview platforms are being used by businesses all around Sri Lanka to expedite their recruiting procedures. The operational efficacy of these technologies has received most of the emphasis in prior studies, while their influence on recruiter satisfaction has received less attention. This study looks at the effects of AI-driven hiring tools on the job satisfaction of recruiters in Sri Lanka who work in various organisational contexts. Using a quantitative approach, data were collected from 110 recruitment professionals through an online survey. Statistical analysis, including descriptive statistics, correlation, and multiple regression, was conducted using SPSS. The findings indicate that AI-powered job boards, chatbots, and resume screening tools significantly contribute to recruiter satisfaction, whereas AI-powered interviews have a less pronounced effect. These insights highlight the importance of aligning AI implementation with organisational efficiency and the experience and satisfaction of recruiters.

Keywords: *Artificial Intelligence, recruiter satisfaction, Sri Lanka, organisations.*

Introduction

Artificial Intelligence (AI) technologies are revolutionising the worldwide recruiting scene by changing how businesses find, evaluate, and choose talent. AI-powered recruiting tools, such as chatbots, virtual interview platforms, predictive analytics, and intelligent resume screening systems, are increasingly playing a key role in contemporary hiring practices. By automating monotonous procedures, enhancing applicant interaction, and facilitating data-driven decision-making, these solutions improve recruiting efficiency (Valdivieso, 2024).

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ISBN: 978-624-5553-76-1

AI benefits organisations since it can handle big data, lessen bias, and predict applicant success. AI-powered chatbots and virtual assistants, for example, handle applicant enquiries, offer real-time updates, and streamline communication during recruiting, relieving recruiters of administrative strain (Almeida et al., 2025). Even while these technologies can improve hiring efficiency, little is known about how they affect recruiter satisfaction, especially in Sri Lanka. This study intends to examine the connection between recruiter satisfaction and AI-driven recruiting tools, particularly emphasising their function in effective hiring.

Research Problem

Artificial Intelligence (AI) in recruitment has transformed traditional hiring practices by automating applicant screening, boosting efficiency, and enhancing decision-making (Almeida et al., 2025). The impact of AI-driven recruitment tools on recruiter satisfaction has not received much empirical attention, even though they offer several advantages, including improving talent acquisition and expediting the hiring process. Recruiters are crucial to the hiring process, and their satisfaction and acceptance of AI-driven solutions may have a significant impact on the effectiveness of hiring. (Valdivieso, 2024). In Sri Lanka, it is critical to assess whether AI-based recruiting increases or decreases recruiters' job satisfaction due to algorithmic biases, a lack of human involvement, and trust in AI decision-making (Gupta & Ata, 2024).

AI tools are being progressively incorporated into Sri Lankan hiring procedures, yet there is no empirical data on how these technologies affect recruiter satisfaction. It is necessary to investigate whether AI-powered chatbots, job boards, resume screening, and interviews enhance or detract from recruiters' experiences while facilitating more effective hiring. The influence of AI-driven recruiting tools on recruiter satisfaction is examined in this study to close the gap and guide HR professionals and policymakers on how best to apply AI in Sri Lanka.

Literature Review

Recruiter Satisfaction

Recruiters' level of satisfaction with the resources, procedures, and results associated with the hiring role is known as recruiter satisfaction. This happiness in the context of AI-enhanced hiring may be attributed to two main factors: process satisfaction and result satisfaction. Perceived usefulness, the perceived simplicity of use, and the extent to which technology increases their productivity have all been found to impact recruiter satisfaction. The perceived effectiveness and ease of use of recruitment technologies strongly correlate with user satisfaction (Chapman & Webster, 2003).

Recruiter satisfaction relates to how happy and effective recruitment specialists feel in their

ISBN: 978-624-5553-76-1

jobs, especially regarding the resources, procedures, and hiring results. Several variables affect satisfaction, including the effectiveness and usability of hiring technology, the calibre of applicant matches, communication procedures, and the degree of decision-making autonomy. The use of AI-powered tools in hiring has increased interest in learning how these technologies affect the recruiter experience. When AI technologies complement human judgment rather than replace it, recruiters are more likely to be satisfied, especially regarding activities like applicant communication and resume screening (Almeida et al., 2025). When AI solutions are transparent and meet recruiters' demands for fairness and control, recruiter satisfaction rises (Valdivieso, 2024). Recruiters' satisfaction with AI systems is significantly influenced by perceived utility and simplicity of use, two key ideas from the Technology Acceptance Model (Venkatesh & Bala, 2008).

AI in Recruitment

Through technologies like applicant tracking systems, chatbots, and predictive analytics, artificial intelligence (AI) has altered recruiting processes globally by increasing efficiency, decreasing human bias, and boosting candidate selection (Upadhyay & Khandelwal, 2018). Multinational corporations are increasingly using AI to enhance decision-making, save expenses, and expedite recruiting (Black & Esch, 2020). However, despite these advantages, there are still worries about algorithmic bias and ethical application, with academics stressing the significance of justice, openness, and regulatory supervision in AI-driven hiring (Binns et al., 2018).

In Sri Lanka, the use of AI in hiring is still in its infancy, particularly in the ICT and major company sectors. Organisations in Sri Lanka have started utilising solutions such as automated communication systems and resume screening software. However, mainstream adoption is still restricted due to infrastructure issues, a lack of HR tech experience, and opposition to change. SMEs still mostly use traditional hiring practices. However, the growing drive for digital transformation, government-led digitisation initiatives, and staff upskilling show they are becoming more prepared for wider AI integration. Context-specific tactics and more empirical studies are crucial as Sri Lankan businesses make these transformations to guarantee AI promotes organisational agility, recruiter efficacy, and fair talent acquisition (Fernando & Herath, 2022).

AI-powered Job Boards and Recruiter Satisfaction

AI-powered job boards are sophisticated recruiting tools that analyse resumes, search trends, job descriptions, and user interactions to match job searchers with appropriate openings using algorithms. These systems use machine learning to constantly enhance the calibre of job-candidate matches, in contrast to conventional job boards (Upadhyay & Khandelwal,

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2018). Employers and applicants are suggested by platforms like ZipRecruiter and LinkedIn Talent Solutions based on contextual relevance and behavioural data. These platforms provide recruiters access to more candidates, faster hiring times, and more effective sourcing. Algorithmic exclusion, on the other hand, raises issues since it can lead to the omission of qualified candidates because of biased training data or inadequate keyword alignment. Diversity may be jeopardised, and unwarranted screening may result, particularly if recruiters use AI recommendations without human supervision (Kochling & Wehner, 2020).

AI-powered Chatbots and Recruiter Satisfaction

AI chatbots are frequently used in hiring to help with interview scheduling, alert candidates about job availability, and automate applicant interactions. These systems can simultaneously handle hundreds of candidates' chats and work with natural language processing (NLP). Enhancing the applicant's experience and expediting communication make them particularly successful in the early hiring stages. Chatbots save recruiters time by eliminating repeated activities and guaranteeing quicker response times. However, certain restrictions exist when managing intricate questions or delicate emotional issues, which might irritate candidates or cause misunderstandings. Recruiters may also encounter difficulties guaranteeing accuracy in replies and using chatbot data in conventional recruiting procedures. Notwithstanding these difficulties, chatbots are increasingly appreciated for their consistency and scalability (Tambe et al., 2019).

Resume Screening Tools and Recruiter Satisfaction

AI-powered resume screening solutions extract and rank applicants according to job-specific criteria using algorithms to analyse massive quantities of applications. To find the greatest matches, these technologies examine organised and unstructured resume data, including education, experiences, and abilities, and compare them to the job description (Kochling & Wehner, 2020). Because of this technology, recruiters benefit from increased productivity and decreased human bias during the initial selection phases. However, there are some problems with the tools. It may unintentionally reinforce preexisting biases or exclude unusual but competent applicants if the algorithm is trained on biased or limited data sets. Because of this technology, recruiters benefit from increased productivity and decreased human bias during the initial selection phases. However, there are some problems with the tools. Training the algorithm on limited or biased data sets may unintentionally reinforce preexisting prejudices or exclude candidates who are skilled but unusual. Candidates skilled in AI resume optimisation may also have an edge over similarly competent people who utilise less algorithm-friendly language. Resume screening technologies can be transformational, but their usage needs close supervision and a balanced integration with human judgment

(Binns et al., 2018).

AI-powered Interviews and Recruiter Satisfaction

AI-powered interviews, especially asynchronous video interviews, assess applicants' communication style, emotional intelligence, and personality attributes using technologies like speech analysis, facial recognition, and sentiment detection. These technologies evaluate body language, speech patterns, and microexpressions to provide information about a candidate's fit for a position (Liem et al., 2018). Recruiters gain from improved data points for decision-making, time savings, and the capacity to manage large application quantities. However, applying behavioural analytics and biometrics has raised moral questions about accuracy, fairness, and candidate privacy (Ajunwa, 2020). Such algorithms may have trouble recognising signs from diverse backgrounds due to cultural and linguistic diversity. Candidates' performance may also suffer if they are uneasy or nervous about being assessed by computers. Notwithstanding these drawbacks, AI interviews' scalability and apparent neutrality, when properly planned and executed, continue contributing to their growing appeal (Binns et al., 2018). The study found that although virtual interviews were more convenient, they also made evaluating candidates' organisational fit and interpersonal abilities more difficult. Recruiters can evaluate applicants more quickly and consistently using AI-powered interviews. However, their overall happiness with the process may suffer due to the inability to thoroughly assess nonverbal clues and the subtleties of in-person interactions. Recruiters must continue to weigh the advantages of AI-powered interviews against the requirement for thorough applicant evaluation (Lakhi et al., 2022).

Apart from the extensively researched tools like chatbots, resume screeners, and AI interviews, more sophisticated recruitment technologies like predictive analytics, AI-powered skill assessments, and candidate relationship management (CRM) platforms have been introduced by recent advancements in artificial intelligence. Recruiters may better predict applicant performance and job fit using predictive analytics, which provides strategic insights beyond conventional measures, based on past recruiting data (Tambe et al., 2019). Comparably, AI-based skill tests, which are frequently incorporated into interactive or gamified settings, offer impartial evaluations of applicants' skills, assisting recruiters in minimising prejudice in shortlisting selections (Liem et al., 2018). In businesses with high attrition or competitive talent landscapes, AI-driven CRM solutions benefit long-term applicant engagement and talent pool nurturing (Upadhyay & Khandelwal, 2018).

Although these new technologies promise better efficiency and data-driven decision-making, little is known about how they will affect recruiter satisfaction. The fairness of automated tests, the intricacy of CRM interfaces, and the openness of predictive algorithms are among issues that recruiters may raise (Gupta & Ata, 2024). Adoption and satisfaction levels may

also be impacted by how these tools are integrated with current HR operations, particularly if technical interruptions outweigh perceived benefits. Empirical research is currently lacking, which emphasises the urgent need for localised studies that explore the experiences of recruiters in many organisational and cultural contexts with these cutting-edge AI technologies. If this gap is closed, the design of AI-driven recruiting ecosystems may become more inclusive, moral, and user-centred.

Methods

The research approach used in this study was quantitative, ideal for testing hypotheses and determining correlations between variables in a methodical and quantifiable manner. The primary objective was to investigate how various AI-driven recruitment tools impact recruiter satisfaction in Sri Lankan organisations. The research was directed by a deductive methodology consistent with positivist paradigms, aiming to scientifically measure human perceptions and behaviours.

Recruiters and HR specialists hiring throughout Sri Lankan companies made up the target population. Individual recruiters employed by private sector companies known to use AI in hiring served as the unit of analysis. A purposive sample strategy was employed to ensure that only individuals with prior experience with AI-driven recruiting procedures were included. An online survey was used to gather information from 110 respondents. A response rate of around 75% was deemed adequate for statistical analysis in the study.

The study technique was a structured questionnaire with two sections: factors about AI tools, recruiter satisfaction, and demographic data. All the variables' measurement items were modified from validated scales in the literature. Every variable was assessed using a five-point Likert scale, with 1 denoting "strongly disagree" and 5 denoting "strongly agree." Five items were used to measure AI-powered chatbots and job boards, four for resume screening tools, four for AI-powered interviews, and six for recruiter satisfaction. These things were extracted from previous studies.

SPSS software was used to analyse the data. Descriptive statistics to comprehend the sample profile, reliability testing using Cronbach's alpha to guarantee internal consistency, and correlation analysis to investigate correlations between variables were all part of the analytical process. A multiple regression analysis was carried out to test the hypotheses and evaluate the strength of the predicted associations. R2 values, standardised beta coefficients, and significance (p-values) were used to interpret the findings. Variance Inflation Factors (VIF) and tolerance values were used to measure multicollinearity, and ANOVA was used to assess model fit.

The Technology Acceptance Model (TAM) served as the underlying theoretical framework for the study to provide a logical foundation. According to TAM, technology adoption is influenced by perceived utility and perceived usability. The model was expanded in this study

to investigate how recruiters' opinions of various AI tools, specifically chatbots, resume screening systems, interview platforms, and AI-powered job boards, affect their general level of satisfaction. Based on this, four hypotheses were formulated.

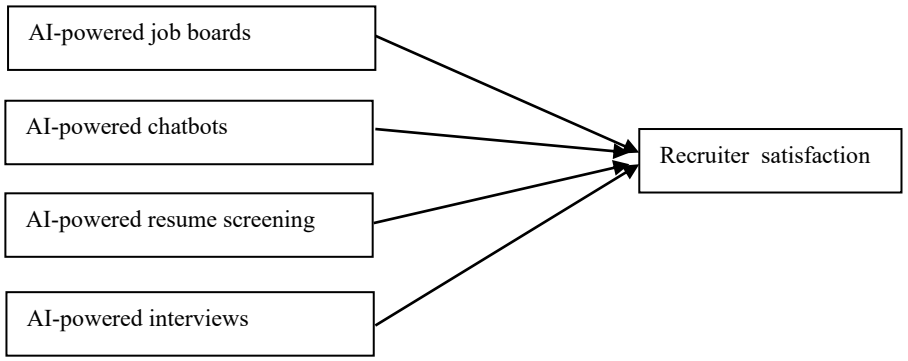

Figure 1: Conceptual Framework

H1: A positive relationship exists between AI-powered job boards and recruiter satisfaction.
H2: There is a positive relationship between AI-powered chatbots and recruiter satisfaction.
H3: A positive relationship exists between AI-powered resume screening and recruiter satisfaction.
H4: There is a positive relationship between AI-powered interviews and recruiter satisfaction.

Data Analysis

The data findings from the investigations on the connection between recruiter satisfaction in Sri Lankan companies and AI-powered recruiting tools are shown in this part. Software called SPSS was used to analyse data gathered from 110 recruiting experts. The study employed multiple regression analysis to evaluate the hypotheses, correlation analysis to assess the direction and strength of relationships between variables, and descriptive statistics to comprehend the demographic profile of the respondents. The significance and explanatory power of the regression model were assessed using standardised coefficients (β), ANOVA, and R-squared values. These statistical methods thoroughly explain how artificial intelligence (AI)-powered job boards, chatbots, resume screening systems, and interview platforms affect recruiter satisfaction.

Table 01: Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Gender	110	1.00	2.00	1.2455	.43233
Age	110	1.00	5.00	3.1364	1.24501
Education	110	1.00	5.00	2.7636	1.16467
Employment	110	1.00	4.00	2.5273	.80945
Income level	110	1.00	5.00	3.2818	1.09320
Valid N (listwise)	110				

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a. Predictors: (Constant), Virtual Interview, Job boards, Resume Screening, Chatbots

Source: Survey Data (2025)

Table 02: Correlations

		Recruiter Satis	Job boards	Chatbots	Resume Screening	Virtual Interview
Recruiter Satis	Pearson Correlation	1	.978**	.476**	.178	-.120
	Sig. (2-tailed)		.000	.000	.063	.213
	N	110	110	110	110	110

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

Table 03: Multiple Regression Analysis – Model Summary

				Std. Error	Change Statistics				
Model	R	R Square	Adjusted R Square	of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
1	.994[a]	.987	.987	.04931	.987	2018.481	4	105	.000

a. Predictors: (Constant), Virtual Interview, Job boards, Resume Screening, Chatbots

Source: Survey Data (2025)

Table 04: ANOVA Test

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	19.629	4	4.907	2018.481	.000[b]
	Residual	.255	105	.002		
	Total	19.884	109			

a. Dependent Variable: Recruiter Satisfaction

b. Predictors: (Constant), Virtual Interview, Job boards, Resume Screening, Chatbots
Source: Survey Data (2025)
Source: Survey Data (2025)

Table 05: Regression Coefficients

		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
Model		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	-.076	.071		-1.075	.285		
	Job boards	.922	.018	.926	52.414	.000	.392	2.551
	Chatbots	.055	.020	.060	2.776	.007	.261	3.825
	Resume Screening	.038	.022	.031	1.786	.037	.394	2.536
	Interview	.001	.010	.001	.081	.436	.761	1.315

ISBN: 978-624-5553-76-1

a. Dependent Variable: Recruiter Satis *Source:* Survey Data (2025)
Source: Survey Data (2025)

Results and Discussion

According to the respondents' demographic profile, most were female, and most were between the ages of 31 and 40. Regarding educational background, the typical responder worked in a mid-level HR or recruiting role and had earned an undergraduate degree or diploma. According to the participants' income levels, most were in the moderate earning range. The sample is a representative cross-section of hiring managers actively engaged in AI-assisted recruiting procedures in Sri Lankan companies.

The results of the correlation study showed a significant, positive, and statistically significant association between AI-powered job boards and recruiter satisfaction ($r = 0.978$, $p < 0.01$), suggesting that job boards play a key role in this relationship. Additionally, chatbots demonstrated a moderately significant association ($r = 0.476$, $p < 0.01$), whereas resume screening demonstrated a poor correlation that was marginally non-significant ($r = 0.178$, $p = 0.063$). There was a small, non-significant negative association between recruiter satisfaction and AI-powered virtual interviews ($r = -0.120$, $p = 0.213$).

The regression analysis indicates a high correlation between the independent variables (AI-powered job boards, chatbots, resume screening, and virtual interviews) and the dependent variable (recruiter satisfaction). The R value of 0.994 suggests a firm linear relationship, while the R^2 value of 0.987 indicates that the independent variables can explain 98.7% of the variance in recruiter satisfaction. This strong fit reinforces the effectiveness of AI-driven tools in enhancing recruiter satisfaction, implying that as these tools are utilised, recruiters experience higher satisfaction levels. The statistical significance of the model is confirmed by the F change value of 2018.481 with a significance level of $p < 0.000$, indicating robust predictive strength.

The ANOVA table further validates the model's significance. The ANOVA results show that the regression model is statistically significant ($F(4, 105) = 2018.481$, $p < 0.000$), which indicates that the model provides a better fit than a model with no independent variables. The sum of squares for regression at 19.629, coupled with a small residual sum of squares at 0.255, confirms that the chosen predictors (AI-powered job boards, chatbots, resume screening, and virtual interviews) collectively contribute to the explanation of variance in recruiter satisfaction. This statistical evidence strengthens the argument for the importance of these AI tools in improving the recruiting experience.

According to the regression coefficients,

H1: There is a positive relationship between AI-powered job boards and recruiter satisfaction.

ISBN: 978-624-5553-76-1

The p-value is 0.000, which is less than 0.05. This indicates strong evidence to accept the hypothesis that AI-powered job boards significantly affect recruiter satisfaction. AI-powered job boards have transformed recruitment by automating job postings and enhancing candidate matching. These platforms utilise machine learning algorithms to analyse job descriptions and candidate profiles, streamlining the recruitment process and potentially increasing recruiter satisfaction. However, specific empirical studies focusing on recruiter satisfaction with AI-powered job boards are limited, indicating a need for further research in this area (Almeida et al., 2025).

H2: There is a positive relationship between AI-powered chatbots and recruiter satisfaction.
The p-value is 0.007, which is less than 0.05. This indicates strong evidence to accept the hypothesis that AI-powered chatbots significantly affect recruiter satisfaction. AI-powered chatbots are being included in hiring procedures more often, according to research, to manage first-contact discussions with candidates, respond to questions, and set up interviews, all of which lessen the administrative workload of recruiters. The adoption of chatbots by recruiters throughout the hiring process is significantly influenced by subjective standards and perceived utility (Drebert, 2022).

H3: There is a positive relationship between AI-powered resume screening and recruiter satisfaction.
The p-value is 0.037, which is less than 0.05. This indicates strong evidence to accept the hypothesis that AI-powered chatbots significantly affect recruiter satisfaction. AI resume screening technologies facilitate the recruiting process by increasing the accuracy and efficiency of applicant shortlisting. While there are clear advantages to using these AI technologies, such as faster and more efficient processes, there are also concerns, like algorithmic bias, which can be avoided with proper algorithm design and monitoring. Because AI-powered resume screening expedites the process and lessens administrative constraints, it often favours recruiter satisfaction despite these reservations (Albassam,2023).

H4: There is a positive relationship between AI-powered interviews and recruiter satisfaction.
The p-value is 0.436, which is greater than 0.05. This indicates insufficient evidence to accept the hypothesis that AI-powered interviews significantly affect recruiter satisfaction. The significance of this restriction rests in the possibility that AI interviews may not always result in higher satisfaction levels, particularly when more complex or individualised interactions are needed. In more delicate or complex situations, AI-driven interviews could not offer the same level of pleasure or quality as human-led ones, according to the study (Liu & Yu, 2025).

Conclusion, implications, and significance

This study focused on job boards, chatbots, resume screening systems, and interview platforms to examine how recruiter satisfaction is affected by AI-powered recruiting tools in Sri Lankan companies. Based on 110 recruitment experts' replies, the investigation found that while AI-powered interviews had no statistically significant impact, AI-powered job boards, chatbots, and resume screening technologies significantly increase recruiter satisfaction. Job boards had the most effect out of all the tools, significantly streamlining the hiring process. The multiple regression model explained 98.7% of the variation in recruiter satisfaction, suggesting that the chosen AI technologies are quite predictive of recruiter experience. These results confirm that perceived utility and usability are important factors influencing users' happiness with AI-enabled systems, according to the Technology Acceptance Model (TAM) theoretical framework. HR experts, AI developers, and politicians may all benefit significantly from these results' practical applications. The use of AI-powered job boards and chatbots should be prioritised by organisations looking to boost employee happiness and recruiting efficiency, since these technologies considerably lighten administrative workloads and enhance productivity. Though their influence is limited, resume screening technologies also have a beneficial impact. However, to guarantee accuracy and fairness in applicant evaluation, their usage must be supplemented by human monitoring. However, AI-powered interviews' poor and statistically negligible role raises the possibility that these tools will not meet recruiters' expectations, particularly when precise evaluations of applicant fit are necessary. Therefore, hybrid models that strike a compromise between human judgment and AI skills could work better.

Particularly in underdeveloped nations like Sri Lanka, this study contributes significantly to the scant empirical literature on recruiter satisfaction in the context of AI adoption. This study emphasises the human experience underlying technology change in HR activities, whereas earlier research has concentrated on operational benefits like time or cost reductions. The study also advances theoretical knowledge of how AI is seen in professional recruiting by using and testing the Technology Acceptance Model.

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Training Modalities and Job Commitment Among Non-Executive Staff: Evidence from the Sri Lankan Banking Sector

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Abstract

The banking industry in Sri Lanka is experiencing a continuous increase in competition in the current economy. Also, the banking sector is a crucial part of the economy. Training has a significant impact on overall performance. This study investigates the influence of different employee training delivery methods on job commitment among non-executive workers in the banking industry of Sri Lanka, with a specific focus on ABC Bank. The research aimed to identify how various training approaches—such as OJB, e-learning, ILT, blended learning, micro-learning, and gamification—influence employees' commitment levels to their roles. Utilizing a mono-methods approach, data were collected through questionnaires from non-executive staff members at ABC Bank. The findings reveal significant differences in job commitment based on the training methods employed, with interactive and personalized training showing the highest positive impact. This study highlights the importance of aligning training methods with employees' learning preferences and job requirements to enhance their commitment and performance. These insights provide valuable recommendations for banking sector HR departments to optimize training strategies, ultimately improving employee retention and organizational effectiveness.

Keywords: *Job Commitment, Employee Retention, Training delivery, Training optimization*

Introduction

Training is a crucial aspect of modern organizational life. Coul et al. (2014) explain that the training industry has grown significantly due to various instructional strategies, learning options, and technologies, making it a crucial component of modern organizational life. Training is understood as a systematic effort to impart knowledge, skills, attitudes, or other

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ISBN: 978-624-5553-76-1

characteristics to improve performance at both individual and organizational levels. While training generally has positive effects, it is crucial to understand the finer points of training and its place in human capital development.

Alshaabani et al. (2014) explain that Employee performance and commitment are closely linked, with profitability, productivity, efficiency, client satisfaction, and employee morale being the primary criteria for organizational performance in any business sector. Job satisfaction is crucial for an organization to achieve its objectives, as it enables a creative and innovative workforce to generate new ideas, enabling the company to grow and adapt positively to changing market conditions and times. However, the Sri Lankan banking industry may lack sufficient training opportunities for non-executive workers to adapt and enhance their job commitment. Ismail (2016) explains that Training is a critical human resource management function in both Public and Private Organizations. It is perceived that training increases employees' commitment. Traditional instructor-led training methods are still popular, but non-executive banking employees may not be appropriate for these methods. Vaughn (2014) explains that Instructor-led training is no longer considered the most effective or cost-effective approach. It is perceived that integrating modern technology in training programs is a crucial component in enhancing organizational commitment, hence making it crucial to study further training modalities that would influence employee commitment among non-executive staff in the Sri Lankan banking sector.

Carolan et al. (2014) stated that training can significantly impact behaviour and brain functions, extending beyond the task it is designed to address. Currently, E-Learning and blended learning methods are gaining popularity. Furthermore, Jehanzeb et al. (2015) argued that training programs enhance organizational performance, demonstrate return on investment, and are crucial for attracting and retaining skilled employees. The training program significantly improved employee satisfaction, knowledge acquisition, job behaviours, and organizational performance. Organizational commitment is crucial in enhancing organizational effectiveness, thereby enhancing work performance and reducing turnover. E-learning has become a widely accepted tool in various fields like higher education, business, and training. E-learning strategies focus on training basic and job-specific skills, rather than developing organizational and managerial competencies. Training is crucial for employees to learn, develop, and adapt to changes in their work environment. It requires constant knowledge improvement, skill development, and habit adaptation. Companies recognize that training improves employee performance and productivity and serves as a tool for managing risks related to new products, markets, and technologies. E-learning has the potential to significantly improve the development of human resources in the banking sector. Most bank employees found e-learning effective, enjoyable, and engaging, indicating that they found it enjoyable to train using. The positive reinforcement of the recurring cycle will ensure that eLearning consistently contributes to business performance.

ISBN: 978-624-5553-76-1

It is imperative that the banking industry explore modern training methodologies like e-learning, blended learning, microlearning, on-the-job training, and gamification to enhance employee commitment.

To address the knowledge gap mentioned above, the main aim of this study is to examine the influence of Employee Training delivery methods on commitment to the job among non-executive workers in the Banking Industry of Sri Lanka, taking ABC Bank as a case study. In achieving the aim, the authors will examine the relationship between commitment to bankers' jobs and Traditional Instructor-Led Training, E-learning, Blended learning, Microlearning, on-the-job training, and Gamification.

Research Questions

a) What is the relationship between traditional instructor-led training and employee commitments?
b) What is the relationship between E-learning and Employee Commitment?
c) What is the relationship between Blended learning and Employee Commitment?
d) What is the relationship between Microlearning and Employee Commitment?
e) What is the relationship between On-the-job training and Employee Commitment?
f) What is the relationship between Gamification and Employee Commitment?

Literature review

How e-learning influences Commitment to the Job

Employee commitment is widely recognized as a key competitive advantage, and it can address challenges like reduced turnover rates and increased productivity. Employee commitment practice is a strategy employed by an organization's human resources to ensure employees' performance and commitment to the organization's vision. According to Kaliannan and Adjove (2015), employee engagement or commitment is frequently linked to organizational concepts like employee satisfaction. Kulikowski Et al. (2022) stated that E-learning implementation can be costly for organizations due to low adoption rates. However, it should be balanced with improved satisfaction influenced by learner satisfaction, employee commitment, learning system technical characteristics, educational content, and self-efficacy. Additionally, Mirmoghtadaie et al. (2023) found E-learning to be a dynamic and efficient learning method that significantly enhances the culture of information and communication technology by offering benefits like ease of use, cost-effectiveness, regular updates, flexibility, learning success support, improved environmental control, and accessibility. However, in the Sri Lankan context, there is still a gap in the literature addressing the relationship between E-Learning and commitment to the job in the Banking industry. Therefore, the authors selected e-learning as an independent variable that should be studied further.

ISBN: 978-624-5553-76-1

How Traditional Instructor-Led Training (ILT) Influences Commitment to Job.

According to Sekhon and Hartley (2020, traditional instructor-led training, as one type of training method examined in this study, does not affect employee training satisfaction, but at the same time, it has significant effects on employee job satisfaction and engagement. However, in a previous study, Dimeff et al. (2015) found that instructor-led training enhances employee learning by promoting group discussions, debates, and team bonding, leading to increased job satisfaction, commitment, and long-term benefits compared to one-on-one or online training. Additionally, Ermel et al. (2017) stated that traditional instructor-led training is more effective for corporate employee development, as it involves live trainer-leading sessions, enhancing practical skills more effectively than self-learning. Furthermore, Alshawabkeh (2020) explained that instructor-led training and job shadowing are formal methods used by organizations to teach employees job tasks, enhance therapy skills, and enhance learner satisfaction. In a recent study, Decock and Vandaele (2022) argued that instructor-led Training brings experts and learners together physically or virtually. This method allows for personalized attention, promotes active engagement, and facilitates real-time feedback, making it a timeless and practical approach. In the Sri Lankan context, there is still a gap in addressing the effect of instructor-led Training (ILT) upon commitment to the job in the Banking industry. Therefore, the authors selected Instructor-Led Training (ILT) as an independent variable for this study.

How Blended learning Influence commitment to a Job

In a study conducted by Strickland (2014), it is stated that blended learning in workplaces is gaining popularity due to its advantages over conventional learning, potentially improving job outcomes by providing employees with new knowledge and skills, and enhancing job performance, commitment, and productivity. According to Wivell and Day (2015), most organizations that invest in blended learning for employees' upskilling can significantly improve engagement, retention, and overall business success. Porter (2016) described blended learning as a comprehensive approach that integrates classroom instruction with additional training methods, offering tailored solutions for business needs, resulting in increased effectiveness, cost-effectiveness, and improved responsiveness. Furthermore, Yperen and Wortler (2017) argue that blended learning practices enhance organizational performance, productivity, and employee satisfaction, minimizing adverse outcomes and promoting flexibility in work schedules and locations due to technological advancements and societal changes According to Mubayrik (2018 blended learning strategy, which integrates online self-directed learning materials, aims to improve employee development and performance by integrating personal learning with job performance. Furthermore, in their study, Wortler et al. (2021) explained how blended learning practices enhance organizational

ISBN: 978-624-5553-76-1

commitment and motivation in demanding work environments, requiring workers to desire work-related choice and psychological freedom, and offering significant control over location and timing. In the Sri Lankan context, there is a gap in knowledge on how blended learning influences commitment to the job in the Banking industry. Therefore, the authors selected Blended learning as an independent variable for the ABC bank case study.

How Microlearning Influences Commitment to Job

Microlearning helps employees build their careers by knowing the organization's requirements. According to Margol (2014), micro-learning aids new employees in understanding the company's brand, culture, expectations, and support systems, providing skills training for transitioning from individual contributors to leaders and helping them navigate their careers. Furthermore, Emerson and Berge (2018) cited that companies increasingly use microlearning strategies to engage and educate employees using mobile devices. These strategies can be customized to create a positive feedback loop, accelerating staff development and increasing employee retention. Renshon (2018) also described how microlearning can enhance employee productivity and knowledge, particularly through competency-based methods. It is further argued that subscription learning techniques can enhance performance in learning organizations, making microlearning a valuable asset for organizations aiming to improve employee performance. Even though there are many studies conducted elsewhere, in the Sri Lankan context, there is still a knowledge gap on the influence of Microlearning on commitment to the job in the Banking industry. Therefore, the authors have selected Microlearning as an independent variable for the ABC bank case study.

How on-the-job training influences commitment to the Job

Most organizations believe training is one of the best methods to teach employees new things and make them better at their jobs. This is helpful for the employees to increase their commitment and productivity. Wen and Lin (2014) cited that on-the-job training (OJT) significantly boosts employee motivation and focuses on future job improvement, particularly for new employees in the work environment, as it helps develop desired skills for their specific roles. Furthermore, Zahra et al. (2014) explain that the effectiveness of On-the-Job Training (OJT) in the banking and finance industry is often questioned due to a lack of systematic research. To enhance its effectiveness, four predictors need to be studied: self-efficacy, motivation, training content, and manager support. Gupta (2023) explains, that OJT is a learning method where employees observe and work alongside experienced colleagues to gain skills. It involves mentorship, allowing employees to tackle challenging tasks confidently. The process starts with shadowing, progresses to working under guidance, and then independently applying the acquired skills. Considering the literature gap related to the aforementioned relationships between on-the-job training and commitment to jobs in the

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Banking industry, the authors have selected on-the-job training as an independent variable for the case study.

How Gamification Influences Commitment to a Job

Satisfied employees are beneficial for the organization. Employees need more than benefits, bonuses, and company swag to commit to their employers fully. It is common knowledge that not only do well-paid employees not love their jobs. There are many ways to keep employees happy and increase their commitment to work. Gamification is one of the best for that. Because it can boost employee motivation. That incorporates games like points, levels, and rewards into their daily tasks. Furthermore, Buckley (2017) explains that Gamification can enhance engagement and motivation in training and education by making it more engaging and appealing. Girdauskiene (2022) cited in his study that gamification is a highly effective tool for motivating employees and enhancing engagement, participation, and productivity. Gamification naturally motivates increased competition, potentially enhancing organizational job satisfaction and performance. Furthermore, Miri and Macke (2022) described gamification as one of the most powerful tools that enhance employee engagement because it allows for transforming tedious and routine tasks into interesting and meaningful activities and engaging employees. Stol et al. (2022) further cited that gamification significantly boosts employee motivation, engagement, retention, loyalty, and organizational commitment. According to the study, it fulfils internal and external needs, while loyalty and motivation remain insignificant in gamified and non-gamified environments. Through the above review, authors have identified a gap between Gamification and commitment to the job in the Banking industry. Therefore, the authors selected Gamification as a variable for the study.

Conceptual Framework

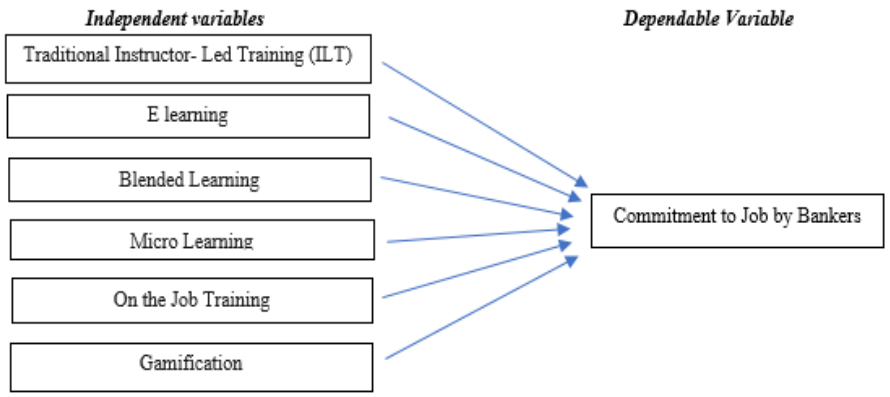

Figure 01: Conceptual Framework

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Methods

The researchers have adopted a positivist philosophical approach, which emphasizes objective measurement, causal inference, generalizability, and actionable insights in research. According to this research, the authors conducted the study using 250 staff members of ABC Bank. They prepared a structured questionnaire for this research and identified how training methods impact job commitment among non-executive employees of this bank. The authors used a deductive approach for this research. A deductive approach involves researchers testing social theories with data, moving from general to specific levels, typically associated with scientific investigation. Therefore, this deductive approach was most suitable for identifying the relationship between training delivery methods and job commitment among bank employees. They had a structured framework (Questionnaire) and planned to use advanced math tools like regression analysis to analyze data (SPSS software system) and identify connections. The authors used a case study for this. This research is more manageable because the authors focused on the specific topic in ABC Bank (the relationship between training delivery methods and employee commitment) instead of the broader issue. The authors picked the Central Operations department of ABC Bank plc as a case study (banking services, operation support, central clearing, and payment services departments) to learn about the impact of training delivery methods on the commitment to the job among non-executive staff in the banking industry. The authors used a mono method, which utilizes a single data collection technique and its corresponding analysis procedures for this research. ABC Bank used a cross-sectional design as a time horizon for this research to examine the impact of training delivery methods on job commitment across a diverse sample, providing insights into potential methods and job commitment. This approach enabled quick assessment and analysis, allowing ABC Bank to implement targeted retention strategies. A quantitative research design may employ a single data collection technique, like a questionnaire. To conduct this research, a structured questionnaire was developed to collect quantitative responses from bank employees in central operations at ABC Bank related to research questions.

The authors conducted the study to find the effect of employee training delivery methods on commitment to the job among non-executive workers in the banking industry of Sri Lanka. They selected the ABC bank in Sri Lanka by collecting data from the following categories of employees in the total sampling frame.

Trainee Banking Assistant - 98

Banking Assistant - 152

The population of authors selected the Trainee Banking Assistant and Banking Assistant in Central operations (banking services, operation support, central clearing, and payment services departments) who worked in the ABC Bank PLC. Researchers selected the 250

respondents using a simple random sampling technique and received 250 valid responses.

Analysis and Discussion

Correlation Analysis Between on the job Training and Commitment to the Job of Bankers

Table 01: Summary of Inferential Statistical Analysis

	Pearson Correlation	Conclusion	Sig. (2-tailed)
Traditional Instructor-Led- Led Training for Commitment to the Job of Bankers	.736	Strong Positive correlation	.000
Blended Learning for Commitment to the Job of Bankers	.755	Strong Positive correlation	.000
E-Learning for commitment to the Job of Bankers	.768	Strong Positive correlation	.000
Micro-Learning for Commitment to the Job of Bankers	.769	Strong Positive correlation	.000
Gamification for commitment to the Job of Bankers	.796	Strong Positive correlation	.000
On-the-Job Training	.823	Strong Positive correlation	.000

Source: Authors Developed (2025)

Instructor-led training (ILT) is a field-specific instruction method that improves understanding, effectiveness, and employee-organization connections. Supported by organizational leadership, it strengthens the relationship between traditional training and job commitment. According to these findings, the Pearson correlation coefficient value is 0.736, indicating a positive relationship between the independent and dependent variables. Blended learning, a combination of classroom instruction and online training, is a strategic approach in the banking industry that improves effectiveness, cost-efficiency, and job commitment by offering in-person and online learning opportunities, enhancing professional growth, and boosting employee satisfaction. According to these findings, the Pearson correlation coefficient value is 0.755, indicating a positive relationship between the independent and dependent variables. Organizations worldwide increasingly use E-learning to maximize the returns on man-hours. It has gained significant interest among bank managers and researchers as a cost-effective way to improve staff performance. Furthermore, the Pearson correlation coefficient value is 0.768, indicating a positive relationship between the independent and dependent variables. A microlearning platform is a tool that enhances employee engagement and motivation by incorporating gamification, personalized learning paths, and rewards, reflecting industry trends and skills, and assisting employees in navigating other learning sources. What is more Pearson correlation coefficient value is 0.769, indicating a positive relationship between the independent variable and dependent

variable. Gamification theory suggests that incorporating game-like elements into work environments can boost employee morale and commitment by transforming routine tasks into enjoyable experiences, enhancing job satisfaction, and creating a positive organizational atmosphere. This leads to increased engagement, motivation, and connection to work, resulting in a dedicated workforce. According to this analysis, the Pearson correlation coefficient value is 0.796, indicating a positive relationship between the independent and dependent variables.

Multiple regression analysis

Table 02: Summary of Multiple Regression Analysis

Model	Unstandardized Coefficients		Standardized Coefficients	*t*	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	.398	.166		2.400	.017		
Traditional_Instructor-Led	.099	.063	.099	1.565	.119	0.265	3.776
Blended_Learning	.034	.074	.034	.457	.648	0.257	3.885
E-Learning	.115	.071	.118	1.616	.107	0.204	4.913
Micro_Learning	.127	.069	.132	1.835	.068	0.226	4.432
Gamification	.158	.069	.163	2.296	.023	0.197	5.079
On-The-Job_Training	.383	.065	.393	5.891	.000	0.230	4.356
Adjusted R-square	0.719						
F value	103.450						

Source: Authors Developed (2025)

The summary table provides an overview of a multiple regression analysis aimed at understanding the influence of various training methods on the job commitment of bankers. The analysis incorporates six predictors: on-the-job training, traditional instructor-led training, e-learning, micro-learning, Gamification, and blended learning. These predictors represent different types of T&D strategies that may affect bankers' commitment to their jobs. R (.852): The R-value, or correlation coefficient, indicates a strong positive linear relationship between the observed job commitment of bankers and the values predicted by the model. An R-value of .852 suggests that the predictors collectively have a significant positive influence on job commitment. R Square (.726): The R Square value represents the proportion of variance in the dependent variable (job commitment of bankers) explained by the model's independent variables. With an R Square of .726, 72.6% of the variability in job commitment can be attributed to the training methods included in the model. This is a high level of explained variance, indicating the model's effectiveness in capturing the relationship between the predictors and the dependent variable. Adjusted R Square (.719): While similar to R Square, the Adjusted R Square considers the number of predictors in the model and adjusts for the potential over-fitting. An Adjusted R Square of .719 indicates that the model remains

strong and generalizable, even when accounting for the difficulty added by the six predictors. Std. Error of the Estimate (.30793). This metric measures the average distance the observed values fall from the regression line. A lower standard error indicates a better fit of the model to the data. In this case, the standard error of .30793 is relatively small, which suggests that the model's predictions are close to the actual data points, enhancing its reliability. R Square Change (.726): Since this is the first model, the R Square Change is the same as the R Square, indicating that including these six predictors explains 72.6% of the variance in job commitment. F Change (103.450): The F Change statistic assesses the overall significance of the regression model. With a high F value of 103.450, the model is statistically significant, meaning that the predictors collectively provide a meaningful explanation of the dependent variable. The associated significance level (Sig. F Change) is .000, far below the conventional threshold of .05, confirming the model's strong statistical significance. Degrees of Freedom (df1 = 6, df2 = 234): The degrees of freedom are related to the number of predictors and the sample size. The first degree of freedom (df1 = 6) corresponds to the number of predictors. In contrast, the second degree of freedom (df2 = 234) is related to the residuals, calculated as the sample size minus the number of predictors minus one.

The analysis suggests that combining on-the-job training, traditional instructor-led training, e-learning, micro-learning, Gamification, and blended learning plays a significant role in influencing the job commitment of bankers. The high R Square and Adjusted R Square values indicate that these training methods explain a substantial portion of the variability in job commitment, making the model a strong tool for understanding and predicting this aspect of employee behaviour. Moreover, the statistical significance of the model, as indicated by the F Change and Sig. F Change values underscore the importance of these training methods in shaping job commitment. In practical terms, this analysis could be used by organizations to tailor their training programs, focusing on the methods that have the most significant impact on employee commitment, thereby enhancing overall job satisfaction and performance within the banking sector.

Conclusion

This research investigates the influence of different types of Employee Training delivery Methods on job Commitment among the non-executive workers at ABC Bank in Sri Lanka. This research explored Traditional Instructor-led Training (ILT), E-learning, blended learning, microlearning, on-the-job training, and Gamification. As key findings, Traditional Instructor-led Training (ILT) is a method that significantly boosts job commitment among bankers by promoting Interactive Activities, Standardized Materials, Physical Presence, and Credentialing. This also makes them feel like they belong to a group, which is important for them to be committed to their job. The mean value is between 4.46 and 4.34, and the Person Correlation is 0.736, indicating that Traditional instructor-led training effectively boosts job

commitment among Bankers. Blended Learning combines Self-paced online modules, Face-to-face training, Interactive online activities, and classroom sessions. This approach helps employees feel more committed to their jobs because it keeps them interested in their work, helps them stay in their jobs longer, and helps them learn new skills. Positive correlations (Person correlation value of 0.755) indicate that Blended learning is linked to higher job commitment levels among bankers. Microlearning positively impacts job commitment through its focused, short duration, focused learning objectives, multimedia richness, and its ability to provide continuous learning opportunities aligned with the employee needs and organizational goals by leading the organization's goals. Person-correlation 0.769 and mean value between 4.25 and 4.29 reveal that microlearning significantly enhances job satisfaction and commitment, aligning with employee needs and organizational objectives. On-the-job training is crucial for increasing job commitment by providing the real work context, Job performance improvement, adaptability to change, and retention rate, thereby boosting job performance and commitment. According to the statistics analysis, the mean value is between 4.27 and 4.42, and the Pearson Correlation of 0.823 indicates a positive impact on job commitment. E-learning demonstrates a strong positive correlation with job commitment. That is accessibility, interactivity, scalability, and technical support. Through this valuable tool, job commitment and satisfaction can be enhanced. By indicating a person correlation value of 0.768, it highlights a positive impact on job commitment among bankers with this training method. Gamification indicates progress Bars, Recognition rewards, Feedback loops, Challenges, and quests can boost motivation, Satisfaction, and commitment by making work more engaging and fun. A strong positive correlation (Pearson correlation coefficient value of 0.796) highlights that gamification is a powerful tool for enhancing job commitment by making tasks more engaging, motivating, and satisfying employees, and creating a supportive work environment in the banking industry.

This research suggests that both the blend of traditional and modern training methods is most important for boosting job commitment in the competitive banking industry in Sri Lanka. The banking sector should consider a blended approach by combining Traditional instructor-led training and the modern E-learning platform to give employees a more flexible, interesting, and engaging way to learn. Also, this study recommends investing in e-learning platforms because they have short training modules that can be accessed whenever needed. The findings suggest that banks should enhance their on-the-job training by implementing more practical and flexible methods to enhance employee learning and retention. The Gamification Training sessions can also be incorporated to increase motivation and engagement among bankers.

ISBN: 978-624-5553-76-1

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ISBN: 978-624-5553-76-1

ISBN: 978-624-5553-76-1

Career Crafting in the Post-retirement Work Engagements: Exploring the Crafting Behaviours of Post-Retired Employees in Sri Lanka

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Abstract

Despite significant attention being paid to job crafting of individual employees, career crafting remains a relatively new area of focus, especially in understanding how older workers navigate their post-retirement work engagements. However, career crafting holds substantial potential for deepening our understanding of the post-retirement careers of retired employees. This paper aims to understand why and how retirees engage in career-crafting behaviours in their post-retirement work engagements. Adopting a qualitative approach, this study draws on focus group interviews with 23 retirees from four districts in Sri Lanka. Findings highlight that Retirees adopt cognitive, relational, and task crafting to redefine work, relationships, and activities, making post-retirement work purposeful, flexible, and identity-enhancing while revealing the post-retirement career crafting among Sri Lankan retirees is shaped by motivations such as self-reinvention, autonomy, family bonding, and defying aging stereotypes, reflecting both personal agency and cultural values.

Keywords: Career crafting; Older employees; Post-retirement work engagements; Sri Lanka

Introduction

Workforce ageing is widely recognised as a natural global phenomenon that has significant impacts on contemporary organisations (Salomão Filho et al., 2023). While organisations are implementing strategies to build a resilient workforce, retirees themselves are also seeking ways to engage in work in a resilient manner (Murakami, 2021). Recent studies emphasise the importance of the competencies of older workers (Dychtwald et al., 2024) and their accumulated wisdom (Hilsen & Olsen, 2021). Therefore, it is reasonable to suggest that older retired workers should shape their post-retirement careers in alignment with their preferred working styles and passions, fostering both satisfaction and engagement. Furthermore, career crafting, which can facilitate positive ageing (Bar-Tur, 2021), healthy ageing (Michel & Sadana,

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ISBN: 978-624-5553-76-1

2017), and successful ageing (Ryff, 1989), could contribute to greater engagement in the workforce.

Past research has explored the outcomes of workforce ageing at various levels, including national, organisational, and individual levels. For example, workforce ageing-related research at the national (macro) level has focused on labour market dynamics (Vodopivec & Arunatilake, 2008), economic issues (Cristea et al., 2022), national-level policies (Blackham, 2017; Gahan et al., 2016; Nagarajan & Sixsmith, 2023), government interventions (Cebulla & Wilkinson, 2019; de Vere et al., 2022), and societal implications (Dingemans & Henkens, 2019). The organisational level attempts to understand workforce ageing have focused on organisational demographics (Calzavara et al., 2020), organisational strategies (Adhikari et al., 2023; Wang et al., 2024), and human resource practices (Armstrong-Stassen, 2017; Farr-Wharton et al., 2023; Finsel et al., 2023). In addition to these, recently, particular attention has been paid to motivation drivers for post-retirement workers (Hansson et al., 2023), factors influencing work status (Wu et al., 2024), retirement planning (Eberhardt et al., 2022), work disengagement and life satisfaction (Henning et al., 2025), and successful ageing (Gonot-Schoupinsky et al., 2022), thus attempting to examine the individual-level dynamics of workforce ageing. Still, there is a dearth of findings on individual experiences (Dingemans & Henkens, 2019) in light of the outcomes of workforce ageing.

Particularly, how career-crafting behaviours of retirees occur in response to post-retirement conditions remains largely unexplored. Additionally, career crafting is a rapidly emerging concept in career research (Diaa et al., 2024; Ge et al., 2023), yet it holds significant potential for understanding the post-retirement careers of older individuals. In addition to the studies on late-career planning and job crafting for older workers (Ang, 2021), existing research on carer crafting have explored career crafting in the context of occupational choice in a conceptual study (De Vos et al., 2019), an empirical investigation of the relationship between career success and career crafting (Janssen et al., 2021), career pathways in the school context (Tims & Akkermans, 2020), development and validation of a career crafting assessment (Lee et al., 2021), a meta review of career crafting literature (Balakhtar et al., 2024), career crating in the context of career performance (Leong et al., 2024) and career crafting strategies of self-initiated expatriates (Suarez-Bilbao et al., 2023).

Although scholarly attention has been paid to career crafting among the typical workforce, it appears that career crafting is particularly essential for older workers, retirees, or those planning for retirement. Therefore, this study aims to understand why and how retirees engage in career-crafting behaviours in their post-retirement activities. Specifically, the research question addressed in this study is: Why (reasons) and how (ways and means) do retirees engage in career crafting?

Literature Review

Job Crafting Vs. Career Crafting

Job crafting refers to how employees redesign their jobs to better align with their preferred working styles and their passions, enhancing both satisfaction and engagement (Wrzesniewski & Dutton, 2001). As defined by Akkermans and Tim (2017), job crafting refers to "employees proactively modifying aspects of their job to create a better fit between their job and their characteristics: (p.174). Since jobs consist of a combination of tasks, cognitions, and interactions aimed at achieving specific objectives, job crafting involves changing or altering how tasks are performed, the nature of interactions, and how tasks are perceived (Berg et al., 2008). Job crafting can also help employees overcome adverse outcomes, such as taking control of specific tasks to reduce stress and enhance their ability to cope with workplace challenges (Berg et al., 2008).

Tim and Akkermans (2020) integrate three concepts —cognitive crafting, task crafting, and relational crafting —to propose the idea of career crafting. They argue that, in career crafting, employees engage in cognitive crafting (altering the way they think about their career), task crafting (changing the scope and type of jobs they undertake), and relational crafting (altering the relationships at their workplace) (Tim & Akkermans, 2020). In the present study, we conceptualize our working definition of career crafting in the context of post-retirement engagement in line with the same cognitive, task and relational aspects, thus proposing that cognitive crafting(shifting the way retirees approach the post-retirement career), task crafting(changing the scope and type of jobs the retirees engage in - maybe by shaping the jobs and their daily activities to avoid challenges), and relational crafting (changing the relationships at their jobs - building a strong network of friends, colleagues, and mentors at jobs who offer support).

Notably, job crafting and career crafting differ in their respective scope, timeframe, and the employee's intent. Job crafting refers to the short-term, oriented changes individuals make to their currently engaged work roles to enhance self-satisfaction, engagement, or performance (Wrzesniewski & Dutton, 2001). In contrast, career crafting is a broader, future-oriented process through which individuals intentionally shape their entire career course, aligning professional paths with personal values and long-term goals (Tims & Akkermans, 2020).

Career Crafting Dynamics

Career crafting is a means of enhancing personal and professional growth (Balakhtar et al., 2024) and is seen as a proactive behaviour of individuals (Tim & Akkermans, 2020). De Vos et al. (2019) identified employability, adaptability, and career competencies as closely related factors in crafting sustainable careers across the life course. Contextual factors shaping career crafting are identified as organisational characteristics, family support, and external

environmental factors. In contrast, adaptability, career competencies, subjective and objective career success, and gender are noted as individual-level factors (Balakhtar et al., 2024). When considering the outcomes of career crafting, Diaa et al. (2024) found that career crafting ensures career sustainability over time, thereby enhancing subjective career success and perceived employability.

Proactive Behaviour Theory [PBT] (Crant, 2000) has been recently used in investigating employee behaviours. Crant (2000) defines proactive behaviour as "taking initiative in improving current circumstances or creating new ones; it involves challenging the status quo rather than passively adapting to present conditions" (p.436). Accordingly, PBT posits that individuals are not passive recipients of their work environment but instead act in self-initiated, future-focused, and change-oriented ways to shape their roles and contexts. Past research has used PBT in their explorations of career proactivity (Jiang et al., 2023), career competencies and job crafting (Plomp et al., 2016), and career crafting and career success (Diaa et al., 2024). This evidence shows that career-related research draws on PBT to study how individuals shape their career paths. However, post-retirement-focused studies are yet to explore the proactive behaviours of retirees such as career crafting. Interestingly, a recent study by Crant and Chen (2024) highlights that although the main effects, mediators, and moderators of employees' proactive behaviours are known, there remain opportunities for further empirical work to develop and advance theory; thus, cultural considerations are one such area.

Method

This study was a qualitative inquiry grounded in the interpretivist paradigm, adopting an inductive approach and utilising Proactive Behaviour Theory as its underlying theoretical framework. Primary data were collected through four focus group discussions (FGDs) conducted with 23 retired but engaged individuals in a cross-sectional study. We used focus group discussions (FGDs) for four key reasons: they collaboratively facilitate obtaining relevant inputs; participants can be selected according to pre-planned stratifications; the synergistic nature of group interaction encourages the sharing of rich information; and they offer a comfortable setting for retired individuals, who may feel more at ease engaging with peers when meeting unfamiliar people (Heller et al., 1990). The participants for these discussions were recruited from four districts: Kandy (4), Matale (10), Nuwara Eliya (3), and Anuradhapura (6), representing a mix of urban, rural, and moderately modernised areas in Sri Lanka. We believe these districts stand out among the country's 25 districts due to their unique blend of history, culture, geography, and economic contributions, offering a rich and diverse population context for the study. Participants were identified and connected through Grama Niladhari officers (the first-contact government representatives for civilians) or Samurdhi

Officers (local officials administering poverty alleviation and prosperity-related programs) in their respective areas. The sampling strategy was non-probabilistic, purposive sampling.

Although retirement[†] Has traditionally been regarded as disengagement from the formal workplace, but it is increasingly being redefined in light of demographic shifts. Today, retirement is viewed as a phase that offers opportunities for continued engagement and personal development (Dychtwald et al., 2024). Post-retirement engagement refers to retirees remaining involved in meaningful activities, such as part-time work, volunteering, hobbies, or lifelong learning (James et al., 2010). For this study, we define post-retirement work engagement as "Active engagement in an economically beneficial activity undertaken after formal retirement, including both salaried positions and self-employment". Accordingly, the inclusion criteria for participation in this study were: (a) retirement from government or private sector employment, (b) being aged 57 or above, and (c) active engagement in an economically beneficial activity undertaken after formal retirement, including both salaried positions and self-employment.

We conducted four FGDs, covering all four districts, with two rounds of discussions in each. Each focus group consisted of 5–6 retirees with diverse occupational histories. The group discussions were held in person at pre-selected locations, arranged by the participants themselves. Participation was entirely voluntary. At the beginning of each discussion, participants were briefed on the purpose of the study, the topic of discussion, its rationale, and assured of confidentiality regarding their identities. The FGDs were conducted over four days, with each session lasting between 90 and 135 minutes. Two researchers facilitated the discussions: one moderated the session while the other took detailed notes. The discussions were conducted in the mother tongue (Sinhala language) of all participants, and the notes were taken in the same language. The notes were reviewed, completed, translated into English, and coded by both researchers on the same day to ensure accuracy and reliability. Thematic content analysis was conducted using the framework proposed by Miles, Huberman, and Saldaña (2014), which involves identifying recurring patterns in the data, clustering similar narratives, and abstracting broader themes across focus groups. Themes such as self-reinvention, freedom work, and capitalising inner craftsmanship were inductively derived through iterative reading of transcripts, supported by illustrative narratives drawn from participant stories. A theme matrix (e.g., Table 1) was developed to consolidate the themes, their meanings, and representative data excerpts. Although data were collected through FGDs, several participants shared rich, personal narratives during the conversations. These narratives, while individually voiced, resonated with the broader sentiments expressed within each group. As Morgan (1997)

[†] The minimum retirement age in Sri Lanka ranges from 57 to 60 years, depending on the effective date of the relevant Gazette notification (Gazette of the Democratic Socialist Republic of Sri Lanka, November 19, 2021).

ISBN: 978-624-5553-76-1

notes, FGDs often bring out shared meanings through individual storytelling, making personal narratives valuable for illustrating group-level themes.

Findings

The insights emerging through the FGDs provide the evidence that post-retirement career crafting is a more intentional process, often characterised by individual agency and artistic expression. Thus, overall career crafting behaviours of Sri Lankan retirees are more towards personal meaning-making rather than just structural or environmental influences. Additionally, this deliberate career crafting effort indicates that retirees are actively seeking post-retirement careers, rather than merely continuing their previous work. The following section presents the findings of the career crafting stories that emerged through the data.

Forms of post-retirement career crafting

Self-reinvention career crafting

This refers to the conscious and strategic process through which retirees proactively plan their transition into post-retirement careers, ensuring continuity in their professional identity. This process often begins well before retirement, allowing for a smooth transition without a career gap. For instance, a retired public-school principal at the Nuwara Eliya District FGD shared:

> *"When I was reaching my 50s, I started thinking about what I wanted to do after retirement. I still felt young and capable, so I gradually took on an advisory role in an international school. By the time I officially retired, I had already transitioned into the role of Principal at the same international school. It was simply a change in the school type, but my professional identity remained intact."* Here, He did not wait until his retirement to consider his next steps. Instead, he began planning well in advance, recognising that retirement would not mean the end of his professional identity.

In his story, he further shared that the responses of his community reinforced his career reinvention. As he shared, the school's parents requested that he continue as Principal, and his students also encouraged him to remain. Even the villagers and neighbours encouraged him to take on his new position with pride and respect. This acceptance by his community further solidified his new role and validated his decision to reinvent himself. Thus, here, post-retirement career crafting is not just about finding a job, but about maintaining a sense of purpose, pride, and professional identity. Thus, many retirees describe it as the rebirth of a new career rather than the end of their professional journey.

In addition, two sub-themes also emerged under this theme: (1) reclaiming identity beyond job titles. This refers to retirees who move beyond their previous designations and find a renewed

sense of self. For example, a former government Nursing officer who transitioned into a Nurse Training Consultant stated:

> *"I realised I was more than just my job title. I had decades of experience, so I rebranded myself as a "Training Consultant" rather than just an 'ex-nurse'."*

Theme (2) designing a "second act" with purpose – Many retirees deliberately curate their post-retirement work to align with personal values and interests. Here, it was noticed that retirees want their second career to be not just an extension of the past, but an intentional and fulfilling new life. For example, a retired female public school teacher became a Private Tutor.

> "*After decades in the public school as a teacher, I wanted to continue teaching, but in a way that allowed me to focus on individual students' needs rather than rigid curricula. Now, as a private tutor, I can design lessons that truly engage my students, and I find so much joy in seeing their progress without the traditional rules in my previous job."*

Taken together, the process of self-reinvention aligns with cognitive career crafting (Wrzesniewski & Dutton, 2001), where individuals redefine their professional roles in ways that maintain continuity in their work identity. This supports prior research suggesting that post-retirement career engagement is driven by the need to preserve identity and maintain self-worth (Wang & Shultz, 2010).

Inner value-driven career crafting

It was observed that the retirees often choose self-driven work that provides them with autonomy, flexibility, and a sense of personal control. This allows them to engage in activities that align with their preferences rather than being bound by external structures or employer expectations. One of the most common self-driven career paths observed among retirees was commercial farming. Many retirees transitioned into full-time agricultural work, including vegetable farming, fruit cultivation, and livestock ownership. This was especially prevalent among those who inherited family land or had purchased agricultural property before retirement, allowing them to establish their farming ventures. A former prison officer who became a commercial farmer shared his experience:

> *"I love spending my days among the green pepper fields. My entire day is now dedicated to farming. Unlike the high-pressure environment of the prison, my days are now slow-paced, allowing me to enjoy life while still earning an income."*

He further added;

> *"My spouse, also a retiree, joins me for all the fieldwork, so our days are full of activity. We are alone at home, with our married children living in outstations. I am happy that we have something meaningful to do together, generate seasonal income, and contribute to our daily consumption; not only that, it keeps us healthy as well."*

Thus, through such self-driven career choices, retirees experience a renewed sense of purpose, striking a balance between economic independence and personal fulfilment. Their career crafting is not just about continuing to work, but rather it is about working on their terms, in ways that enhance their quality of life.

Furthermore, this couple's story exemplifies a scenario where a space for family unity emerges in post-retirement career crafting. When the retired prison officer-turned-farmer and his spouse, also a retiree, work alongside him, sharing responsibilities and enjoying each other's company in the process. The couple has found that their shared work in the field brings them closer, making their post-retirement years more fulfilling. Additionally, they generate income together, which benefits their daily consumption needs. The mutual purpose they share strengthens their relationship and provides emotional fulfilment during their post-retirement years.

Regarding the career crafting behaviour highlighted in this story, it suggests a shift toward self-directed work, aligning with task crafting behaviours (Berg et al., 2007), where retirees modify their job tasks to align with their values. This finding also challenges traditional retirement norms by emphasising autonomy over necessity (Fasbender et al., 2019).

Breaking ageing stereotypes, career crafting

This concept challenges the traditional idea that ageing inevitably leads to a passive, less engaged lifestyle. Instead, many retirees actively seek to remain productive and continue contributing to their fields, proving that the value of experience and expertise does not diminish with age. One such individual is a former Nursing Officer whose career was filled with years of valuable local and international training. Despite the wealth of knowledge she had accumulated, she felt that post-retirement career opportunities did not align with her capabilities or provide a platform for her to utilise her expertise fully. She expressed her feelings of frustration and unfulfilled potential:

> *"I feel like I was competent in my job, especially as I was nearing retirement. I wish I could have worked for another decade. I am saddened that my expertise is now going to waste. At the very least, there should be a proper way to channel our expertise back into the community or the field to which we have dedicated our lives. I am open to any opportunity that comes my way to share my expertise in caregiving."*

Her desire to continue making a meaningful impact despite retirement shows her determination to break the common stereotype that older individuals lose their drive and ability to contribute. Rather than accepting a passive role, she actively seeks ways to stay engaged in her field. She expressed interest in consultancy, advisory roles, and volunteer training, hoping to share her vast knowledge with others in need. Thus, her story is a perfect example of career crafting in post-retirement, where the individual actively works to maintain

professional relevance and continues to contribute meaningfully, defying the notion of "passive ageing." By seeking out new opportunities and remaining open to various forms of work, whether through consulting, volunteering, or teaching, she demonstrates how retirees can craft their careers in ways that utilise their expertise while breaking the conventional moulds. In particular, this aligns with the concept of "encore careers," where retirees seek meaningful work that aligns with their values and expertise (Freedman, 2007).

Craftsmanship-oriented career crafting

The data revealed that among Sri Lankan retirees, especially women, craftsmanship serves as a meaningful and intentional avenue for career reinvention. This aligns with research showing that older women in South Asia often leverage domestic and artisanal skills in self-employment or small-scale entrepreneurship after retirement, both for income generation and personal fulfilment (de Mel, 2001; Gunatilaka, 2020). Globally, such forms of engagement have been framed as “encore enterprises,” particularly among women seeking purpose-driven work in later life (Cohen, 2014; Weber et al., 2019). Many retirees turn to artisanal and heritage-based crafts, such as batik-making, handloom weaving, and jewellery design, blending traditional skills with entrepreneurial aspirations. Unlike passive work continuation, these engagements are deliberate and deeply personal, reflecting retirees’ desire for an active and engaged lifestyle.

One such example is a retired postmaster who transitioned into running a batik and handloom shop after retirement. Reflecting on her journey, she shared:

> *“During my years as a postmaster, I always liked the design of batik sarees and handloom fabrics worn by customers who visited my post office. When retirement arrived, I did not want to just sit at home. I wanted to create something of my own, something that reflected my personality."*

She began by attending a short batik-making course and experimenting with designs at home. Initially, her creations were gifts for friends and family, but the positive feedback encouraged her to take it further. With her savings and a small business loan, she set up a modest workshop and retail space, hiring a few local women skilled in handloom weaving and batik dyeing.

> *"Now, my days are filled with colours and creativity. I design unique batik sarees, and our handloom shawls are made with great care. Customers love that each piece tells a story. This is not just business for me; it is a passion."*

This story illustrates how craftsmanship, when approached with intentionality, can offer retirees a purposeful, fulfilling, and financially viable second career. More than just economic survival, these post-retirement careers represent a form of self-expression.

Transitioning career crafting

This refers to individuals who opt for a completely different occupation post-retirement. This may be due to a desire for change, an unwillingness to continue in the same career, or a need

for a fresh start. These retirees seek a career shift that allows them to explore new interests or engage in less stressful and more socially engaging roles.

A retired government school male teacher shared his experience:

> *"I did not want to continue my teaching career even though there were private tutoring opportunities. Instead, I started a retail grocery shop attached to my home and became the shop owner. I enjoy the diversity of tasks I handle; it is a one-man show where I take care of everything. The best thing I enjoy is people dropping by; I always have a customer to chat with, share information, exchange gossip, and feel connected to the community. However, I still follow my old work habits and close my shop at 2 PM, just like the school day used to end."*

This story highlights how, despite a complete career shift, continuity in work habits and structured routines remain integral to the retiree's post-retirement work life. The transition reflects a deliberate move toward a career that offers greater social interaction, autonomy, and flexibility while maintaining a sense of purpose and discipline from the previous profession.

In summary, the above five stories reveal several reasons for post-retirement career crafting, as depicted in the table below.

Table 01: Reasons leading to post-retirement career crafting

Reason	Description	Extract from Stories
Self-reinvention	Retirees proactively plan for a new career path while maintaining their professional identity.	The retired school principal transitioned to an international school before retiring to maintain continuity in his career.
Maintaining professional identity	Retirees redefine themselves beyond their previous work roles, recognising their expertise.	The retired nurse rebranded herself as a "Training Consultant" instead of just an "ex-nurse."
Designing a "Second Act" with purpose	Retirees craft careers that align with their values and interests, creating a fulfilling new phase in life.	The retired schoolteacher became a private tutor to provide personalised education outside rigid curricula.
Freedom work	Retirees seek autonomy, flexibility, and control over their work.	The retired prison officer became a commercial farmer, enjoying freedom and a relaxed pace.
Strengthening family bonds	Career crafting involves joint work with spouses, creating a shared purpose.	The retired prison officer and his spouse worked together on a farm, strengthening their relationship.
Breaking Stereotypes of Passive Ageing	Retirees resist societal expectations of slowing down and seek continued engagement.	The retired nurse sought consultancy and training roles, refusing to let her expertise go to waste.
Capitalising inner craftsmanship	Retirees turn hobbies and passions into viable careers.	The retired postmaster started a batik and handloom business
Transitioning to a new career path	Some retirees deliberately switch to an entirely different career to explore new interests.	The retired schoolteacher opened a grocery shop, finding joy in social interaction and flexible work.

ISBN: 978-624-5553-76-1

Safeguarding health and physical fitness	Most retirees deliberately engage in various activities as a means of physical exercise to safeguard their health.	The retired prison officer continues to work in the field as a daily need for exercise, keeping the body moving.

Ways of Post-Retirement Career Crafting

The same five stories were used to illustrate the process of career crafting in the context of post-retirement. It can be observed that the post-retirement work engagement involves all types of career crafting, including cognitive, task, and relational crafting, as presented in the table below.

Table 02: The ways of career crafting in the context of post-retirement

Career crafting form	cognitive crafting (reframing meaning & identity)	Relational crafting (redefining work relationships)	task crafting (redesigning work activities)
Self-reinvention career crafting	Retirees reframe their professional identity beyond retirement (e.g., seeing it as a transition rather than an end).	Strengthening existing professional relationships and gaining validation from communities, students, and colleagues to solidify the new role (e.g., retired principal motivated by parents & students).	Taking on advisory/consulting roles, engaging in leadership within a different but related domain, and shifting focus from rigid job titles to meaningful work.
Inner value-driven career crafting	Viewing work as a means of personal autonomy and well-being rather than obligation (e.g., farming as a fulfilling lifestyle rather than necessity).	Engaging in collaborative work with spouses, family, or neighbours (e.g., a retired prison officer and spouse farming together).	Shifting to work that allows complete control over tasks, pace, and environment (e.g., agricultural activities)
Breaking ageing Stereotypes: career crafting	Rejecting societal perceptions of ageing as a decline and instead reframing it as a stage of contribution and impact (e.g., retirees resisting the idea of "wasted expertise").	Seeking new professional and social networks to stay engaged in their field (e.g., a former nurse looking for consultancy, training, or volunteer work).	Engaging in consultancy, advisory, or volunteer-based tasks to continue leveraging expertise rather than retiring into inactivity.
Craftsmanship-oriented career crafting	Redefining work as an artistic, expressive, rather than just a job (e.g., a batik	Creating new relationships through entrepreneurship (e.g., working with local women in craft-	Learning and mastering new crafts, shifting from structured work to entrepreneurial creativity (e.g., running a

	maker, seeing her work as a creative passion).	making, building customer networks).	boutique for handloom sarees).
Transitioning career crafting	Redefining what "work" means by embracing a completely different profession post-retirement (e.g., a schoolteacher reinterpreting his role as a shop owner).	Rebuilding social engagement through customer interactions rather than formal professional networks (e.g., a shop owner enjoying conversations with customers).	Taking on entirely new tasks that differ from previous roles, adopting a work structure that maintains routine but enhances flexibility (e.g., a grocery shop owner maintaining structured work hours like a school day).

Discussion and Conclusion

In the current study, based on the literature on successful ageing (Kooij, 2015), we demonstrate that older workers continually craft their careers in a way that allows them to pursue what they find interesting. Furthermore, the study shows that older workers are more likely to engage in interest crafting on workdays. Hence, it can be concluded that older workers craft their careers to do what they find interesting. In line with the literature on successful ageing, we demonstrate that older workers exercise agency in dealing with the ageing process by incorporating their changing motives into their post-retirement careers (Featherman, 1992; Freund & Baltes, 2002). This aligns with contemporary research emphasising the importance of meaningful work and psychological resilience in post-retirement transitions (Wang, Wanberg, & Kanfer, 2021). The findings reflect not only individual adaptation but also culturally embedded motivations, including family obligations and social recognition, which are less commonly explored in Western-centric retirement literature (Mahadevan & Mayer, 2023).

In particular, the retirees in the study demonstrated a proactive mindset and a desire to continuously develop and acquire new skills, which aligns with the concept of self-reinvention and career crafting. Their ability to adapt and evolve shows how retirees can find purpose and reinvention in their professional lives even after retirement (Schreurs et al., 2011). Further, the participants experienced positive emotions in their work lives, which is a fundamental strength for self-reinvention and career crafting. This highlights the importance of maintaining a sense of purpose and meaning, which retirees seek when crafting a second act (Fredrickson, 2001). The findings also align with the concept of encore careers, which emphasise purpose and flexibility, in line with existing literature (Lain & Vickerstaff, 2022; Freedman, 2007). This adaptive behaviour supports current understandings of cognitive and relational career crafting as essential strategies to maintain identity and well-being in older adulthood (Tims, Bakker, & Derks, 2013).

The study emphasises flexible work hours and part-time arrangements as essential elements of post-retirement careers. This aligns with the idea that retirees seek work that offers freedom

and flexibility, allowing them to design their work around their needs and preferences (Schreurs et al., 2011). It was also noticed through data that post-retirement career crafting, where workers adjust their roles to fit their needs and abilities, was a key factor. This approach gives retirees control over their work environment, aligning with the freedom to choose work that suits them (Tims & Bakker, 2010). Additionally, retirees in this study challenged traditional stereotypes of passive ageing by remaining engaged through entrepreneurship, creative expression, and community work. These findings reinforce newer perspectives in ageing research that highlight agency, purpose, and intergenerational contribution (Formosa, 2021; Calasanti, 2020). Interestingly, perhaps due to the influence of Sri Lankan culture, the retirees described a strong support system and a permissive home environment, which suggests that family support and connections play a crucial role in their ability to continue working. This supports the idea that retirees often work to maintain or strengthen family ties (Bosma et al., 2025). The participants also exhibited a high level of proactivity and psychological strength. This challenges the stereotypes of passive ageing and highlights retirees' desire to remain engaged, active, and productive, even in their later years (Ng & Feldman, 2008).

The current study revealed how Sri Lankan retirees engage in post-retirement career crafting as an evolving, culturally embedded process that involves all forms of dimensions of job crafting: cognitive, relational, and task crafting (Wrzesniewski & Dutton, 2001). Drawing on the participants' stories, it is evident that retirees proactively reframe the meaning of work and their professional identities, a form of cognitive crafting evident in themes such as self-reinvention and breaking stereotypes of passive ageing. This reframing challenges societal expectations around ageing and retirement, highlighting retirees' agency in redefining the meaning and value of their post-retirement engagement. Alongside cognitive reframing, relational crafting emerged prominently through retirees' efforts to sustain and reshape social and professional relationships. The Sri Lankan context, with its strong emphasis on family and community cohesion, appears to amplify the relational dimension of career crafting, making social ties a crucial enabler for post-retirement work engagement. Finally, task crafting was manifested as retirees redesigned their work activities to align with their evolving preferences, capabilities, and life circumstances. This included shifting to flexible work arrangements, engaging in entrepreneurial ventures such as craft-making or commercial farming, and initiating entirely new career paths, such as retail business ownership. Such flexibility reflects retirees' desire for autonomy and control, consistent with the theme of "freedom work" identified in this study. Task crafting thus allows retirees to tailor their work to sustain health, personal well-being, and satisfaction. Importantly, these three dimensions did not emerge as discrete categories but were deeply intertwined with Sri Lanka's socio-cultural context. Post-retirement career crafting in this context is not only a reflection of individual agency but also a culturally constructed phenomenon shaped by collective values, family structure, and societal

expectations. Retirees' pursuit of self-reinvention, meaningful second acts, and craftsmanship-oriented careers is embedded in narratives of family support, community validation, and cultural respect for sustained contribution.

In conclusion, while the well-established job crafting framework provides a helpful lens to interpret retirees' experiences, this study extends the framework by emphasising the holistic and culturally embedded nature of post-retirement career crafting in Sri Lanka. This insight invites further cross-cultural research to understand how socio-cultural contexts shape the forms and meanings of career crafting beyond traditional Western models. Additionally, the study focused on a small, purposively selected sample of Sri Lankan retirees, which may limit the generalizability of the findings. Future research could benefit from a larger and more diverse sample across different regions and occupations to achieve a richer understanding. The use of FGDs in this study prioritised individual narratives over group-level themes; subsequent studies might combine FGDs to balance personal and collective insights.

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ISBN: 978-624-5553-76-1

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ICME 2025 "Entrepreneurial Bricolage: Steering Volatile Markets through Improvised Strategies and Innovative Thinking"
Proceedings of 14th International Conference on Management and Economics

Driven by the Algorithm: The Invisible Hand Steering Gig Worker Performance

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Abstract

Technological advances have catalysed the growth of the gig economy, redefining global work patterns by offering flexible freelance engagements, especially in ride-hailing services. This shift holds particular significance for countries like Sri Lanka, where the COVID-19 pandemic has amplified economic challenges and made gig work an attractive alternative. In this digital era, ride-hailing drivers are subject to algorithmic control that manages their performance through monitoring, feedback, and automated controls. However, the effect of such digital management on driver performance in non-Western settings remains underexplored. Consequently, our study investigates the influence of algorithmic output control on the work performance of Uber drivers in Sri Lanka, considering the mediating role of challenge technostress. Our results reveal that algorithmic output control alone does not guarantee improved performance; rather, the drivers' positive interpretation of these controls is essential. When algorithmic directives are perceived as developmental opportunities rather than steady constraints, drivers exhibit higher customer ratings and more reliable operational performance. These findings suggest that digital platform design should improve clarity and transparency to persuade these positive perceptions. PLS-SEM has been utilised to analyse the data collected through a questionnaire, where the sample was drawn through purposive sampling. In summary, our research supports a nuanced view of algorithmic management, highlighting its impact on workers' performance. Future studies should explore platform interventions, including enhanced feedback systems and digital literacy programs, to promote challenge-oriented technostress and improve overall performance in the gig economy.

Keywords: *Algorithmic control, Gig economy, Gig worker, Technostress, Work performance*

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ISBN: 978-624-5553-76-1

Introduction

The origins of the gig economy can be traced back to the late 19th and early 20th centuries, when the word "gig" referred to short-term jobs, particularly among jazz musicians (Meijerink & Keegan, 2019). Over time, its definition has broadened due to technological advancements, increased internet access, and shifting workforce preferences (Meijerink & Keegan, 2019). This shift led to the expansion of flexible, remote, and task-based employment structures where individuals complete on-demand work without formal employment status. Researchers have offered a variety of interpretations on the gig economy; for example, Abraham et al. (2017) view it as comprising self-employed individuals who work under flexible, loosely organised schedules enabled by digital platforms. The sudden rise of on-demand ride-hailing platforms, such as Uber, has been fuelled by advances in information technology. Uber allows users to accept ride requests through its mobile app and utilises advanced algorithmic systems, consisting of input, behavioural, and output controls, to manage drivers and streamline service delivery (Barratt, 2020; Croitor et al., 2021). Sri Lanka faced an economic crisis following the pandemic, which has affected those engaged in the gig economy, particularly ride-hailing drivers. However, the impact of algorithmic controls on work performance remains unexplored (Gooneratne, 2024). Taxi drivers in Sri Lanka operate under various conditions, including changing customer expectations, regulatory frameworks, and differing levels of digital infrastructure, compared to their Western counterparts (Lee & Lee, 2015). Furthermore, there is a noticeable lack of research into the role of technostress, specifically challenges that result from the interactions with digital platforms as a mediator within the relationship between algorithmic controls and performance. Existing studies have only linked technostress with reduced job satisfaction and increased stress levels among gig workers (Tarafdar et al., 2019); however, its specific impact on ride-hailing drivers in Sri Lanka remains to be explored. This study aims to bridge these gaps by evaluating the impact of algorithmic output control on the work performance of Uber drivers, while also challenging the notion that technostress mediates this relationship.

Sri Lanka's gig economy is rapidly expanding, with ride-hailing services like Uber playing a crucial role in providing employment opportunities. Despite the dynamic growth of this sector, there is a clear research gap as to how algorithmic output control mechanisms affect the work performance of gig workers, particularly when challenge technostress is mediating the relationship (Cram et al., 2020; Lang et al., 2023). The primary purpose of algorithmic management is to increase work performance, yet current research tends to focus on key aspects of worker autonomy and stress rather than directly on performance (Kellogg et al., 2020). Moreover, studies focused on Sri Lanka's gig economy remain scarce, resulting in limited empirical evidence on the effects of algorithmic output controls on the performance of local gig workers (Ruvishani & Kariyapperuma, 2021). This insufficiency in the literature

hinders platform managers from making informed decisions to optimise gig worker conditions in a rapidly evolving digital labour industry.

To ensure a sustainable gig economy in Sri Lanka where both businesses and their employees flourish, it is nearly essential to address this knowledge gap. This study focuses on answering the question: How does the use of algorithmic output controls in gig working platforms impact the work performance of ride-hailers in Sri Lanka, while technostress mediates the relationship? The corresponding research objective is to assess the impact of algorithmic output controls on the work performance of ride-hailing drivers in Sri Lanka, with challenge technostress serving as a mediating variable.

Literature Review

Algorithmic Control on Technostress

Past literature on algorithmic control and technostress primarily focuses on the negative impact, suggesting that strict digital supervision and constant connectivity can exacerbate employee stress. (Buenadicha-Mateos et al., 2022; Riedl et al., 2012). However, more recent research has shifted toward a novel understanding, finding that algorithmic control through continuous monitoring, feedback, and evaluation of performance can produce both techno-eustress, a positive form of stress, and techno-distress, a negative form of stress. (Califf & Brooks, 2020). Some researchers have shown that such controls may limit autonomy and escalate stress (Hang et al., 2022). Other researchers note that algorithmic systems, such as those used by Uber, employ output controls that not only measure performance (Croitor & Benlian, 2019) and (Cram et al., 2020). However, it also offers workers clear, measurable targets, which can range from daily to monthly targets. This dual nature suggests that the impact of algorithmic control is complex and mediated by how employees perceive these digital pressures.

Technostress and Work Performance

Technostress itself takes two forms: challenge and hindrance. This research focuses on the challenge of technostress and its potential to mediate the relationship between algorithmic control and work performance. Research indicates that when individuals interpret technological demands as opportunities for skill enhancement and personal growth, they tend to showcase higher engagement and productivity (Salanova et al., 2014). For example, an Uber driver who sees the platform's rating system as a tool for self-improvement may actively refine service quality, leading to increased customer scores and more dependable performance (Cram et al., 2020). This way of perceiving the digital feedback will serve as a motivational factor rather than merely a factor of negative stress. Although much of the early literature focuses on adverse stress outcomes, contemporary studies reveal that a positive appraisal of technology-induced challenges can lead to improved task execution and decision-making (Cram et al.,

ISBN: 978-624-5553-76-1

2020). Thus, understanding how challenge technostress mediates the relationship between algorithmic controls and work performance is crucial in adapting to environments that use algorithmic controls to enhance productivity and well-being. This review consolidates findings from various studies. Tarafdar et al. (2019) and Cram et al. (2022) provide details for further research that acknowledge both the complexities and potential benefits of algorithmic management in today's gig economy. With the available literature up to date, this study will test the hypothesis (H1) that technostress in gig working platforms significantly mediates the relationship between algorithmic output controls and the work performance of ride-hailers in Sri Lanka.

Methods

Research Design

This study employs positivism as its research philosophy, focusing on measurable observations and unbiased reality. In addition to a quantitative study, which aims to analyse the mediating impacts of challenge technostress on algorithmic controls and work performance among Sri Lankan ride-hailing gig workers, utilising positivism will enable us to quantify the effects of these mediating variables. A deductive approach is employed throughout the study, as the authors deduced hypotheses and designed a quantitative study to test the mediating effects that impact the core principles of algorithmic control and work performance. The authors adhered to a single quantitative method, namely surveys, which ensured that the data collection remained uniform throughout the study. Lastly, a cross-sectional study design was employed because it not only provided immediate insights but also enabled the gathering of a varied sample of gig workers at a single point in time. This method captured an accurate snapshot of the current algorithmic control, technostress, and work performance dynamics.

Sampling and Data Collection

Study targets currently active Uber drivers in Sri Lanka. Lacking a comprehensive sampling framework and facing ethical limitations, the authors adopted a purposive sampling technique. A sample size of 100, and the participants were included in the study based on their nature of gig work. The study included any individual who is a ride-hailing gig worker and is currently employed by Uber.

Operationalization

A structured questionnaire was created to collect data from the participants. Firstly, four demographic questions were asked, starting with obtaining consent to collect data, followed by age, years of activity, and type of vehicle. The algorithmic control, which is the independent variable, was tested using the indicator 'output control', and three questions were asked to measure it, adopting questions from Weibel et al. (. The challenge of technostress, which serves

as the mediating variable, was assessed through four indicators: 'increased efficiency', 'improved job performance', 'increased satisfaction', and 'skill development', all of which were adopted from Ragu-Nathan et al. (2008). The dependent variable, Work performance, included five indicators in total, which were tested through a framework generated by the authors using the Uber developer platform and other literature. The indicators 'total earnings' and 'cancellation rate' were adopted from Evans-Lacko et al.(2016). The indicators, 'customer rating', 'trip completion and ride acceptance rate', were adopted from Uber & Developers (2025). Finally, the concept of 'hours worked' was adopted from Sundararajan et al. (2016). Lastly, a five-point Likert scale structure was used to record the participants' answers.

Conceptual Framework

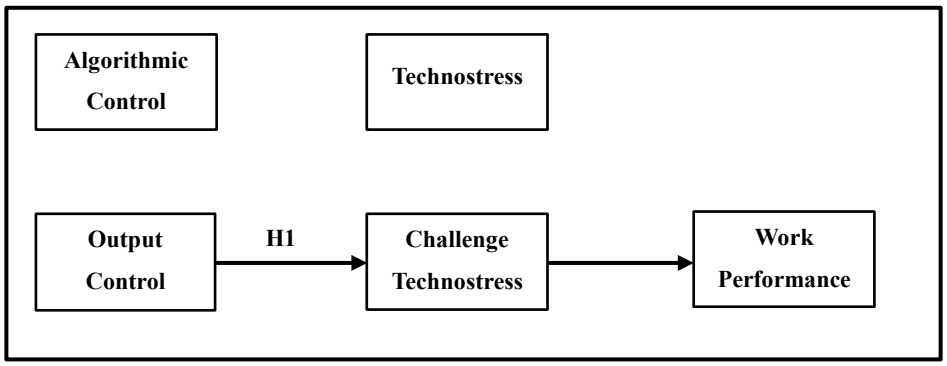

Figure 01: Conceptual Framework

According to Cram et al. (2022), employees may view algorithmic control as an opportunity to enhance their skills and increase productivity if they regard it as a challenge. Employees may feel overworked, micromanaged, and powerless if algorithmic management is viewed as a barrier, which could have a negative impact on performance (Schafheitle et al., 2021). A direct-effect approach assumes a consistent response from every employee, while overlooking this crucial psychological process. A more detailed understanding of how various workers evaluate algorithmic control differently, resulting in a range of performance outcomes, is made possible using technostress as a mediator. Figure 01 illustrates our conceptual framework.

Data Analysis

Analysis of the survey data was conducted using SmartPLS 4.1.1.4, a powerful tool for Structural Equation Modelling (SEM). As noted by Popova and Popovs (2022), PLS-SEM is a potent causal predictive technique that explains the variance of independent variables while simultaneously exploring both direct and indirect relationships among constructs. Because the model integrates both types of relationships, this method proved ideally suited to the study.

ISBN: 978-624-5553-76-1

The authors gathered responses from 100 Uber drivers, and the detailed findings are presented in the results section.

Multicollinearity and Descriptive Statistics

Table 01: VIF Assessment

Variables	VIF
Challenge Technostress -> Work Performance	1.000
Output Control -> Challenge Technostress	1.000

The dataset was analysed to find any significant issues with multicollinearity between the variables. In structural equation modelling, particularly in PLS-SEM, high multicollinearity can inflate standard errors and obscure the unique contribution of individual predictors. This was assessed using the Variance Inflation Factor (VIF), where values between 1 and 5 are generally considered acceptable. As shown in Table 1, multicollinearity does not exist in the model. The main statistics for every latent variable in the study are compiled in Table 2. According to Cheah et al. (2024), leveraging unstandardized mean and standard deviation values preserves the original units, allowing for insightful interpretations and a refined perspective on the actual data landscape. All three Constructs are moderately leptokurtic, as indicated by the values closer to 1 in the above table. Additionally, all three Constructs are negatively skewed, suggesting a flatter distribution with lower values.

Table 02: Latent Descriptives

Variables	Mean	Median	Standard deviation	Excess kurtosis	Skewness
Challenge Technostress	3.596	0.009	0.761	0.168	-0.484
Output Control	3.599	0.117	0.756	0.168	-0.307
Work Performance	3.712	0.012	0.632	0.686	-0.456

Measurement Model Assessment

The validity and reliability of the constructs were validated via measurement model assessment, with an Average Variance Extracted (AVE) of 0.643 and Composite Reliability (CR) of 0.740. According to Hair et al. (2019), factor loadings above 0.708 are acceptable. The indicators' outer loadings for Output Control varied from 0.748 to 0.836, reflecting strong internal consistency. The outer loadings for Challenge Technostress have an AVE of 0.604, a CR of 0.838, and a range of 0.731 to 0.847. With a CR of 0.858 and an AVE of 0.431, the Work Performance construct maintained acceptable levels of reliability despite having slightly lower

ISBN: 978-624-5553-76-1

outer loadings (ranging from 0.564 to 0.726). This may still be acceptable, as they have been utilised with a strong theoretical background, given that the indicators were created by analysing how Uber measures drivers' performance (Uber & Developers, 2025).

Table 03: Measurement Model Assessment

Latent Variable	Observed Indicator	Item Code	Outer Loadings	Composite Reliability	Cronbach's Alpha	AVE
Output Control		OC1	0.748	0.740	0.725	0.643
		OC2	0.836			
		OC3	0.818			
Challenge Technostress	Increased Efficiency	IE 1	0.782	0.838	0.836	0.604
		IE 2	0.756			
	Improved Job Performance	IJP 1	0.766			
	Increased Satisfaction	IS 1	0.847			
	Skill Development	SD 1	0.731			
Work Performance	Total Earnings	TE 1	0.705	0.858	0.853	0.431
		TE 2	0.634			
	Customer Ratings	CUR 1	0.622			
		CUR 2	0.662			
	Trip Completion and Ride Acceptance Rate	TC&RA 1	0.691			
		TC&RA 2	0.726			
	Cancellation Rate	CAR 1	0.585			
		CAR 2	0.564			
	Hours Worked	HW 1	0.641			
		HW 2	0.716			

The output control vs challenge technostress HTMT values were 0.801, work performance vs challenge technostress HTMT values were 0.916, and work performance vs control HTMT values were 0.718. Despite approaching the threshold, the value between Work Performance and Challenge Technostress was still barely acceptable. Because it compares inter-construct correlations rather than concentrating solely on variance, the HTMT approach offers a more sensitive and reliable evaluation of discriminant validity than more conventional approaches, such as the Fornell-Larcker method (Henseler et al., 2015). According to Table 4, the correlation constructs of the latent variables show that most variables have moderately strong relationships, ranging from 0.50 to 0.70. Output control versus challenge technostress

ISBN: 978-624-5553-76-1

indicates a correlation of 0.637, which suggests a moderately strong relationship, as output control increases, challenge technostress also tends to increase. When it comes to work performance versus challenge technostress, there is a correlation of 0.783, which indicates a strong positive relationship where an increase in challenge technostress leads to an improvement in work performance. Finally, in the work performance versus output control analysis, a correlation of 0.576 is observed, indicating a moderate positive relationship.

Table 04: Discriminant Validity and Correlation Results

Variable	HTMT	Correlation
Output Control vs Challenge Technostress	0.801	0.637
Work Performance vs Challenge Technostress	0.916	0.783
Work Performance vs Output Control	0.718	0.576

Results and Discussion

Results

For our demographics, we have considered the age of Uber drivers, vehicle type, and employment period. The largest age group was 33-40 years old (35%), followed by those aged 26-32 years (30%). The workforce was primarily middle-aged. Three-wheelers saw widespread use (84.47 %). Cars (11.65%) and bikes (3.88%) had low usage. Regarding employment duration, 34 % of the survey participants had worked for 1 - 3 years. 24 % had more than 5 years of experience.

Table 05: Results for Demographics

Measure	Item	Count	Column N%
Age	18 - 25	6	6.00%
	26 - 32	30	30.00%
	33 - 40	35	35.00%
	40 - 50	21	21.00%
	Above 50	8	8.00%
Type of Vehicle	Bike	4	3.88%
	Three wheels	87	84.47%
	Car	12	11.65%
	Van	0	0.00%
	Lorry	0	0.00%
Employment Period	Less than 6 months	8	8.00%
	6 - 12 months	16	16.00%
	1 - 3 years	34	34.00%
	3 -5 years	18	18.00%
	More than 5 years	24	24.00%

ISBN: 978-624-5553-76-1

As per Table 6, the mediation has a path coefficient of 0.442 and a standard deviation of 0.070. The statistical significance of the association is demonstrated by the t-value of 6.301 and a p-value of 0. The p-value is not reported as 'nil', but rather as 0. This suggests that algorithmic output control improves the work performance of ride-hailing drivers. This significant mediation effect highlights that the positive aspects of technostress, when drivers perceive the technology as a challenge rather than a hindrance, play a critical role in translating algorithmic control measures into improved work performance.

Table 06: Hypothesis results

Hypothesis	Path	Path coefficient	Standard deviation	T value	P value	Decision
H1	OC -> CT -> WP	0.442	0.070	6.301	0.000	Significant

Discussion

The study shows that algorithmic output control by itself is not enough to improve driver performance. A positive understanding from the workers also matters. Platform design should focus on elements that create clarity, openness, and a sense of freedom. When drivers view algorithmic instructions as developmental opportunities rather than restrictions, they tend to achieve better results. For example, they obtain higher customer scores, pay more, and have superior operational dependability (Califf & Brooks, 2020; Tarafdar et al., 2019).

By analysing how ride-hailers perceive the use of algorithmic control in a non-Western setting, the study adds empirical depth to a topic that has been heavily influenced by research in Western gig economies. According to Cram et al. (2020), the heightened technostress challenge faced by ride-hailing drivers is correlated with algorithmic output controls, particularly those linked to performance metrics and customer feedback. Their results suggest that by encouraging skill development and adaptive actions, these control techniques may motivate drivers. Nevertheless, their research did not examine whether these techno-stressors result in observable benefits, such as improved work performance.

In contrast, our study expands on this theoretical framework by demonstrating that output control mechanisms in Sri Lanka also lead to challenge technostress, which in turn significantly mediates and improves driver work performance, despite differing socioeconomic circumstances, labour practices, and limitations in digital infrastructure. This new connection between challenge technostress and performance adds significantly to the body of literature by illuminating the functional mechanism by which algorithmic governance influences gig workers' performance.

Conclusion

In conclusion, this study contributes empirical evidence to the growing body of research that advocates for a critical understanding of algorithmic management, one that recognises its

effects as contingent upon how workers perceive it psychologically, rather than assuming it is inherently oppressive or liberating. Future studies are recommended to examine how platform interventions, such as feedback systems, stress-reduction designs, and digital literacy initiatives, may encourage challenge-oriented technostress and improve performance and well-being in the gig economy.

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ISBN: 978-624-5553-76-1

ICME 2025 "Entrepreneurial Bricolage: Steering Volatile Markets through Improvised Strategies and Innovative Thinking"
Proceedings of 14th International Conference on Management and Economics

How HRM Drives Sustainable Organizational Performance? The Mediating Role of Organizational Innovation

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Abstract

In today's volatile and competitive business environment, sustainable organizational performance (SOP) demands more than traditional efficiency; it requires adaptive strategies and innovative thinking. This study investigates how Human Resource Management (HRM) practices serve as strategic levers to foster Organizational Innovation (OI), thereby enhancing SOP in the banking sector of Sri Lanka's Batticaloa District. A quantitative study used primary data from 238 bank employees in Batticaloa District, measured with a five-point Likert scale. Data were analyzed using univariate, bivariate, and multivariate methods via SPSS (Version 22). The current study examines the mediating role of OI in the HRM–SOP relationship. Findings confirm that while HRM practices significantly influence SOP, their impact is amplified when mediated through OI. The results underscore the value of HRM practices in cultivating a culture of innovation that drives sustainability. This study contributes to the underexplored intersection of HRM, innovation, and sustainability in emerging economies. It provides strategic insights for practitioners seeking to steer their organizations through dynamic markets with agile, people-centric strategies. By aligning HRM systems with innovation objectives, firms can unlock the human capital potential necessary for sustainable success despite resource constraints and unpredictability.

Keywords: HRM Practices, OI, SOP

Introduction

In an era of market volatility and uncertainty, Sri Lanka's business sector must continuously adapt to social, economic, and environmental disruptions. Sustainable Organizational Performance (SOP) ensures long-term success and resilience, integrating economic, social, and environmental dimensions. Sustainability performance management, an emerging concept, addresses these three aspects in corporate management (Schaltegger & Wagner,

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ISBN: 978-624-5553-76-1

2006). Kaplan and Norton (2005) introduced the Balanced Scorecard (BSC), which integrates non-financial measures such as customer satisfaction, internal processes, and learning and growth to guide firms toward SOP. In Sri Lanka, the banking sector significantly impacts the economy and the social and environmental landscape, positioning banks as crucial agents in maintaining financial stability and sustainability (Central Bank of Sri Lanka, 2022).

Human Resource Management (HRM) practices are essential for achieving SOP, primarily through shaping employees' behaviour, skills, and attitudes (Collins & Clark, 2003). Ineffective HRM practices such as poor compensation, limited training, biased recruitment, and lack of performance feedback can hinder employees' engagement in socially and environmentally responsible innovation. In contrast, effective HR practices like proper staffing, development, performance management, and rewarding systems can foster a motivated workforce that actively contributes to organizational innovation and sustainability (Youndt et al., 1996; Paauwe, 2009; Shipton et al., 2006). In this context, HRM practices become critical improvisation and strategic renewal tools.

Organizational innovation (OI), including product, process, and knowledge innovation, is key to gaining a sustainable competitive edge (Damanpour, 1991; Hurley & Hult, 1998). Innovation is driven by knowledge sharing and technological advancements, which allow firms to develop creative solutions to social, economic, and environmental challenges (Tsai & Ghoshal, 1998). Through HRM, organizations can encourage employees to take risks, generate ideas, and improve operational performance (Mumford, 2000), leading to the successful implementation of SOP.

In Sri Lanka's banking sector, licensed commercial banks and licensed specialized banks dominate the financial system and account for the highest share of total assets. The soundness of banks is important, as it contributes towards maintaining confidence in the financial system, and any failure may have the potential to impact the activities of all other financial and non-financial entities, and finally, the economy, society, and environment (Central Bank of Sri Lanka, 2022). HRM-driven innovation has introduced new financial products and services while ensuring employee well-being, data security, work-life balance, and environmental responsibility. Examples include promoting green technologies such as clean hydrogen and sustainable aviation fuel, and operational innovations like 24-hour digital banking and paperless processes (Central Bank of Sri Lanka, 2022). This study highlights how banks in volatile markets like Sri Lanka leverage HRM as a strategic tool to improvise, adapt, and drive innovation in the face of uncertainty. Banks can effectively navigate market turbulence and contribute to SOP by enabling resourceful, people-driven strategies through HRM.

Some gaps remain in establishing the interrelationship of HRM practices, innovativeness, and SOP. Although the positive impact of HRM practices on OI and SOP is well documented in developed economies such as Europe, the USA, Japan, and others, there remains a

ISBN: 978-624-5553-76-1

noticeable gap in understanding this relationship within emerging economies like Sri Lanka. Specifically, there is a lack of research exploring the interconnectedness of HRM practices, OI, and SOP in the banking sector. While a few studies have looked at the direct link between HRM practices and OI or SOP, the mediating role of OI in this relationship is unexplored (Rasool et al., 2019). Additionally, most existing research in Sri Lanka has been limited to the ICT and apparel sectors, overlooking the banking sector, which is crucial in driving economic, social, and environmental development (Central Bank of Sri Lanka, 2022). Banks today increasingly adopt innovative products and CSR activities to remain competitive and enhance their community presence.

Grounding this study within the Resource-Based View (RBV) and Knowledge-Based View (KBV), it is posited that HRM practices act as strategic enablers that help build valuable, rare, and inimitable human and knowledge capital key elements for achieving sustained competitive advantage. However, Sri Lankan banks face HRM-related barriers such as biased recruitment, inadequate training, and weak performance systems, which undermine innovation and sustainable performance outcomes. Moreover, consistent with global theories, the RBV suggests that internal capabilities such as innovative capacity fostered through HRM are essential to long-term success. The KBV further emphasizes the role of knowledge sharing and learning in translating employee potential into organizational value. However, local issues like poor knowledge-sharing culture, low trust, and lack of collaborative mechanisms impede this process (Currie & Kerrin, 2003; Mueller & Dyerson, 1999).

However, many banks face internal HRM-related obstacles such as biased recruitment, inadequate environmental awareness programs, lack of investment in training, poor compensation, weak staffing practices, and the absence of effective performance assessment and communication mechanisms. These issues lead to unmotivated employees who are neither committed to organizational goals nor aware of how to contribute to societal and environmental well-being (Central Bank of Sri Lanka, 2022). Evidence suggests that HRM practices like training and performance appraisal are critical to fostering employee creativity, which in turn drives OI and SOP (Jiang, Wang, & Zhao, 2012). Therefore, this study examines how HRM practices translate into SOP through the mediating role of organizational innovation.

Literature Review

HRM Practices and Sustainable Organizational Performance

Jackson and Schuler (2002) define HRM practices as a system that attracts, develops, motivates, and retains employees to ensure the effective implementation and the survival of the organization and its members. HRM practices are effective in changing the attitudes, capacities, and behaviours of employees to attain organizational goals in more efficient and effective ways (Chen & Huang, 2009). Using four dimensions of human resource practices,

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including staffing, training, performance appraisal, and compensation (Youndt et al., 1996) indicates that an HR practices system is directly related to multiple dimensions of operational performance. According to Ali and Atan (2020), HRM practices significantly correlate with SOP (Pearson's r ≈ 0.54–0.86) among Lebanon's Islamic vs. conventional banks. In that respect, this study has selected four major HRM practices (Staffing, Staff development, Performance management, and Compensation & benefits) which encourage workforces to engage in organizational innovation that leads to SOP.

The ability of an organization to succeed over the long term while taking social, environmental, and economic aspects into account is referred to as SOP. Scholars like Pfeffer (1994) emphasize that investing in employees through training and development, fair compensation, and a supportive workplace culture increases productivity and employee satisfaction. Further, research by Parker and Wright (2021) suggests a positive relationship between HRM practices and SOP. These findings suggest a positive link between HRM practices and SOP. Thus, the first hypothesis of the study is as follows.

H1: There is a significant positive relationship between HRM practices and SOP.

HRM Practices and Organizational Innovation

HRM may facilitate the exploration of problems and encourage employees to explore existing knowledge, consequently stimulating organizational innovation (Shipton et al., 2006). So, HRM practices are essential for all organizations to engage their employees appropriately, which leads to participation in organizational innovation. Based on the review, researchers concluded that HRM practices influence the products, processes, and administrative types of innovation of banks in Nigeria (Elenwo & Nwabali, 2024). Although bundles of HRM practices are generally considered more effective in influencing organizational innovation, studies have highlighted inconsistencies in how these bundles are measured, with frequent overlaps in the items included within each bundle (Seeck & Diehl, 2017; Shipton et al., 2019). Thus, the second hypothesis of the study is as follows.

H2: There is a significant positive relationship between HRM practices and OI.

Organizational Innovation and Sustainable Organizational Performance

The banking business depends heavily on organizational innovation since it enables financial institutions to adjust to quickly changing market conditions. Organizational innovation is the intentional introduction and application of new ideas, processes, products, or procedures that will benefit the job, the work team, or the organization (West et al., 2004). Banks may improve customers' experiences via digital channels, streamline processes, and create more effective risk management techniques by adopting an innovative organizational culture. Laurse and Foss (2003), suggest that organizations adopting innovative human resource

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practices, such as employee involvement, training, and reward systems, tend to achieve higher levels of innovation performance. Firms with greater innovativeness will be more successful in responding to changing environments and developing new capabilities to achieve better performance (Montes, Morenco, & Fernandez, 2004). Innovative firms thrive in dynamic environments, anticipating changes and opportunities. Research by Tidd and Bessant (2020) argues that organizations capable of fostering a culture of innovation are better positioned to achieve sustainable organizational performance. Therefore, based on the above direct and indirect evidence, it postulates the third hypothesis as follows;

H3: There is a significant positive relationship between OI and SOP.

Organizational Innovation Mediates between the Relationship of HRM Practices and Sustainable Organizational Performance

Empirical research in the banking sector demonstrates a consistent link between HRM practices, innovation, and sustainable organizational performance (SOP), closely aligned with theoretical frameworks such as the Resource-Based View (RBV) and the Knowledge-Based View (KBV). For instance, Rasool et al. (2019) conducted a study among 20 branches of Chinese banks. They found that HRM dimensions, staffing, staff development, performance management, and compensation enhance SOP directly and indirectly, with product, process, and knowledge innovation acting as full mediators (PLS-SEM analysis). The relationship between SOP and HRM practices can be mediated by organizational innovation. Tsang and Zahra (2008) confirm that HRM practices influence organizational innovation, enhancing SOP. Jimenez-Jimenez and Sanz-Valle (2011) found that HRM practices significantly influenced OI, positively impacting SOP. Jiang et al. (2012) suggest that HRM practices influence organizational innovation by nurturing employees' skills, knowledge, and motivation. HRM practices that prioritize skill development, knowledge sharing, motivation, and diversity are crucial for creating an innovative organizational culture. A study that addresses the mediating role of organizational innovation between HRM practices and SOP is by Jiang et al. (2012). Research by Volberda, Van Den Bosch, and Heji (2013), suggest in their study that organizational innovation plays a mediating role between HRM practices and SOP. Businesses can better adapt to changing surroundings and achieve long-term sustainability by using HRM practices that support innovation and continual learning. Thus, the fourth hypothesis of the study is as follows;

H4: OI mediates the relationship between HRM Practices and SOP

The current study was based on the extent of HRM practices on SOP with the mediation of OI among the banking sector employees in Batticaloa District. Thus, the model describes the path of research firmly in theoretical constructs. The model (see Figure 1) for the present

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study is supported in the previous literature and modified for research purposes.

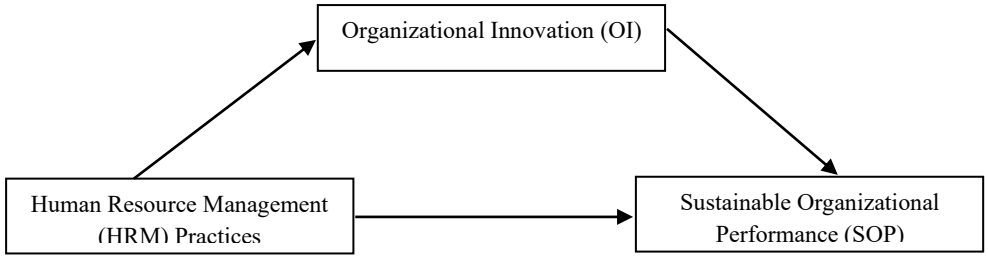

Figure 01: Conceptual Framework

Methods

This study gradually interacts with social reality, and the data were gathered in an apparent value-free manner. Typically, quantitative data collection and existing literature are used to build hypotheses. Therefore, these are the main points of this investigation. Therefore, the research philosophy of this study is positivism. Thus, Positivism in this study holds that reality is observable from an object's point of view. As the research approach, researchers used a quantitative research approach to identify how the HRM practices translate into SOP through OI. Accordingly, the study used a mono method, where quantitative data and analysis procedures were used only to answer the research questions.

Research by Creswell and Creswell (2017) explained that the time horizon is a critical aspect of research design, where researchers must determine the appropriate length of time needed to effectively address their research questions and objectives. Depending on the research objectives, this study also has to use a limited specific period while collecting the data from a single time point from the respondents. Hence, this research has to use the cross-sectional time horizon.

The targeted populations of the present study were employees of selected banks in the Batticaloa District. The population of the study is known, including 590 employees in seven selected banks in the Batticaloa District. Out of the population, 238 employees were selected randomly to represent each bank. The sample size of 238 was determined using the formula $n=N/1+Ne^2$, where N=590 and e=0.05, ensuring a 95% confidence level. The primary data were collected through a closed, structured questionnaire with 40 respondents from the selected banks in Batticaloa District. Part "A" asked the respondents to provide their personal information, while Part "B" included the research information, which consisted of research concepts. Reliability was assessed using Cronbach's Alpha: Staffing (0.817 – Good), Performance Management (0.729 – Acceptable), Staff Development (0.786 – Acceptable), Compensation & Benefits (0.821 – Good), Organizational Innovation (0.885 – Good), and

ISBN: 978-624-5553-76-1

Sustainable Organizational Performance (0.914 – Excellent), confirming strong internal consistency across all constructs.

This study analyzed and evaluated the collected questionnaires using bivariate analysis (correlation analysis) and multivariate analysis (simple and multiple regression). The statistical package for Social Science (SPSS 22.0 version) was used to simplify the analysis work of this study. In this research setting, the researcher has used a variety of tables and figures to present the data and analysis findings as needed.

Results and Discussion

The findings of this study reveal a strong and statistically significant positive relationship between HRM practices and Sustainable Organizational Performance (SOP) ($r = 0.520$, $p < 0.000$). This supports the Resource-Based View (RBV), which posits that valuable, rare, and inimitable human resources can sustain a competitive advantage (Barney, 1991). Investments in strategic HRM practices - staffing, performance management, and development - contribute to building a high-quality workforce, and enhancing organizational resilience and performance. This aligns with prior findings by Pfeffer (1994) and Huselid (1995), who emphasized that effective HRM improves employee productivity, satisfaction, and long-term outcomes. More recently, Parker and Wright (2021) reaffirmed this by linking HRM systems with employee retention, operational efficiency, and financial sustainability.

Furthermore, HRM practices exhibited a strong positive correlation with OI ($r = 0.613$, $p < 0.000$), reinforcing the Knowledge-Based View (KBV) of the firm, which highlights the importance of knowledge creation and application through human capital. HRM functions such as training, empowerment, and performance feedback are key mechanisms for stimulating creativity and knowledge sharing, thereby fostering innovation (Shipton et al., 2006). This implies that organizations can leverage HRM to shape a culture encouraging experimentation, continuous learning, and proactive problem-solving.

Most significantly, the study found a powerful correlation between OI and SOP ($r = 0.804$, $p < 0.000$), suggesting that innovation is crucial in translating HRM efforts into sustainable performance outcomes. OI is defined as implementing new processes, products, or ideas (West et al., 2004), which enhances adaptability and competitive responsiveness. This supports the views of Tidd and Bessant (2020), who argue that innovation capabilities are central to achieving long-term sustainability.

The findings of this study reveal a strong and statistically significant positive relationship between HRM practices and SOP ($r = 0.520$, $p < 0.000$), aligning with prior research that emphasizes the strategic value of HRM. Scholars such as Pfeffer (1994) and Huselid (1995) have long argued that investments in training, fair compensation, and supportive work environments enhance employee satisfaction and productivity, ultimately boosting long-term organizational performance. More recently, Parker and Wright (2021) confirmed that

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comprehensive HRM practices correlate with higher employee retention, improved operational efficiency, and better financial outcomes, all supporting sustainability objectives.

Table 01: Relationships among HRM Practices, Organizational Innovation, and SOP

Variables		HRM practices	OI	SOP
HRM practices	Pearson Correlation	1		
	Sig.(2-tailed)			
OI	Pearson Correlation	0.613**	1	
	Sig.(2-tailed)	0.000		
SOP	Pearson Correlation	0.520**	0.804**	1
	Sig.(2-tailed)	0.000	0.000	

Source: Survey Data

The prime objective of the study was to investigate the mediating role of OI in the relationship between HRM practices and SOP. The difference between c and c' is a measure of the mediation effect. This difference equals the product of the paths to and from the mediator. Thus, c-c'=ab. The total effect of X on Y (C) can be decomposed into a direct component (C') and an indirect component (ab), c=c'+ab. Regression analysis was conducted to find the beta value of a, b, c, and c'.

Figure 2 can be conceptualized as a causal model where HRM practices on SOP were mediated by organizational innovation. An unstandardized regression weight of 0.670 for HRM practices in predicting SOP; this, c=0.670. An unstandardized regression weight of 0.613 for HRM practices in predicting organizational innovation; thus, a=0.613. The unstandardized regression weight of 1.001 for organizational innovation in predicting SOP when controlling for HRM practices; thus, b=1.001. From these findings, three conditions necessary for mediation have been satisfied. The mediation effect can be measured as the reduction in the regression weight for HRM practices and SOP: c-c' = 0.670- c ' = 0.670-0.056 = 0.614. Since the three conditions for mediation were satisfied and the reduction from c to c' is significant, it can be concluded that Organizational Innovation significantly mediates the relationship between HRM practices and SOP. The study also supports the proposed hypothesis.

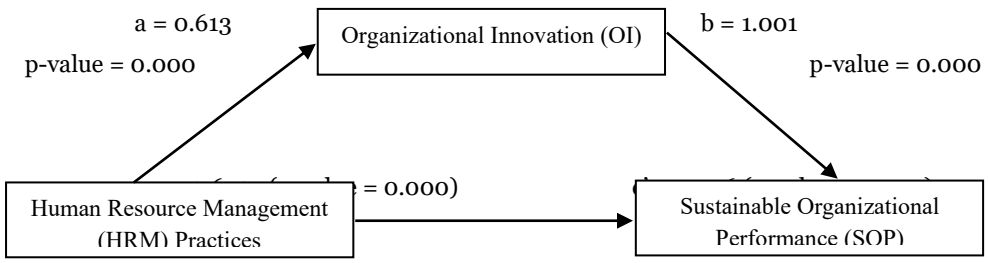

Figure 2: Coefficient Path

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This mediation further affirms theoretical assumptions from both RBV and KBV. Through HRM, organizations develop talent that performs and innovates, creating a dynamic capability that competitors find hard to replicate. This aligns with prior research, emphasizing that HRM practices are critical enablers of innovation (Shipton et al., 2006; Seeck & Diehl, 2017). These practices empower employees to generate and implement new ideas, enhancing innovation at the organizational level. Organizational innovation has been widely acknowledged as a key driver of long-term performance (West et al., 2004; Tidd & Bessant, 2020). Studies by Rasool et al. (2019) also confirm that OI was thus shown to mediate between HRM and SOP. Innovative organizations tend to respond more effectively to changing market and environmental demands, adopt sustainable business practices, and engage in socially responsible initiatives. Thus, hypotheses H1 and H2 are supported, underscoring the strategic role of HRM as both a resource allocator and knowledge enabler in achieving sustainable outcomes.

Conclusion

This study explored the mediating role of OI in the relationship between HRM practices and SOP within the banking sector in the Batticaloa District of Sri Lanka. The findings revealed a strong and positive relationship between HRM practices and SOP and between HRM practices and OI. The results confirmed that OI significantly mediates the relationship between HRM practices and SOP. This indicates that HRM practices alone may not be sufficient to drive sustainability unless they also foster an innovative organizational culture and processes.

Despite the valuable insights offered, the study is subject to certain limitations. First, the research focused on a single sector (banking) and a specific geographic region (Batticaloa), which may limit the generalizability of the findings. Second, the study employed a cross-sectional design, which does not allow for observing changes over time. Third, only selected HRM practices were examined, and other potentially influential factors such as leadership style, organizational culture, or external environment were not considered.

Nevertheless, the study makes several important contributions to the existing body of knowledge. Theoretically, it enriches the HRM and innovation literature by empirically validating the mediating role of OI in a developing country context where empirical research remains limited. Practically, the study highlights the need for banking institutions to adopt HRM practices that enhance employee performance and promote innovation as a pathway to achieving long-term sustainability. Furthermore, the findings provide valuable insights for policymakers and HR professionals aiming to design strategic HR initiatives that align with sustainability objectives.

Future researchers are encouraged to address the limitations of this study by expanding the

scope to other sectors, such as the apparel industry, and by selecting a larger sample size. Incorporating qualitative methods could provide deeper insights and enrich the findings. Additionally, as this study was cross-sectional and data were collected simultaneously, future research should consider longitudinal designs to explore causal relationships between variables.

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ISBN: 978-624-5553-76-1

ISBN: 978-624-5553-76-1

Marketing and Tourism Management

Social Media Credibility on Social Commerce Purchase Intention with the Mediating Effect of Trust in Online Communities (Evidence from Skincare Consumers on Facebook)

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Abstract

Social commerce integrates social media and e-commerce, transforming consumer purchasing behaviour. As more consumers rely on social media for shopping, the credibility of information has become increasingly significant, particularly in the skincare product market. Although the effect of the credibility of the information on purchase intention has been examined in the past, most of the studies are within the developed economies, and limited knowledge exists on how the same dynamics apply in emerging markets like Sri Lanka. Besides, few studies have focused on the synergistic impact of source credibility, message credibility, and trust in online communities, particularly Facebook-based skincare buying. This research paper fills this gap by examining the role of the credibility of information on purchase intention mediated by the importance of trust in online communities within the research context of Sri Lanka. Purposive sampling was used to obtain data from 384 Sri Lankan Facebook users who had bought skincare products online due to the necessity of relevant experience. The study used a structured questionnaire to collect data by distributing it among active members of Facebook-based skincare consumers in Sri Lanka. Analysis was carried out using structural equation modelling (SEM). The results indicate that source credibility and message credibility have a significant and positive influence on purchase intention. Moreover, the role of trust in the online community is an important mediator, which supports the need to establish credible online spaces. The research paper adds to the dearth of literature on social commerce in an emerging economy and provides practical implications in credibility-based marketing steps in the skincare products sector.

***Keywords**:* Social commerce, purchase intention, Source credibility, Massage credibility, Trust Online Community

Introduction

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ISBN: 978-624-5553-76-1

The credibility of information dispersed on social media is the cornerstone of consumer trust in social commerce, shaping purchasing decisions and encouraging sustained business relationships (Coutinho et al., 2023; Mikalef et al., 2017). Prior to the end of 2024, social media usage exceeded 5.2 billion individuals throughout the world, accounting for 63.8% of the global population (Kemp, 2024). The specified substantial growth in usage highlights consumers' escalating reliance on digital platforms for their everyday activities. (Zhang et al., 2024). Besides that, social media has evolved from a mere communication and information-sharing platform into an influential device for marketing and sales (Hettiarachchi et al., 2019). Social media platforms have surfaced as crucial avenues for social commerce, enabling consumers to explore products and engage with online businesses through reviews, recommendations, and user-generated content. The collaboration between social media platforms and their effect on consumer purchase intention has transformed into a dominant global trend, influencing buying decisions across numerous environments (Sindhuja et al., 2023).

Among the several social media platforms, the Facebook platform stands out as one of the most influential and extensively used for social commerce (Han & Trimi, 2017). Accompanied by a global user population of 3.2 billion active individuals, Facebook empowers businesses to engage with a broad audience and establish direct interactions with customers (Statista, 2024). The platform's broad reach, user-friendly attributes, and extensive marketing tools position Facebook as a key player in social commerce. The extensive user base and sustained popularity of Facebook emphasizes its pivotal role in enabling businesses to connect with customers and drive sales in the digital landscape (Krishna K & Yavisha, 2023). Unlike other industries in Sri Lanka, the skincare market has transformed significantly, with consumers increasingly relying on social media for purchases, fuelled by the growing effectiveness of skincare products and treatments (Hettiarachchi et al., 2019). The market is expanding rapidly and becoming highly competitive in the digital space.

Despite the widespread use of social media, especially Facebook, ensuring the accuracy and reliability of shared information remains a challenge (Saikaew & Noyunsan, 2015). Consumers often evaluate the trustworthiness of user-generated content, such as reviews, ratings, and recommendations, due to concerns about bias and misinformation. Prior Studies show that 70% of online consumers question the credibility of social media content (Ong'ong'a & Oloo, 2022). Key factors influencing consumer trust and purchase decisions include the information source's reliability and the message's credibility. However, their interaction within social commerce remains underexplored. Prior research highlights factors like information quality and source expertise as crucial to credibility, along with assessments of message and source credibility (Zhang et al., 2024).

The role played by social commerce is increasing, particularly in fields of consumer lifestyle trends like skincare. Even though the influence of source and message credibility on consumer

attitudes was examined in some of the past studies (Cheung & Lee, 2012; Erkan & Evans, 2016). Thus, most of them were carried out within the framework of the Western market and were not mentioned in relation to social commerce platforms such as Facebook. Although trust in online communities has been widely understood as one of the most significant factors affecting purchase intention (Hajli, 2015; Hajli et al., 2014; Kim & Park, 2013). Therefore, its mediating role between the credibility cues and the buying behaviour has been studied less.

In addition to this, there is not much emphasis on peer-led Facebook skincare groups, where informal reviews and social relationships greatly influence purchases. This gap is even higher in emerging markets like Sri Lanka, where the levels of trust in communities and reliance on social media are high, leading to unprecedented consumer behaviours. In addition, few studies have examined demographic factors such as age, gender, education level, and income level that have been determined to have an impact on online choice credibility and trust in social commerce (Alkan et al., 2023). The study addresses these gaps in the literature, with the author examining the elements of credibility and trust and the influences of demographic variables on the concepts in the Sri Lankan social commerce context rather than through the Western-centric lens that the past research employed.

The study focused on how source and message credibility influence purchase intentions in social commerce in Sri Lanka, with a mediating focus on trust in an online community. It has a primary goal that is substantiated by the narrow sub-objectives: first, to determine the effect of the credibility of sources on trust in online communities; second, to determine the effect of trust in online communities on the purchase intention in social commerce; third, to determine the effect of message credibility on trust in online communities. Such a sequential mediation model explains the ultimate influences of trust on consumer buyer behaviour. To attain these goals, the research will attempt to answer three research questions: (1) How does the source's credibility affect trust within online communities in the context of Sri Lankan social commerce? (2) How does trust in online communities affect purchase intention in social commerce? (3) How does the message credibility factor impact trust in online communities? By answering these questions, the research will enable a complete understanding of the role of information credibility in consumer behaviour and provide insight to businesses and policymakers in emerging economies, especially in Sri Lanka.

Literature Review

Source Credibility

Source credibility is a communicator's positive traits that boost information value and impact (Jackob & Hueb, 2016; Singer et al., 2023). According to Dwivedi et al. (2023), source credibility has three dimensions: expertise, trustworthiness, and homophily. These traits strongly influence consumer buying. However, this study emphasizes source trustworthiness

and expertise. Purchase intentions depend on consumer perceptions of information source credibility. (Asante et al., 2021; Zhao et al., 2020). Similarly, Jackob &Hueb (2016) state that information source credibility initially affects receiver perceptions, attitudes, opinions, and behaviour. Prior research suggested that consumers are more likely to trust information and recommendations from sources they perceive as credible. Similarly, Miracle (2024) states that source credibility enhances persuasion and leads to higher trust in an online community. According to Koch (2024), source credibility directly affects the acceptance of information in online communities. Addressing the above prior research, the following hypotheses are proposed:

H1: Source credibility positively impacts trust in the online community.

Message Credibility

Message credibility is a type of information credibility. It is based on receiver judgements, including objective perceptions of message credibility and judgement of medium credibility. Message credibility can be defined as the perceived credibility of the communicated message itself (Li & Suh, 2015). While the source's credibility plays a role in online communities, researchers suggested that even a message from a less credible source can still foster trust if the content appears well-reasoned and factual. According to Petty &Cacioppo (1986), users evaluate message credibility through central and peripheral processing. Message credibility has a positive impact on trust in online communities, as users rely on the perceived accuracy, consistency, and quality of information when forming trust (Cheung et al., 2008). Additionally, well-structured and evidence-based messages contribute to higher engagement and reduced misinformation, further strengthening trust in digital environments (Sbaffi & Rowley, 2017). Considering the literature, the following hypothesis is proposed:

H2: Message credibility positively impacts trust in the online community.

Trust Online Community

To establish trust, one party must trust the exchange partner's reliability and integrity (Morgan & Hunt, 1994). Effective relationship marketing requires commitment and trust between parties. Trust is the willingness of one party to expose themselves to another's actions in the expectation that the latter will take a specific action significant to the trustor, regardless of the ability to supervise or regulate the other party (Schoorman et al., 2007). Online trust is "the extent to which consumers believe the online shop will fulfil its obligations, behave as expected, and prioritise customer interests" (Dachyar & Banjarnahor, 2017). Customer trust includes competence, benevolence, and integrity (Chen & Dhillon, 2003). Online communities must build trust to reduce consumer apprehensions about commercial transactions and increase

purchase intentions in social commerce environments. Addressing the above prior research, the following hypothesis is proposed:

H3: Trust in online communities positively impacts social commerce purchase intention.

Mediation Effects

The reputation a source holds as a factor of its perceived expertise and trustworthiness influences the user's trust in online communities. With trusted, credible sources, users (consumers) are more inclined to believe the information provided, and this helps in building trust within the community (Cheung & Lee, 2012; Hajli et al., 2014). In addition, trust itself is highly important in social commerce purchase intention since it lowers perceived risk and enhances willingness to buy (Hajli, 2015; Kim & Park, 2013). In addition, trust in online communities acts as a mediator between source credibility and purchase intention, converting the perceived trust into consumer action.

H4: Trust in Online Communities mediates the relationship between Source Credibility and Social Commerce Purchase Intention.

Message credibility, which refers to the perceived believability, accuracy, and reliability of online content, has a considerable effect on trust in online communities and, consequently, on purchase intention in social commerce. Users are more inclined to trust the online community disseminating the content when they consider the messages credible (Appelman & Sundar, 2015; Erkan & Evans, 2016). This trust alleviates doubts and bolsters consumers' confidence in the purchase decision (Kim & Park, 2013). It has been reported that trust acts as a mediator between message credibility and purchase intention, transforming perceived message reliability into actual consumer action (Hajli, 2015).

H_5: Trust in Online Communities mediates the relationship between Message Credibility and Social Commerce Purchase Intention

Social Commerce Purchase Intention

Hajli et al. (2017) say social commerce, a subset of electronic commerce, has garnered attention. Recently, social media commerce has become a central research area. Some studies have examined how social media platforms affect consumers' purchase intentions, while others have examined how social interactions affect consumer behaviour (Zhang et al., 2024). Similarly, Mikalef et al. (2017) examined how social commerce platform features affect users' purchase intentions and word-of-mouth communication. According to Zhang et al. (2024), there are few studies on how content affects consumer purchase intentions. The information sellers and intermediaries provide on social media platforms is crucial because consumers cannot physically inspect the products they are considering. The gap highlights the need to

study how information affects social commerce consumer purchase intentions. This research gap must be filled to understand how consumers handle the unique challenges and opportunities of digital, socially interactive purchasing decisions.

Methodology

Deductive research methodology establishes predefined variables and hypotheses based on prior studies that show how the credibility of social media information affects consumer purchase intentions in social commerce. (Tseng, 2023). Based on statistical data and prior studies, the study targets Sri Lankan Facebook users aged 19 - 34 who want to buy skincare products. (Kanani & Glavee-Geo, 2021). According to Statista (2024), Facebook's dominance as a social commerce platform made it ideal for data collection. Due to the unknown population size, convenience sampling was used. Cochran's formula was used to determine the sample size of 384 respondents. Based on literature-driven models, a structured questionnaire was created in English and Sinhala for clarity and inclusivity. The questionnaire comprised two sections: the first gathered demographic and contextual information, including age, online skincare purchasing behaviour, and Facebook-related skincare shopping experience, while the second assessed critical research variables, such as social commerce purchase intention, source credibility, message credibility, and trust in the online community. Responses were evaluated using a five-point Likert scale to guarantee data validity and reliability. Data analysis used Structural Equation Modelling (SEM) to examine variable relationships, construct latent variables, detect errors, and statistically validate theoretical assumptions. Model significance and hypotheses were tested using Smart PLS bootstrapping. Internal reliability was assessed using Cronbach's alpha. This structured approach allows the study to rigorously analyse how source credibility and message credibility affect social commerce purchase intentions through trust online communities, particularly in Sri Lanka.

Data Analysis and Results

Demographic Results

There were 420 responses, but only 384 were valid and used for analysis. The demographic profile of respondents consisted of gender, age, income level, and usage frequency. Table 1 presents all of this and gives us a better idea of the sample. It also shows that the results can be applied to the target group of Facebook skincare consumers.

Table 1: Demographic Results

Variable	Item	Frequency	Percentage

Age	19 - 22 Years	90	23%
	23 - 26 Years	168	44%
	27 - 30 Years	55	14%
	31 - 34 Years	71	18%
Gender	Male	145	38%
	Female	238	62%
	Prefer not to say	1	0%
Income Level	Below Rs. 50,000	181	47%
	Rs.50,000 - 100,000	85	22%
	Rs.100,000 - 150,000	57	15%
	Rs.150,000 - 200,000	38	10%
	Above Rs.200,000	23	6%
Facebook purchase frequency	Once a month or less	282	73%
	2-3 times a month	81	21%
	Once a week	10	3%
	Several times a week	11	3%

Source: Authors' compilation.

Measurement Model Assessment

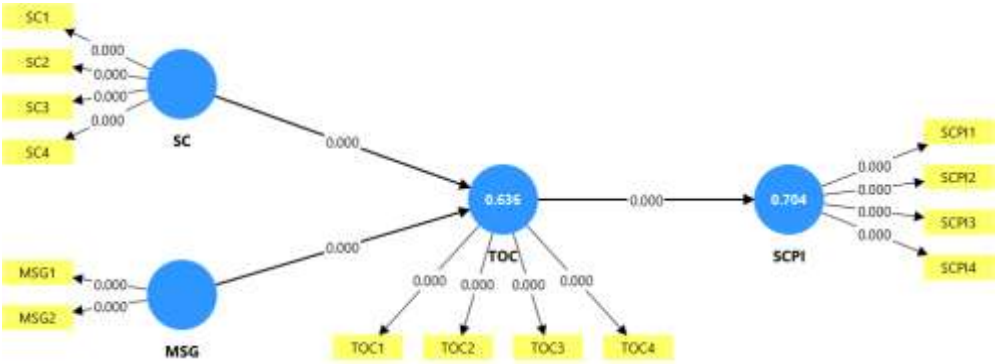

Figure 1: Graphical Output of the SEM Measurement Model Analysis.

Source: Authors' illustration, extracted from Smart PLS.

Figure 1 displays the relationships between constructs along with each indicator. The diagram provides an overview of how the observed variables represent their respective latent constructs, supporting the measurement model's reliability and validity.

Cronbach's alpha, Composite Reliability, and Average Variance Extracted (AVE) are significant values that help us determine the questionnaire's validity and reliability. The values obtained from these analyses are displayed in Table 2. The factor loadings of the individual measurement items also support construct validity as each item demonstrates significant loadings above the recommended threshold of 0.70 (Hayes et al., 2017). The results indicate that all constructs have strong reliability as both Cronbach's alpha and composite reliability values were above the recommended threshold of 0.70 (Hair et al., 2021; Henseler et al., 2015). Furthermore, the

AVE values also meet the recommended threshold of 0.50, which confirms that a substantial portion of the variance in the indicators is explained by their respective constructs (Hayes et al., 2017). Trust Online Community and Social Commerce Purchase Intention exhibit particularly high reliability, while source and message credibility meet the required standards. All these findings confirm the robustness and quality of the measurement model in the study.

Table 2: Reliability and Validity

Construct	Factor Loadings	Cronbach's Alpha	Composite Reliability	Average Variance Extracted
Source Credibility	0.850	0.864	0.907	0.71
	0.796			
	0.863			
	0.860			
Message Credibility	0.867	0.745	0.886	0.795
	0.916			
Trust Online Community	0.908	0.928	0.949	0.823
	0.898			
	0.935			
	0.888			
Social Commerce Purchase Intention	0.828	0.935	0.951	0.795
	0.897			
	0.910			
	0.920			
	0.899			

Source: Authors' compilation, extracted from Smart PLS.

Discriminant validity was assessed using the Heterotrait-Monotrait Ratio (HTMT), and the Fornell-Larcker criterion is shown in Table 3. Although several HTMT values exceeded the recommended threshold of 0.85 (Henseler et al., 2015). Therefore, the Fornell-Larcker criterion confirmed that the square roots of AVE exceeded inter-construct correlations. Thus, despite the HTMT concern, sufficient evidence supports the discriminant validity of the constructs, following (Hair et al., 2017; Voorhees et al., 2016).

Table 3: Fornell-Larcker and HTMT

Constructs	MSG	SC	SCPI	TOC
MSG	0.892	1.025	0.978	0.918
SC	0.821	0.843	0.877	0.833
SCPI	0.822	0.79	0.892	0.899
TOC	0.771	0.749	0.84	0.907

Source: Authors' compilation, extracted from Smart PLS.

The Variance Inflation Factor (VIF) values were analysed to evaluate multicollinearity among the indicators. Table 4 shows that all the VIF values are between 1.544 and 5.013, which is less than the usual limit of 5 (Hair et al., 2021). This indicates that multicollinearity is not a concern in this study, and the indicators are sufficiently independent to be included in the model.

Table 4: Multicollinearity Assessment (VIF)

Constructs	VIF
MSG1	1.544
MSG4	1.544
SC1	2.148
SC2	1.800
SC3	2.192
SC4	2.152
SCPI1	2.535
SCPI2	3.644
SCPI3	3.977
SCPI4	5.013
SCPI5	3.518
TOC1	3.678
TOC2	3.013
TOC3	4.622
TOC4	2.970

Source: Authors' compilation, extracted from Smart PLS.

In Table 5, R^2 values show how much of the variance in the dependent variables is explained by the independent variables. For Social Commerce Purchase Intention (SCPI), 70.6% of its variance is explained, while Trust in Online Community (TOC), 63.6% is explained. The adjusted R^2 values are very similar, indicating the model's stability (Hair et al., 2021).

Table 5: Coefficient of Determination (R^2) and Adjusted R^2

Construct	R-square	R-square adjusted
SCPI	0.706	0.705
TOC	0.636	0.634

Source: Authors' compilation, extracted from Smart PLS.

The model fit was evaluated using SRMR, Chi-square, and NFI values shown in Table 6. The SRMR for the saturated model was 0.050, which indicates a good fit, as values below 0.08 are acceptable (Henseler et al., 2015). The estimated model showed an SRMR of 0.081, still within an acceptable range. Also, Chi-square values are reasonable considering the sample size. The NFI values also show a satisfactory model fit (Hair et al., 2021). These results confirm that the model is suitable for further analysis.

Table 6: Model Fit Indices

Indices	Saturated model	Estimated model
SRMR	0.050	0.081
Chi-square	738.632	841.355
NFI	0.867	0.848

Source: Authors' compilation, extracted from Smart PLS.

Structural Model Assessment

Using Smart PLS 4.0, the research conceptual model is analysed, shown in Figure 2. For each measurable factor, loadings are depicted in the model. The factor loadings for the constructs, source credibility, message credibility, trust online community, and social commerce purchase intention demonstrate consistent strength, underscoring robust measurement reliability. All constructions exhibit satisfactory internal consistency, thereby validating the measurement model.

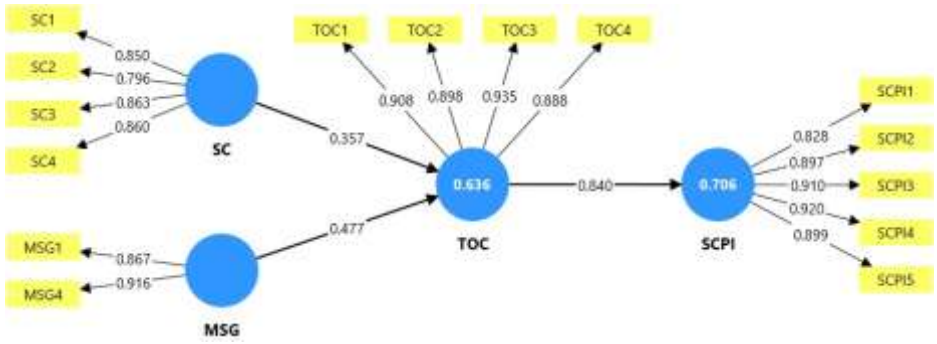

Figure 2: Graphical Output of the Structural Model Analysis.

Source: Authors' illustration, extracted from Smart PLS.

Table 7 reveals that the structural model results confirmed several significant direct and indirect relationships. Massage credibility positively impacts trust in the online community, which means that when messages are perceived as credible, users are more likely to trust the online community. Therefore, source credibility positively impacts the trust of the online community. This indicates that users are more likely to trust the online community when the information source is perceived as credible. Furthermore, trust in online communities strongly and positively impacts social commerce purchase intention, reinforcing its critical role in shaping purchase intentions.

Table 7: Path Coefficients and Hypothesis Testing

		Path	Coefficient	Sample Mean	SD	*t*-stat	*p*-*value*	Test Results
Direct	H1	SC -> TOC	0.357	0.355	0.066	5.431	0.000	Supported
	H2	MSG -> TOC	0.477	0.481	0.072	6.667	0.000	Supported
	H3	TOC -> SCPI	0.84	0.842	0.034	24.593	0.000	Supported
Indirect	H4	SC -> TOC -> SCPI	0.288	0.287	0.064	4.532	0.000	Supported
	H5	MSG -> TOC -> SCPI	0.395	0.399	0.064	6.212	0.000	Supported

Source: Authors' Compilation extracted from PLS-SEM

The indirect effect analysis revealed that message and source credibility significantly influenced social commerce purchase intention through the mediating role of trust in online communities. The mediation pathway from SC to TOC to SCPI was supported, indicating that source credibility enhances consumer trust, which drives purchase intention. Similarly, MSG

ISBN: 978-624-5553-76-1

showed a strong indirect effect through TOC, confirming its importance in shaping consumer behaviour.

Table 7 results suggest that the relationships between the constructs are robust and statistically significant, with p-values ≤ 0.000 in all cases (Ronkko et al., 2016). The strong path coefficient between trust in online communities and social commerce purchase intention underscores the importance of trust in online communities in influencing purchase intention. Overall, the model demonstrates strong predictive power and reliability, confirming that the indicators of each construct make distinct and meaningful contributions without redundancy.

Discussion

This study confirms that source and message credibility positively impact trust in online communities, enhancing social commerce purchase intention. Consumers are more likely to trust online communities when information comes from credible sources, such as experts and influencers, aligning with prior research on expertise and transparency (Shah & Wei, 2022). Similarly, message credibility, characterized by factual accuracy and consistency, strengthens trust, supporting previous findings on the role of message quality in digital trust formation (Beck et al., 2023). Notably, this study highlights message consistency as a key factor, an area less explored in prior literature. Furthermore, trust in online communities significantly increases purchase intention by reducing uncertainty and fostering consumer confidence, consistent with previous research (Dowling & Staelin, 1994; Saleem & Ellahi, 2017). These findings complement research on credibility and trust in social commerce ecosystems, highlighting their role in consumer decision-making. This study emphasizes the importance of information credibility in social commerce and the need for businesses to implement comprehensive risk mitigation strategies that balance trust enhancement to succeed in competitive markets like the skincare industry.

Conclusion

This study highlights the significance of source and message credibility in shaping social commerce purchase intention, with trust in online communities as a mediator. While the findings offer valuable insights for Sri Lankan skincare brands, limitations such as convenience sampling, platform exclusivity (Facebook), the exclusion of older consumers, and additional credibility factors restrict generalizability. Future research should expand the scope by including diverse demographics, multiple platforms, and additional credibility influences, employing longitudinal and qualitative approaches for deeper insights. Brands should collaborate with credible influencers, encourage authentic user reviews, and foster online

community engagement to enhance trust and reduce perceived risk, ultimately strengthening their social commerce strategies.

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ISBN: 978-624-5553-76-1

Sustainable Wellness Tourism in Sri Lanka: A Qualitative Study on Pathways for Destination Competitiveness

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Abstract

The tremendous combination of natural beauty and cultural heritage makes Sri Lanka an attractive and emerging destination for people seeking holistic experiences in the travel industry. This paper examines the wellness experience of international tourists and the role of the wellness experience in the sustainability and competitiveness of a destination. The findings, based upon thematic analysis of in-depth interviews with 11 tourists, show that emotional and psychological comfort, facilitated by calm surroundings, Ayurvedic therapies, and traditional cultural aspects plays a prominent role in satisfying visitors Research examines how tourists view and act towards experiences in sustainable wellness tourism for pathways to destination competitiveness in Sri Lanka. The research shows that emotional and psychological well-being is the most critical factor in visitor satisfaction, derived from calm environments, Ayurvedic practices, and yoga and meditation arts. International visitors highlighted Sri Lanka's authentic indigenous traditions, a pleasant local welcome, and reasonable premium service as the main elements that made their wellness trip successful. The researchers detected both difficulties related to post-pandemic economic recovery and visitors' concerns about prices. Through this research, sustainable tourism studies received new insights about the power of traditional wellness methods to create destination uniqueness that encourages visitor commitment. Wellness tourism marketing using digital platforms, consistency in service quality, and alignment of the wellness agenda with sustainable development goals in Sri Lanka are some of the innovations that can promote the long-term development of the sector The research addresses qualitative gaps concerning South Asian wellness tourism, thus offering industry-specific recommendations for both government and tourism entities to take advantage of evolving traveler expectations.

Keywords: *Cultural authenticity, Qualitative research, Sustainable wellness tourism, Tourism experience, Tourist motivations*

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ISBN: 978-624-5553-76-1

Introduction

The worldwide wellness tourism industry emerged due to three main factors, including an ageing population, rising healthcare expenses, and developments in medical technology (Hjalager & Flagestad, 2012). The wellness tourism industry delivers well-being physically, mentally, and spiritually (McCabe & Johnson, 2013). Popular wellness tourism destinations now include various products combining spas with massages, mouth-watering food, and yoga activities (Hunt & Harbor, 2019). The Global Wellness Institute estimates that wellness tourism is a highly potential portion of the tourism industry, worth more than USD 850 billion worldwide, and it expands at a rate of over 7.5 per cent every year. Travellers drive this growing demand in search of health, stress, and culture. A destination gets its appeal from tourists seeking either previous experiences or fresh new encounters. Research has not sufficiently explained what factors push tourists toward choosing particular destinations, nor how their real experiences match their expectations (Lim et al., 2015). The research focuses on examining Sri Lankan visitors' motivations together with their tourism experiences, to fill the existing knowledge gaps (Devesa et al., 2010). The research of wellness tourism has an important methodological deficiency that stems from using quantitative approaches because these methods poorly reflect the detailed and customized tourism encounters of visitors (Dillette et al., 2020) By investigating the motivation of international tourists and wellness experience in Sri Lanka, the research is expected to reveal important aspects that contribute to sustainable wellness tourism and enhance the competitiveness of the destination country. Research findings will help comprehend Sri Lanka's wellness tourism market while presenting strategies to boost its position as a wellness tourism destination.

Problem Statement

Most studies on wellness tourism rely on quantitative methods, emphasizing numerical data while overlooking the complexity of individual visitor experiences (Dillette et al., 2020). This creates an important methodological gap, particularly in Sri Lanka, where qualitative approaches like interviews and focus groups are necessary to capture wellness tourists' nuanced experiences and motivations. In general, motivations and experiences related to wellness have been studied around the world. However, little is known about how it all adds to the sustainability of a particular destination and its competitive edge in the long term. Further, there is a theoretical gap in the understanding of visitor motivation and experience (He et al., 2021). There is a gap in the literature concerning connecting the purpose of tourists visiting wellness destinations to their experience, in particular in Sri Lanka, where little research has been done on the factors of cultural and spiritual enrichment (Sivanandamoorthy, 2021). These gaps need to be addressed to build a more comprehensive picture of the dynamics of wellness tourism.

Literature Review

Tourism aimed at wellness continues to emerge as an expanding sector within international travel since guests seek both rest and health enhancement. The cultural and natural wonders of Sri Lanka create valuable prospects for tourism focused on wellness care. The nation has not yet maximized the sector's potential despite its existing potential because of knowledge shortfalls. The analysis explores global and regional intentions and experiences, and matters related to wellness travel to fill knowledge gaps. Wellness tourism involves travelling to enhance or maintain one's physical, mental, and emotional well-being. People who take wellness trips often participate in relaxing and healing activities like spa treatments, yoga, meditation, healthy eating, and traditional therapies such as Ayurveda services, which lower the tension, provide better exercise, and enhance a healthier lifestyle. Sustainability in wellness tourism means offering these services in a way that protects the environment, respects local culture, and benefits local people. Destination competitiveness means how attractive and good a destination can serve tourists compared to others. Competitive wellness destinations, such as Sri Lanka, are unique, authentic, and of good quality. They offer high-value Ayurvedic healing, nature retreats, and spiritual activities and preserve cultural and natural resources.

Experience in Wellness Tourism

The wellness tourism sector of Sri Lanka centres its activities on three main aspects (Dahanayake et al., 2025), which encompasses emotional and physical well-being and the preservation of cultural heritage. The SERVQUAL scale evaluates service quality through five dimensions, which show the importance of nature and quality aspects regarding tourist satisfaction and return intentions (George, 2010). Health tourism succeeds through medical yoga and Buddhist meditation practices that deliver spiritual transformation to visitors. Tourism focused on well-being in Sri Lanka brings together historic ancient practices alongside modern treatments such as Ayurveda, along with yoga traditions (de Silva et al., 2024). Physical relaxation and mental health advantages provided by these practices occur while visitors experience improved travel satisfaction through nature and individualized services.

Motivations for Wellness Tourism

Tourism related to well-being depends on factors that drive tourists to seek relaxation through spiritual ventures and improve their health status (Kelly, 2015). Four major motivational

elements include travel, health, spirituality, and personal development. Customers place the highest value on quality teaching and medical care when they visit retreats or stress services. Seven motivational factors are identified through the Wellness Tourist Motivation Scale. These include relaxation and stress relief, escape from routine, health improvement, self-healing, self-development, spiritual connection, and indulgence (Bayih & Singh, 2020). Sri Lankan tourists who are middle-aged adults with a secondary education choose affordable travel locations, given their high price sensitivity. People tend to patronize traditional healthcare methods in the AYUSH system for extended periods because they deliver excellent services. Other motivating circumstances in the Sri Lankan setting include the ambition to get genuine Ayurvedic medicine, an idyllic natural backdrop, and a spiritual air embraced by Buddhist meditation practices. The personal care, emotional health, and cultural distinctiveness that Sri Lanka provides are also what appeal to many wellness tourists. Its relative cheapness in terms of wellness services within the Western nations also makes it attractive among tourists, who need wellness services and at the same time find it quite cost-effective (Kelly, 2015).

Challenges in Wellness Tourism

The COVID-19 pandemic actively diminished the wellness tourism market in Sri Lanka, resulting in reduced tourist activity and financial losses. Wellness tourism requires stronger resilience because international travel has declined, customers have changed, and concerns about health and safety have intensified (Sivanandamoorthy, 2021). The wellness tourism stakeholders in Sri Lanka should rebuild their resilience through digital marketing programs, enhanced safety procedures, and coping strategies.

Integration of Sustainability in Wellness Tourism Practices

Sustainability in wellness tourism means including environmentally friendly operations, cultural conservation, and community participation in tourism services, which enhance physical, mental, and emotional well-being. Sustainability in wellness tourism practices in Sri Lanka is yet to be incorporated, but the island country has good potential because of its ancient Ayurvedic practices, biodiversity, and community-based healing methods (Sivanandamoorthy, 2021). Enhancing sustainability in wellness tourism needs a national approach that advances eco-certification, community involvement, and stable service quality, which can improve Sri Lanka in the global wellness tourism market and help preserve the environment and culture in the long term (Sumanapala & Wolf, 2023).

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The Role of Culture and Traditional Knowledge in Sustainable Wellness Tourism

Sustainable wellness tourism in Sri Lanka is closely linked to this country's abundance of cultural heritage and knowledge systems, including Ayurveda, which is also considered the basis of this country's wellness destination. Ayurveda practice as a cultural heritage is not only beneficial in terms of being sustainable cards but also in its approach towards health and health promotion, utilizing locally produced herbs, traditional healing ceremonies, and community-based treatment, which can also offer reduced carbon footprint and authenticity (Ramanayaka, 2024). A large group of these Indigenous practices are the foci of wellness resorts as they infiltrate them with eco-friendly approaches like herbal gardens and nature-based therapy centres (Sugathapala, 2024). Conservation and maintenance of traditional knowledge are also vital concerning employee welfare, and employees who are trained to work in Ayurvedic and wellness services become more satisfied with the work when it is done in conditions that have significant value to the culture and environment (Munasinghe et al., 2024).

Methodology

Using this method, the study performs an inductive analysis of Sri Lanka's wellness tourism participant experiences. The research adopted a qualitative design to examine participants' experiences regarding relaxation strategies, stress management approaches, cultural encounters, and social activities. Multiple research participants experienced positive relaxation first and then encountered various multiracial social experiences (Maxwell, 2013). Thematic analysis was conducted on the transcripts of in-depth interviews to identify recurring themes that explain why tourists choose Sri Lanka as their wellness travel destination (Rutledge & Hogg, 2020).

Data Collection

The data collection process involved in-depth interviews to capture participants' motivations and experiences comprehensively. This method enabled individuals to openly express their opinions and give in-depth explanations of their encounters (Rutledge & Hogg, 2020). Participants were encouraged to talk about their motivations, expectations, and experiences with wellness using open-ended questions.

Sampling Technique and Selection

Respondents were selected using purposive sampling, ensuring they had extensive experience with various wellness tourism services across Sri Lanka. This included visitors with diverse wellness offerings such as Ayurvedic therapies, yoga and meditation retreats, spa treatments,

and other holistic practices across recognized wellness hubs like Habarana, Ella, Kandy, Ahungalla, and Weligama. To ensure a broad understanding of wellness tourism experiences, only international tourists who had visited Sri Lanka specifically for wellness purposes, stayed for over two weeks and participated in various wellness activities were considered eligible. The inclusion criteria ensured coverage of the full spectrum of wellness services and diverse experiential contexts. This approach addressed the qualitative research gap and theoretical limitations identified in the problem statement, particularly the need to explore complex, personal experiences and motivations beyond narrow and singular service engagements.

In line with this, eleven participants who represented varied backgrounds and had experienced holistic wellness activities across different regions of Sri Lanka were selected. Their detailed profiles are presented in Table 1. Moreover, the chosen respondents explored novel healing practices while seeking individually tailored adventures intended to restore equilibrium in both mind and body. Based on these rigorous criteria, eleven (11) respondents were selected for participation in the study, and their profiles are detailed in Table 1.

Table I: Respondent Profiles

Respondents	Country	Gender	Purpose of visit
Respondent 1	Germany	Female	Yoga Retreat
Respondent 2	India	Male	Ayurvedic therapy
Respondent 3	United Kingdom	Male	Meditation and relaxation
Respondent 4	Germany	Male	Spa and yoga
Respondent 5	Australia	Female	Adventure and wellness
Respondent 6	United Kingdom	Female	Ayurvedic Healing
Respondent 7	Germany	Male	Yoga and Ayurveda
Respondent 8	Cambodia	Male	Yoga Retreat
Respondent 9	Thailand	Male	Spiritual Healing
Respondent 10	Germany	Female	Spa and yoga
Respondent 11	United States of America	Female	Ayurvedic therapy

Data Analysis Techniques and Tools

Through thematic analysis of interview data, the researchers utilized NVivo to explore tourists' visits to Sri Lanka, along with their attitudes and reasons for travelling (Zamawe, 2015). The detailed method led to the complete understanding of how tourists experience wellness journeys across different aspects in Sri Lanka while revealing central components that enhance their while also helping to identify key factors related to sustainability, such as the

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use of natural resources and support for local communities, as well as elements that improve Sri Lanka's competitiveness as a wellness tourism destination, including quality of services, cultural uniqueness, and affordability.

Results

In the interviews, five key themes emerged in wellness travel to Sri Lanka: emotional well-being, social connections, experiences of authenticity, cultural relevancy, and affordability. People noted that they felt relaxed, rejuvenated, and extremely tranquil. Such personal accounts result in an increased score of overall fulfilment, proving the point that the micro-level individual accounts mirrored the macro-level practices of wellness tourism, depicted in Figure 1 based on thematic analysis of participant interviews, five major motivational determinants were identified as influencing international tourists' decisions to visit Sri Lanka for wellness tourism. These determinants are directly connected to tourists' expectations and their experienced satisfaction. Each determinant reflects how specific service elements and environmental factors support emotional, cultural, and physical well-being in Sustainable wellness tourism.

Figure 01: Gist of Sri Lanka's Wellness Tourism Experiences and Visitor Motivations

Emotional and Psychological Well-Being

The main characteristics of the wellness experiences that visitors to Sri Lanka experienced were relaxation and serenity. The wellness centres' lush, natural settings produced a peaceful ambience that instantly promoted relaxation. While therapies like massages with warm oils offered profound relaxation, many participants talked about how the surroundings reduced tension. The relaxed pace of life allowed visitors to escape their daily responsibilities and lose themselves in tranquil surroundings. For instance, in their own words, they have mentioned that,

"It was comfortable, and the service was nice and kind, stress relieving and relaxing." Respondent 7

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"I felt lighter, more relaxed, and mentally cleared."– Respondent 8

"The Wellness centres are often surrounded by lush greenery, which immediately makes me feel relaxed."– Respondent 10

Wellness activities positively impacted the tourists' mental clarity. Guests were able to revitalize their minds through yoga, meditation, and massages, which improved their focus and mental clarity. Visitors experienced a new sense of mental clarity that lasted long after the sessions, as the calm surroundings encouraged mindfulness and helped them detach from cognitive distractions. Respondent 10 described their experience, stating:

"Yoga and meditation sessions help me clear my mind, while this is for treatment, especially the massages." – Respondent 10

Many participants valued the health setting's tranquillity because they saw it as a significant contrast to the stresses of daily life. The peaceful ambience allowed visitors to indulge in self-care and unwind completely. It was essential for mental and emotional health to be able to withdraw in such a serene setting. Another traveller fondly recalled the peacefulness of the wellness setting, stating,

"Incredibly peaceful, which was exactly what I needed after months of a stressful work schedule." – Respondent 8

"I feel much more relaxed and peaceful physically." – Respondent 10

Social Interactions and Hospitality

The tourists arriving in Sri Lanka find rest and a sense of genuine cordiality and humanity here. Thus, one of the travellers shared that it is "very humane," and the attitude of locals is very warm and respectful. Such compassionate treatment, in combination with the welcoming atmosphere, creates a memorable journey rooted in kindness. For example, in their own words, they mentioned,

"The staff have been incredibly warm and welcoming." - Respondent 9

"*The staff have been incredibly warm and welcoming." - Respondent 3*

The tourists describe the variety of wellness activities they engage in as great in Sri Lanka, where every moment is thoughtfully planned for rest and comfort. One describes the care of his masseur; aside from the professional techniques, there were attentive questions about his physical comfort throughout the treatment. The oil massage was given exactly as he wanted it, and the fragrances in the room made it more calming. Everything combined harmoniously from the oily massage to the soft ambience to let them unwind completely. Everything was "perfect," he described, and he got almost great pleasure from how those factors combined their merits to give them an experience both profoundly relaxing and memorably lovely.

"I found that lovely experience" - Respondent 6

"I like oil massages and all these things, and the masseur here was like so. Moreover, with the aroma and all these things, things look perfect. I love the experience.' - Respondent 9

Uniqueness And Authenticity of Wellness Experiences

Visitors are fascinated by Sri Lanka's wellness tourism because of its outstanding experiences and distinctive combination of affordability. The quality of the offers is exceptional, according to one reply, even if the prices are much lower. Another emphasized that their yoga practice was "something very different" and one of their favourite things, saying that it was "totally different from anywhere in the world." These observations highlight how Sri Lanka distinguishes itself as a travel destination offering financial value and unforgettable wellness experiences.

"I would say it is not as much from the experience, but obviously, the prices you said are very different. - Respondent 2

"It was something very different." - Respondent 6

"It was different from anywhere in the world." - Respondent 11

The respondents were excited and curious to learn more about Sri Lanka's distinctive customs, especially Ayurveda. Respondent 5 expressed their excitement by saying,

"*I had heard that the Sri Lankans have some unique traditions like Ayurveda, and I want to explore how it is defined."* – Respondent 5

Travellers' perceptions of the genuineness of Sri Lankan traditional therapies have far exceeded their expectations. One person thought about it. This feeling highlights how tourists' wellness journey is improved when they receive authentic therapies that align with the local way of life.

"I was not sure how the treatment would be, but they are authentic and deeply rooted in the local practice." – Respondent 7

Cultural and Traditional Significance of Sustainable Tourism

Travellers to Sri Lanka appreciated the authenticity of the natural environment and the vibrancy of cultural traditions. The untouched beauty of fields and cultural celebrations prompted positive reflections. One participant commented that sustainable wellness tourism in Sri Lanka benchmarks strongly toward cultural heritage and traditional knowledge systems, particularly Ayurveda, which epitomizes the wellness identity of the country. Ayurveda supports wellness with local herbal resources, established healing practices, and community-directed modes of therapy. Authenticity and reducing carbon footprints are assured (Ramanayaka, 2024). While many wellness retreats employ eco-friendly practices, such as herbal gardens and lifestyle therapy using the natural environment (Sugathapala, 2024), traditional knowledge also ensures employee wellness. Skilled practitioners utilizing Ayurvedic therapy practices feel satisfied with their cultural identity and knowledge of ecology (Munasinghe et al., 2024).

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Visitors were captivated by Sri Lanka's stunning natural landscapes and rich cultural legacy. The pristine beauty of the countryside and the variety of cultural activities it offers were highly praised by many. One respondent mentioned,

"Fantastic natural environment and cultural aspects" – Respondent 3

Many tourists find Sri Lanka's wellness offerings remarkable since they are both reasonably priced and of excellent quality. One person emphasized the importance of getting high-quality care, saying.

"*To get something good quality and a massage."* - Respondent 11

"It was quite important for Sri Lanka to have high-quality Wellness services at a fraction of the cost compared to the euro." – Respondent 11

Combining ancient beauty methods, such as Ayurveda, with the sincere warmth of local hospitality enchants tourists visiting Sri Lanka. One respondent mentioned,

"Beauty traditions practice like Ayurveda and the warm hospitality make it a unique experience." – Respondent 10

Affordability And Value for Money

Visitors often contemplate the costs of well-being activities in Sri Lanka versus those in other countries. A traveller commented that Sri Lanka offers a broad wellness experience, but the same is less costly in India. For visitors from countries such as Germany, the costs in Sri Lanka are lower than what they would pay in their own country, so Sri Lanka is somewhere they want to visit. Overall, Sri Lanka offers an important balance of good quality at low costs and allows visitors to indulge in high-end services such as Ayurveda, massage, and yoga activities at an affordable rate, creating a memorable experience.

"India is comparatively cheaper than Sri Lanka" – Respondent 3

Tourists thus comment on the cost of wellness treatments in Sri Lanka. Many note that they are affordable, though the prices sometimes vary. One tourist mentions that, compared to her native country, where a single massage can be as high as €90, the massages in Sri Lanka felt reasonably priced and accessible. They also appreciated the friendly, personable approach of the massage therapists, which added warmth to each session. Although some herbal treatments were considered expensive, the visitors generally found them inexpensive compared to European standards. It is this balance of quality service, personable care, and overall affordability that enables travellers to have such a satisfying wellness experience in Sri Lanka.

"Sri Lanka is comparatively cheaper than India." – Respondent 6

"In my home country, I only had one massage, which was expensive. I think I paid €90.00. In Germany, the one I bought was expensive." – Respondent 6

"Herbal treatments are very expensive." – Respondent 3

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Discussion

Emotional And Psychological Well-Being

Sri Lanka is a wellness tourism destination that attracts many tourists seeking emotional and psychological wellness (Backman et al., 2022; Liu et al., 2023). The quiet and calm atmosphere of the wellness centres, combined with the green vegetation, will allow the tourists to unwind and release stress (Kim & Yang, 2021; Luo et al., 2017). The rural environment surrounding the tourists leaves them relaxed and content (Neuhofer et al., 2021), which aligns with existing studies on how nature helps enhance mental health. Other things, such as yoga and meditation, help mental clarity, focus, and mental refreshing. Wellness tourism is a gratifying experience because of the cognitive and affective benefits of combining mindfulness exercises and natural environments.

Social interactions and hospitality

The experience and value of social interactions and authentic hospitality have been identified in the study as important in promoting wellness experiences. It also boasts of the hospitality and comfort of the Sri Lankan wellness personnel who ensure that the tourists feel important and well cared for. The experience can be improved with positive social interaction with others and individual attention from the staff, making them feel emotionally bound and comfortable (Chen et al., 2022; McCabe & Johnson, 2013).

Uniqueness And Authenticity of Wellness Experiences

The wellness tourists in Sri Lanka are looking to get unique and authentic experiences, and traditional practices, such as Ayurveda, can provide them with a unique combination of modern comfort and cultural richness (He et al., 2021; Lim et al., 2015). This research supports the idea that wellness practices deeply rooted in a culture help add satisfaction and richness to the wellness experience of tourists, as was seen before.

Cultural and Traditional Significance of Sustainable Tourism

Sri Lanka has traditional heritage elements and cultural aspects that are incorporated into boosting wellness tourism destinations (Dahanayake et al., 2025). A blend of Ayurveda traditional medical practices can provide authentic wellness experiences to authentic seekers (Auliya & Hendro Koestoer, 2024; Chi et al., 2020). It is a wellness practice that is deeply embedded in culture, thus forming a better appreciation and knowledge of the destination (Han et al., 2017; He et al., 2021) As literature indicates, incorporating traditional wellness practices and local culture enhances wellness tourism.

Affordability And Value for Money

Through the study, we learn that Sri Lanka has cheap wellness services which are attractive to value-seeking tourists interested in quality and low prices. Such a balance of quality and price

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allows stating that Sri Lanka is a destination of desire (Kelly, 2015; Mak et al., 2008), which proves earlier studies that the key to attracting tourists in search of affordable, yet premium experiences in wellness tourism is to get the balance between quality and price.

Conclusion

The research emphasizes the significance of sustainable wellness tourism in Sri Lanka, citing its relationship to emotional and psychological well-being, cultural authenticity, social hospitality, uniqueness of services, and affordability. To increase their sustainability and competitiveness, wellness tourism providers must concentrate on high-quality, culturally based, environmentally friendly experiences. This development is facilitated by the Sri Lankan government, together with the Sri Lanka Tourism Development Authority. Community-based wellness businesses can be scaled using national standards, financial incentives, training, and local practitioners' support. With policy support, industry commitment, and genuine wellness products, Sri Lanka can improve its global position in the wellness tourism market.

Policy Implications

The study recommends that the country boost its wellness tourism sector by improving visitors' experiences and shaping services depending on visitors' motivations. The short-term suggestions are introducing capacity-building initiatives to enhance the quality of service in wellness centres, educating the personnel on approaches to customer service, and providing financial incentives to wellness providers. A tailored marketing campaign must be used to market the authentic culture and natural wellness tourism products of Sri Lanka. Among the strategic policy shifts that need to occur on a long-term basis are establishing national wellness quality certifications, reporting standards for wellness tourism providers, and implementing monitoring models such as the Global Wellness Economy Monitor. Comparing the wellness policies of Sri Lanka with those of Thailand and India will ensure competitiveness without compromising the integrity of the Sri Lankan culture. The following suggestions are meant to boost the wellness tourism sector in Sri Lanka.

Limitations of the Study

The research about wellness travel in Sri Lanka is not devoid of limitations; among them, one may note the limited number of subjects and the lack of data concerning those tourists who chose to travel to another destination or abandoned their plans. The study was limited to formal wellness retreats based out of commercial centres. It did not include community-run and informal wellness providers such as Ayurvedic centres and yoga retreats in villages. The absence of such inclusion of therapists, healers, and local hosts in the sample does not give us the complete picture of the real culture of wellness in Sri Lanka. Nevertheless, the limitations

do not hinder the study from offering some insights into Sri Lankan wellness tourism. Future studies must focus on local community knowledge, evaluate localized or less touristy wellness services, and create an overall image of the destination and its potential for sustainable development.

Future Research

The research unveils some main reasons tourists engage in wellness tourism in Sri Lanka. The possible directions of future research include the role of traditional wellness practices, repetition in travel behaviours, and the interplay of digital technology and traditional wellness experiences. The research must also focus on the hindrances to adopting sustainable practices and the disadvantages experienced by poorly represented markets and multicultural backgrounds. Wellness programs in the public and private sectors should measure their success, and strategies for conducting research should be developed to make Sri Lanka a major wellness destination. The Down South region of Sri Lanka has unutilized potential regarding wellness tourism, and studies must be directed towards identifying the effects of coastal surroundings on wellness experiences and the development of unique tourist products. Sri Lanka should develop sustainability models and concentrate on stress management and mental growth at a time when the world is going crazy over personal wellness.

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ISBN: 978-624-5553-76-1

Enhancing Sri Lanka's Competitiveness in Diving Tourism: Bridging Development Gaps Through Stakeholder Strategies

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Abstract

Sri Lanka's diving tourism sector holds significant potential to enhance its global competitiveness, yet it faces critical development gaps that hinder its growth. This study explores stakeholder-driven strategies to address these challenges by adopting a qualitative research approach. Data were collected through semi-structured interviews with 18 key industry stakeholders involved in diving tourism activities in Sri Lanka. The findings reveal that limited infrastructure, inadequate funding, lack of stakeholder collaboration, and insufficient environmental education are significant barriers to industry expansion. Moreover, the study identifies a gap in research focusing on stakeholder-driven strategies to position Sri Lanka as a premier diving tourism destination. By integrating diverse stakeholder perspectives, this research provides context-specific recommendations to enhance tourist experiences, promote sustainable practices, and drive long-term industry growth. The study's novelty lies in its stakeholder-centric approach, offering actionable insights contributing to the sustainable development of Sri Lanka's diving tourism sector.

Keywords: *Diving Instructors, Diving Masters, Diving tourism, Stakeholder-Driven Strategies, Sustainable Tourism, Tourism Competitiveness*

Introduction

Diving tourism is an emerging niche within the global tourism industry, offering unique experiences that attract adventure-seeking travellers. (Aarflot et al., 2024). Countries with rich marine ecosystems and extensive coastlines have increasingly integrated underwater activities (such as scuba diving, snorkelling, and shipwreck exploration) into their tourism portfolios to enhance competitiveness. Sri Lanka, often referred to as the "Pearl of the Indian

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ISBN: 978-624-5553-76-1

Ocean," boasts an extensive coastline, vibrant coral reefs, and historical shipwreck sites that contribute to its potential as a premier diving tourism destination (*The Best Diving and Snorkelling Sites in Sri Lanka - Tales of Ceylon*, 2019). The industry serves not only as a recreational avenue for tourists but also as a vital source of income for local communities engaged in diving operations, marine conservation, and hospitality services (*Sri Lankan Communities at the Heart of Tourism | Sri Lanka Tourism Alliance*, 2024). The involvement of multiple stakeholders, including diving professionals, tour operators, environmental organisations, and policymakers, highlights the sector's complexity and emphasises the need for strategic development.

Despite its potential, Sri Lanka's diving tourism industry faces several developmental challenges that hinder its ability to compete globally. Infrastructure limitations, inadequate regulatory frameworks, and a lack of stakeholder coordination are persistent barriers to sustainable growth (P.K.B.I, 2022). Additionally, environmental concerns such as coral degradation, marine pollution, and unregulated tourism practices threaten the long-term viability of the sector (*Sri Lanka's Blue Economy*, 2023). Many diving tourism destinations worldwide have implemented structured policies and conservation initiatives to enhance their appeal and sustainability (Wongthong & Harvey, 2014)Yet Sri Lankan policymakers need to overcome 'marine blindness' to prevent the underutilization of the marine life around the country and must focus on a cohesive, stakeholder-driven strategy to navigate these challenges (Weerasooriya, 2023). While some efforts have been made to improve tourism infrastructure and promote conservation, research on effective stakeholder-driven approaches for enhancing Sri Lanka's diving tourism remains scarce. This knowledge gap restricts the development of evidence-based policies that could drive sustainable industry expansion and international positioning.

To bridge this gap, the present study explores the significant development barriers within Sri Lanka's diving tourism industry from the perspective of key stakeholders. It examines how stakeholder-driven strategies can enhance the sector's global competitiveness. Specifically, the study aims to meet three research objectives. *RO1: To analyse how Sri Lanka can better position themselves as a global hub for diving tourism by meeting tourist expectations, RO2: To identify the development gaps through the stakeholders 'point of view who are involved in the Sri Lankan diving tourism industry, RO3: To assess how the identified development gaps have been addressed using the strategies proposed by the stakeholders.*

The following research questions were derived from the above objectives.RQ1: *How can Sri Lanka better position itself as a global hub for diving tourism by meeting tourist expectations?* RQ2: *What are the development gaps identified in the Sri Lankan diving tourism industry from a stakeholder's point of view?* RQ3: *How can the development gaps in the diving tourism industry be addressed, using strategies proposed by stakeholders?*

ISBN: 978-624-5553-76-1

The study renders valuable contributions in several ways by addressing these research questions. Firstly, it provides an in-depth understanding of the structural, operational, and environmental challenges that constrain the growth of diving tourism in Sri Lanka. Secondly, by incorporating diverse industry stakeholders' lived experiences and insights, the study identifies practical, stakeholder-led strategies that can promote ecological conservation and economic resilience. Thirdly, the research delivers context-specific recommendations to guide policymakers, tourism practitioners, and environmental organisations in aligning development efforts with global sustainability standards. Fourthly, the stakeholder-centric lens adopted in this study fills a significant gap in existing literature, offering a replicable framework that can be adapted to other emerging diving tourism destinations. This study contributes to the broader scholarly conversation on sustainable tourism by positioning Sri Lanka as a promising eco-conscious destination within the competitive landscape of global diving tourism.

Literature Review

Diving Tourism – Stakeholder Perceptions

Underwater tourism is the gateway to exploring the beauty beneath the seas. It is mainly associated with scuba diving, and the industry value is projected to be between 20 billion and 30 billion USD in 2023. Meanwhile, coral reef generates around 35.4 billion USD annually (Almeida, 2023). Diving tourism is one of the various aspects of underwater tourism that explores avenues to fish exploration, coral exploration, shipwrecks, caves, and even spatial management. This study leans towards strategies implied by stakeholders in the enhancement and management of diving tourism. A comparative study done in Italy and Mozambique by Serena and her team focuses on their findings, such as the need for different tailored market structures, enhanced environmental education, and the strengthening of trust in government institutions (Lucrezi et al., 2019).

This focus was obtained by examining more than 400 divers' management of scuba diving destinations, diving experiences, and diving perceptions. These factors and findings align with the broader topic of underwater tourism, highlighting the enhancements needed for effective management, supporting tourist satisfaction, and the sustainable use of marine resources. This study has been incorporated to examine the stakeholders' perceptions and experiences in diving tourism. It depicted how the divers with more years of experience tend to be less satisfied with the health of MPA (Marine Protected Areas) and its management. This points out an interesting factor to be considered in the result analysis regarding the support given by governmental institutions in Sri Lanka and the local divers' perception of it. Serena's study incorporates the stakeholder theory, where insights from the divers were analysed for their research, which gives the base for the current study to stand on when conducting the results analysis.

Global Concerns Relating to Diving Tourism

Despite the rapid growth in underwater tourism, complex challenges have emerged in the diving industry, causing disruptions and lags. 'The overcrowding effect' was identified by Eider and the team in Indonesian underwater tourist sites. Eider points out that the identified governance challenges could be reduced by improving safety and satisfying the tourists' preferences through alternative sites and enhanced safety protocols to ease the pressure on popular diving sites (Eider et al., 2021). This challenge further illuminates the DCC (diver carrying capacity) issue the diving industry faces. A longitudinal study conducted by Rico and Antonella across 10 diving sites in Roatan, Honduras, suggests adaptive management to reduce the environmental footprint that hinders the ecological systems in the ocean. This study integrated quantitative calculations along with diver behaviour observations and categorised the carrying capacity into physical, real, and effective dimensions (Rico Fernández & Rivera, 2024).. The current diving practices were deemed to be degrading the reef ecosystem, and the study emphasised periodic reassessments of DCC, comprehensive workshops on reef management, and the utilisation of DCC as a management tool. This highlights a critical gap in diving tourism management, which Sri Lanka also faces. The local diving experts could implement or extract relevant and suitable components of these actionable insights to enhance the competitiveness of the diving industry in Sri Lanka.

Diving Tourism in Sri Lanka

In line with this study's research objectives, a few development gaps identified by analysing past literature can be related to the local context of the Sri Lankan underwater tourism industry. Tourism in Sri Lanka has always been a central topic of discussion due to its mixture of rich cultural heritage with tropical weather conditions and wonderful coastal areas, which makes Sri Lanka recognised as a paradise. Sri Lanka's marine ecosystem significantly contributes to tourism, from clear waters to thriving coral reefs and marine life under the waves. Despite the industry reporting significant growth in the past few years, it faces challenging situations due to the outcome of marine tourism (Sri Lanka Tourism Development Authority, 2024). The plastic waste, offshore fishing, global warming, unnecessary utilisation and consumption of aquatic resources to satisfy the tourist expectations, and adverse impacts on tourism infrastructure are some of the mentioned environmental and security issues against the marine ecosystem about underwater tourism in Sri Lanka (Premarathna, 2022).

In 2022, Sri Lanka stated to secure more than one-fourth of its land, ocean, coastal areas, and inland waters by 2030 at the COP15 Convention on Biological Diversity held in Montreal (*Sri Lanka's Blue Economy*, 2023). The implementation of MPA (Marine Protected Areas) reflects a gap to address from this study concerning the underwater tourism in Sri Lanka. This could

ISBN: 978-624-5553-76-1

positively affect the diving industry of Sri Lanka, as proven in other regions of the world (Marinesque et al., 2012). 'The Blue Flag Certification' is a certification awarded to MPAs that satisfy several standardised criteria and focuses on promoting sustainable development. Being gifted with a vibrant water rim and marine ecosystem, Sri Lanka has yet to receive its certifications. Hikkaduwa, Trincomalee, Mirissa, Unawatuna, Bentota, Pasikuda, and Arugam Bay are some of the areas where implementations have been taken to obtain the Blue Flag Certification (Thirukeswaran & Jayawardena, 2024). The above-mentioned issue brings up talking points and highlights the importance of the globally accepted and supported initiatives that can be utilised to enhance the underwater industry in Sri Lanka.

Marine biologist and founder of Oceanswell, Dr. Asha De Vos, stated in the Tourism and Biodiversity Conservation, which the Asian Development Bank organized, how Sri Lanka has a lot to offer to the tourism industry from the aspect of deep waters, but drains that potential due to the damage the individuals and authorities have caused (*Marine Expert Calls for Sustainable Shift in SL's Tourism Focus - Breaking News | Daily Mirror*, 2024).

Furthermore, Dr. Asha Devos points out the contradicting marketing strategies on coastal, underwater, diving, and surfing tourism and the lack of efforts in conserving the marine environment. This stems from a gap that has not been thoroughly researched in Sri Lanka, with a perspective of diving tourism from a stakeholder point of view. This research study aims to fill these development gaps with the study and support of the industry stakeholders relevant to diving tourism.

Methodology

This research adopts a qualitative approach to gather rich insights from the diving professionals and stakeholders in Sri Lanka to enhance the country's global competitiveness in diving tourism. A qualitative approach (Tomaszewski et al., 2020). With an ethnographic research design, the authors aim to understand the living experiences in their diving careers, barriers they encounter in their profession, the challenges they face, and suggestions for initiatives for the Sri Lankan government to consider promoting underwater tourism in Sri Lanka. To ensure the validity of the research findings, the authors supported the insights shared by the participants with additional comments to enhance credibility, as done by (Ahmed, 2024).

Population and Sample

The target population of this study was the diving professionals in Sri Lanka. From this population, to ensure manageability and a comprehensive analysis, 18 industry professionals comprised diving masters, trainee diving masters, diving instructors, and owners of the diving centres in Colombo and the Southern coast of Sri Lanka. The diving professionals

ISBN: 978-624-5553-76-1

(excluding the trainees) included in the sample have been in the industry for over 5 years. This study was conducted in two different geographic regions to enhance the diversity of the experiences and ensure an accurate representation of all the diving professionals in Sri Lanka. When conducting this research, considerations had to be given to the on and off diving seasons of diving tourism in Sri Lanka. The data was collected during the off season (May to August) on the southern and western coasts (Unawatuna and Colombo) due to the availability of the diving instructors and masters, as the tourist counts during the off season were low.

Sampling Technique

This study adopted a convenience sampling technique to assess the data collection process practically. It was based on the participants' availability to the researcher, the geographical proximity, and willingness to take part in the interviews (Golzar et al., 2022). Additionally, it allowed the collection of data from large populations more easily (Dörnyei, 2007). To minimise the impact of bias, the authors interviewed diving professionals from two different geographical locations, i.e., Colombo and the Southern Coast of Sri Lanka.

Data Collection

Data collection was done through semi-structured interviews with the participants. Thereby, the authors were able to uncover new information and dive deeper into the personal insights of the diving professionals on aspects such as the diving tourism industry's performance in Sri Lanka (Adams, 2015). The rationale behind conducting semi-structured interviews was to open doors for adaptability so the respondents could answer freely without being constrained to a particular area. The information collected from the participants was measured under privacy protection, and it was ensured that it would not be used or shared without their authorisation, other than for this study.

Data Analysis

Thematic analysis was used to examine data through coding, developing themes, reviewing themes, and defining themes (Naeem et al., 2023). The authors began by intimately familiarising themselves with the transcripts through repeated reading and note-taking, followed by independently generating initial codes in short, descriptive labels for meaningful segments. It was followed by grouping related codes into broader themes, iteratively reviewing and refining both codes and themes to ensure coherence and depth. As the last step, the authors clearly defined and named each theme, supported by compelling interview quotes. It must be stated that the authors documented and took notes throughout the data collection process to maintain transparency. This approach was helpful in analysing insights gathered from diving industry professionals to meet the objectives of this study.

(Shekarchizadeh et al., 2018).

Results and Discussion

The first research question explored how Sri Lanka can position itself as a global diving tourism hub by constantly exceeding tourist expectations. This opened a discussion among industry stakeholders, adding significant insights to the study. Moreover, in terms of identifying the development gaps in the Sri Lankan diving tourism industry from a stakeholder's point of view, some key themes include 'coral degradation and marine life, as well as weather conditions.' The authors addressed the third research question, proposing strategies to address the development gaps in the Sri Lankan diving tourism industry. The 'proposed strategies and recommendations' section will discuss these strategies in detail.

Tourist Expectations

Based on the qualitative evidence gathered, it was understood that tourist expectations play a pivotal role in shaping the underwater tourism experience. The diving masters and instructors mentioned that the tourists visiting the southern area of Sri Lanka usually comes with a spectrum of interests, *"Some expect to explore the corals, and some would look into the hotels, and then some would surf"* These were noticed by the diving instructors and diving masters which they had leveraged to their advantage during the on-season periods. *"Some tourists come back to visit us several times because they were happy with our services, and how the locals treated them nicely."* The rate of return to tourist destinations appears to be on the positive side if the tourists' expectations are met accurately (Alegre & Cladera, 2009).

Meeting tourists' expectations is vital to achieving maximum tourist satisfaction. *"The diversity of their expectations keeps changing depending on the foreigners' country, culture, and mindset. Our political stability, price levels, and economic conditions are crucial. During the election time in September, the foreigners were reluctant to come down to Sri Lanka because they did not want to face any chaotic experiences in case something happened."* This statement by one of the dive masters further proves the literature linking how the political stability of a country affects the tourists' satisfaction (Maunier & Camelis, 2013).

A significant finding is the information asymmetry between tourist expectations and the reality of Sri Lanka's underwater attractions, particularly about the coral reefs, which is a significant finding. There is an extreme absence of open marketing and promotion, as demonstrated by the dissatisfaction of the tourist who anticipated watching coral reefs in the Unawatuna area. This fabricated data has the potential to seriously impair tourist satisfaction (Asian Development Bank, 2024). As mentioned in the literature, the difference between the

tourists' expectations and the services rendered by Sri Lanka can have a drastic gap that must be met. A further indication of the urgent need for proactive government participation in extensive coral regeneration programs is the scarcity of coral reefs, a major attraction for underwater tourists. *"There is not enough coral to explore here in Unawatuna; most tourists expect to see coral reefs when they visit the coastal areas anywhere in Sri Lanka."* This was mentioned by a few of the diving masters repeatedly, and it has become a crucial point in bridging the gap between proper advertising and promotion of underwater tourism in Sri Lanka to tourists. The foreigners anticipated witnessing coral life in Unawatuna, but it was not up to their expectations. Actual estimates of the tourism industry should be interpreted as they are, without any over- or underestimations. This correction in information could foster growth and sustainability in the tourism sector. This challenge depicts the lack of sufficient coral reefs that ideally should exist as a diverse underwater attraction. Government involvement in coral regeneration has been minimal, and addressing these expectations enhances tourist satisfaction in underwater tourism in Sri Lanka.

Safety Methods

Diving centres in Sri Lanka are mostly recognised and rated by PADI, the Professional Association of Diving Instructors. The selection of PADI-certified and well-reviewed diving centres demonstrates underwater tourists' attention to safety and credibility. Tourists look for international certifications and positive reviews, demonstrating that trust and perceived security are crucial in their decision-making process. *"We searched for the top-tier diving centres that we could go to, with our budget and their quality. So, we decided to go for the five-star ranked diving centres because a recognised association monitored the service. The reviews also seem good, and I could trust it."* One of the tourists mentioned how important it was to find a trustworthy group of locals to get a rich and safe experience during their stay in Sri Lanka. These centres provide novice and experienced divers with proper equipment and safety guidelines.

Safety is an important concern for diving tourists, and the dive centres seem to prioritise this aspect very well. The dive masters emphasise, *"We check the equipment before we go for the dive," explaining that tanks are tested rigorously for safety: "We check for the maximum capacity in the tank by filling it and if it does not burst, we get it certified."* This aligns perfectly with the focus on "security" as a key attribute in innovative tourism frameworks (Chaieb, 2025). Executing globally recognised safety standards and certifications can increase potential visitors' confidence. The centres prioritise providing safety protocols to ensure each tourist experience positions Sri Lanka as a reliable underwater destination.

"We have not received any bad reviews from any of the tourists we have dealt with so far, maybe I could say improvement points were received, but there were never unhappy moments for the tourists." No adverse incidents had been documented or experienced by the

ISBN: 978-624-5553-76-1

interviewees regarding safety measures, which depicts the commitment and effort given by the stakeholders during the service time, which establishes Sri Lanka as a reliable and secure underwater destination by setting up a benchmark for maintaining a strong quality of service and boosting traveller trust. The underwater world is a different atmosphere; underwater vision and breathing techniques are not everyday skills taught. Therefore, a separate span of attention for the underwater activities is needed.

Diver Experience

Most of the diving centres provide services to both beginners and experienced divers. Sri Lankan diving centres' willingness to serve novice and experienced divers shows great versatility and good customer service. Offering trial dives and proper lessons for beginners helps them build confidence and ensures an enjoyable experience. Experienced divers only need minimal assistance, and a guiding approach works best for them. While this customisation does work, there is room for improvement and further specialisation. More elaborate tours and advanced training courses tailored to experienced divers would meet their changing demands and promote greater participation. Furthermore, thorough verbal explanations concerning equipment procedures for all divers would enhance understanding of safety and operational protocols. The tourists do not need to worry about their previous experience levels due to the above flexibility and adaptability of the stakeholders. For beginners, the whole diving process is explained with detailed instructions. One of the interviewees stated, *"We teach them here, and then go to the shallow and train them practically."* To further boost confidence for the novice divers, a trial dive is performed even before the actual location's prime dive. In contrast, professional divers are only guided on dive paths*: "No need to specifically teach those who already have diving experience unless they ask for instructions specifically from us."* It is assumed that this type of diver already possesses the foundational skills. This tailored approach is practical but could be further enhanced by offering advanced training sessions or curated diving tours for experienced divers. An in-depth explanation of the use of diving equipment should be given to all.

As much as the tourists' diving experience, the dive masters' underwater skills are crucial for enhancing the tourists' satisfaction. The more experienced the diving master or instructor is, the more lenient and comfortable the tourist would be in underwater activities. *"I have been an instructor for one year already. However, beforehand, I was a dive master. I started diving in 2021."* It must be noted that returning tourists request the most approachable or the most experienced divers of their choice. This connects to the study done in Italy and Mozambique, where diver experience was evaluated, and professional divers navigated the underwater paths easily due to their expertise (Lucrezi et al., 2019). Therefore, this reinforces that diver experience impacts tourist satisfaction and experience and has potential for enhancement.

Coral Degradation & Marine Life

Coral restoration in Sri Lanka has not been given any light after the Tsunami's impact on Unawatuna's coral reefs. The future viability of Sri Lanka's underwater tourism industry is at risk due to the terrible condition of coral reefs, which were affected by the Tsunami and subsequent dearth of significant government-led restoration. This poses a significant threat to underwater tourism: *"The major problem is not having enough corals in Unawatuna, due to the Tsunami, the corals were destroyed."* Coral reefs, a vibrant, rich attraction in tourist underwater destinations, should not be easily overlooked. Private efforts are occasionally made for coral regeneration. The dive master notes, *"There was not much action from the government, but there are individuals who are involved in it privately."* Developing partnerships between the government, private entities, and NGOs to initiate coral restoration programs and structural maintenance could improve underwater biodiversity.

Coral grows slowly, significant restoration calls for consistent, extensive, and well-coordinated efforts *"It takes years and years for a tiny coral to grow at least by 10 centimetres, so just imagine the disaster the Tsunami had created on the coastal areas and how much effort we should put in to regenerate the same corals that were damaged. Even if we do our part now, the results take a long time, and we might not even be there to see the results of our genuine efforts."* Coral reef systems are a significant income-generating icon for enthusiastic tourists interested in underwater activities. Tourists uninterested in diving or scared to dive are enthusiastic about watching corals from a glass window. Therefore, reviving them is essential to bolstering the "blue economy" and drawing in more diverse tourists.

"In my opinion more education is needed on this subject and the lack of punishment may also be a cause. However, I must say that the Sri Lankan Navy is doing a good job of protecting the marine life in Sri Lanka. They are like the guardians of the sea here." This shows an attachment to marine conservation, which might be the foundation for more extensive ecological restoration. As much improvement is needed with coral regeneration, Sri Lanka shows appreciable effort in balancing marine life and marine protected areas. (Rathnayake, 2022). One of the dive centre owners confirmed this, crediting the Sri Lankan Navy's efforts.

Weather Conditions

Weather conditions undoubtedly influence underwater tourism, and alerting tourists to rough seas is an example of responsible operational management. The dive centres ensure tourists are informed about rough seas. *"If the sea is rough, we would inform them first."* There can be varied types of tourists, from risk takers to risk averse, and the centre supports their efforts for those willing to dive into challenging weather conditions. This support is provided given the tourists' diving experience level. *"Because many divers are coming from*

Europe and have already dived in the Maldives, as it is a perfect condition for visibility, they also want to experience the off-season, even with the bad visibility. Some people want to experience what it feels like in the off-season." Furthermore, the frequent mention of night diving refers to another specialised segment of underwater tourism. Establishing the necessary licensing and expert divers will give night diving more significance to boost the blue economy in Sri Lanka.

Tourists, as such, are adventurous and love to explore the extremes, unlike average tourists. Despite the adverse weather conditions these types of tourists should not be avoided, as this is a niche part of tourism where limited services are rendered due to the safety measures. However, with the correct expertise in this niche area, Sri Lanka can create an adventurous image in the mindset of tourists, where the underwater destinations could be more attractive to global citizens. The divers mentioned night diving several times. *"There is no specific time, but we start in the morning and continue till about 3 in the evening, after that we do not dive, but we can go on night diving with anyone who has the license for it."* Night diving is another aspect of underwater activities. A specific night diving license should be obtained for a diving centre to operate and provide services. This niche activity appeals to experienced divers looking for unique experiences. It has the potential to further differentiate Sri Lanka in the global market by expanding beyond daytime dives to provide a more comprehensive and adventurous underwater portfolio."

Proposed Strategies and Practical Implications

Based on the results and findings of this study, it can be concluded that Sri Lanka's diving tourism industry can be further developed if the authorities take time to consider the industry-specific suggestions made by the stakeholders of the diving tourism industry on the island.

The findings of this research stemming from the interview discussions have led to several domains where the strategies of this study can be implemented. These are based on stakeholder insights, addressing key areas such as tourist expectations, safety methods, diver experience, coral restoration, communication barriers, feedback, tourist satisfaction, and weather conditions. It was stated that many tourists visit the Southern Coast hoping to experience vibrant coral reefs, however, their expectations are typically met. Following the 2004 tsunami disaster, most coral reefs were destroyed, and few coral regeneration initiatives have taken place on a larger scale. This gap emphasises the necessity of precise marketing and promotional strategies that match expectations with the actual underwater offerings.

In terms of 'safety measurement,' diving centres certified by international organisations such as PADI are vital to gaining the trust of tourists and local diving enthusiasts. The greater number of certified diving centres means more credibility, and the stakeholders can promote

their businesses better. During the interviews, it was highlighted that tourists prefer diving centres with better ratings and those with safety certifications.

Throughout the interviews, stakeholders stated that they always ensure all equipment is in good condition and functioning correctly before taking visitors on diving excursions. Establishing safety procedures through demanding certification and frequent audits will improve Sri Lanka's standing as a trustworthy diving tourism destination. The drivers' level of experience influences the layout of diving tourism services. Experienced and beginner divers can be handled with dive facilities offering specialised instruction and guidelines. The results indicate organised training programs such as beginning trial dives, expert instruction for seasoned divers, and increased visitor confidence and involvement. Further improvement, such as better training sessions and planned experiences, can boost tourists' visits to Sri Lanka.

After the 2004 tsunami incident, many coral reefs were destroyed, making underwater habitats less vibrant, and coral regeneration is an essential component. The research highlights that the government and private sector must act in implementing projects, such as starting large-scale coral restoration projects that would bring marine life and enhance tourists' underwater experiences. In addition to enhancing Sri Lanka's blue economy, sustainable coral restoration programs would attract environmentally aware tourists.

Communication barriers were also identified as a challenge in enhancing the tourist experience. Even though hand signals and translation applications are helping divers to communicate with tourists who do not understand English, modern technologies like underwater communication devices are being implemented. Flawless interactions can be enhanced through facilitated training programs in languages including German, French, and Russian.

Weather conditions play a vital role in planning diving tourism activities, with dive centres ensuring tourists are informed about rough seas before entering the sea. While some tourists prefer adventurous diving experiences. Different preferences may be accommodated with adequate preparation and communication, ensuring a safe experience for everyone. Diving tourism offers could be further expanded by night diving, which calls for specific licensing.

Feedback and tourist satisfaction are vital service quality factors in Sri Lanka's tourism industry. According to the study, tourists provide positive feedback about their experiences, which boosts the reputation of Sri Lanka's diving industry. However, addressing issues like coral availability, expanding tourism offerings, and incorporating conservation campaigns could further develop satisfaction levels and promote sustainable tourism practices.

Conclusion

Sri Lanka's diving tourism industry holds immense potential but faces critical challenges,

including inadequate infrastructure, weak regulatory frameworks, environmental degradation, and limited stakeholder collaboration. This study highlights the need for a stakeholder-driven approach to address these barriers and enhance the industry's global competitiveness. Strengthening infrastructure, enforcing standardised safety regulations, fostering sustainable tourism practices, and improving stakeholder coordination are essential to positioning Sri Lanka as a premier diving tourism destination. Additionally, integrating internationally recognised certifications and promoting environmental education will enhance service quality and sustainability. By offering actionable, stakeholder-informed strategies, this study contributes to the existing body of knowledge, aligning economic development with environmental conservation. While the findings provide valuable insights, future research should incorporate quantitative approaches to deepen the analysis and explore the role of digital innovations in tourism promotion. By adopting a sustainable and collaborative development strategy, Sri Lanka can unlock the full potential of its diving tourism sector, driving both economic growth and long-term ecological preservation.

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ISBN: 978-624-5553-76-1

ISBN: 978-624-5553-76-1

Impact of Online Innovation on Repurchase Intention on Hotels: Customer Experience as a Mediator

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Abstract

This study investigates the influence of online innovation on repurchase intentions in Sri Lanka's three-star and higher-rated hotels, with customer experience as a mediating factor, focusing on how digital tools like websites and social media shape guest behaviour. The study aims to identify the impact of online innovation on repurchase intention; to determine the impact of online innovation on customer experience; to identify the impact of customer experience on repurchase intention; and to identify whether customer experience mediates the relationship between online innovation and repurchase intention. A structured questionnaire was initially administered to 167 hotel guests who booked online within the past five years as a pilot test to refine the research design and ensure data reliability. Partial Least Squares Structural Equation Modelling was employed to analyze the relationships between online innovation, customer experience, and repurchase intention. The findings reveal that online innovation positively impacts repurchase intentions, with customer experience partially mediating this relationship. The study fills a knowledge gap with a solid sample and outlines the role of digital literacy in new markets. It provides valuable implications with regard to hotels to consider investing in personalization driven by AI and training of staff. It proposes that future research should also incorporate managerial and lower-tier hotel segments to expand on the knowledge.

Keywords: Customer Experience, Online Booking, Online Innovations, Repurchase Intention

Introduction

The hotel sector in Sri Lanka showed considerable development between 2012 and 2018 (Weerathunga et al., 2020). The Civil War in Sri Lanka ended in 2009, and after the island

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ISBN: 978-624-5553-76-1

country started gaining boatloads of international tourists, increasing competition in the hospitality sector (Tajeddini et al., 2022; Bonfanti et al., 2025). Under such changing conditions, online innovation has gained prominence in crafting guest experiences (Tajeddini et al., 2022; Liu et al., 2024). As a larger proportion of travellers utilize digital channels to conduct their research and make their accommodation bookings, the importance of a hotel's online presence has increased considerably, contributing to communication, convenience, and customer relationships (Lariviere et al., 2017; Lee & Kim, 2018; Lestari & Ellyawati, 2019). Hotels are also urged to employ advanced digital technologies to remain competitive and deliver according to modern expectations, which lie in enhanced access and personalization (Podsakoff et al., 2003). It is noted that, due to the popularity of mobile devices among travellers, user-friendly and responsive websites are not an option anymore, but a necessity (Lariviere et al., 2017).

The significance of websites in affecting consumer behaviour is emphasized in empirical research because they are usually the initial source of information about the hotel and the making of a reservation (Munasinghe, Gunawardhana, & Ariyawansa, 2018). Moreover, strategic web utilization and social media have been established as marketing pillars within the hospitality sector, enhancing visibility and guest loyalty (Kahn, 2018; Liang, Choi, & Joppe, 2018). An effective online presence increases recognition and interaction and builds customer loyalty (Kahn, 2018; Lee & Kim, 2018). Hotels that adequately exploit digital tools in such a competitive environment are better positioned to attract new guests and create sustainability in customer relationships. The repurchase intention is a success outcome measure that is especially relevant to the hospitality sector, where loyal consumers can generate long-term revenues and serve as cost-efficient marketers due to word of mouth (Liang, Choi, & Joppe, 2018; Majeed et al., 2022).

The study aims to identify the impact of online innovation on repurchase intention; identify the impact of online innovation on customer experience; identify the impact of customer experience on repurchase intention; and identify whether customer experience mediates the relationship between online innovation and repurchase intention. Research indicates that customer satisfaction and overall experience significantly impact repurchase intention, with factors such as perceived quality, price, digital marketing effectiveness, and brand image playing key roles.

Research Problem

Despite Sri Lanka's digital literacy rate reaching 63.5% in 2023 (Census and Statistics, 2023), limited research explores how increasing digital competence affects customer interactions with digital innovations in hospitality. As consumers become more tech-savvy, their expectations and behaviours toward digital touchpoints, such as hotel websites and social media, evolve.

(Lam & Law, 2019). However, the intersection of digital literacy, online innovations, and customer behaviour in the hotel industry remains underexplored, creating a critical knowledge gap. This gap hinders actionable strategies for hotels targeting digitally literate guests, particularly in regions recovering from crises like the 2019 Easter attacks or economic instability. (Nagendrakumar et al., 2022).

Single-case studies have often limited previous research. For instance, Amoako, Doe and Neequaye (2023) studied 167 guests from a single hotel in Ghana, which may not capture market diversity. In contrast, our research on three-star and higher-rated hotels across Sri Lanka offers a more comprehensive and generalizable analysis. This study bridges methodological, empirical, and knowledge gaps in Sri Lanka's hotel industry, providing insights for academics and practitioners. Understanding digitally literate customers' interactions with hotel innovations can improve experiences and boost repurchase intentions.

Literature Review

Development of the theoretical framework

The Tourist Experience Driver Model (TEDM) explains factors affecting tourists' experiences, such as location, service quality, and social interactions. High-quality service, shaped by destination features like infrastructure and culture, drives repeat business. (Šimková, Kořínková, & Obršálová, 2024). The Technology Acceptance Model (TAM) focuses on perceived usefulness and ease of use, influencing technology adoption. (Agag & El-Masry, 2016; Davis, 1989). This study combines TAM and TEDM to explore how online innovation enhances customer experience and repurchase intentions in Sri Lanka's hotel industry (Amoako, Doe, & Neequaye, 2023; Larivière et al., 2017). Digital platforms shape decision-making and loyalty.

Online Innovation and Repurchase Intention

To enhance interactions, online innovation involves a business's online presence, including websites, social media, and technology adoption. It influences demand, branding, and consumer awareness, where services are indirectly delivered (Dimitrios et al., 2023; Kahn, 2018). Repeat purchases are vital, and maintaining website transparency with social media engagement strengthens customer retention (Lee & Kim, 2018; Qenaj & Beqiri, 2022). A strong digital relationship fosters behavioural commitment through activity, communication, and perceived intimacy (Demangeot & Broderick, 2016). Websites and social media highlight hotel services, environment, and security, influencing customer perceptions (Amoako, Doe, & Neequaye, 2023). Marketing and communication further impact repurchase intentions (Roy et al., 2020). Despite reliance on digital platforms, complex offers remain challenging, affecting customer trust (Agag & El-Masry, 2016). Modern technology enhances hospitality experiences (Zhou et al., 2019), shaping customer behaviour (Ruswanti, Eff, & Kusumawati, 2020). Hotels

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must optimize digital strategies to drive repurchase intentions and customer loyalty. Therefore, the hypotheses are as follows:

H_1: Online innovation has a positive impact on repurchase intention.

Online innovation and customer experience

Positive customer experiences, from discovery to post-purchase support, drive brand advocacy, loyalty, and repeat purchases (Hult et al., 2019). These experiences, shaped by all interactions throughout the customer lifecycle, are crucial for repurchase intention (Nyagaka, 2024; Vrontis et al., 2022). In the hotel sector, positive experiences enhance the desire to return (Majeed et al., 2022). While budget hotel websites offer similar services, they serve as platforms to showcase customer feedback, strengthening the brand and encouraging repeat visits (Alrawadieh, Alrawadieh, & Cetin, 2020; Lee & Kim, 2018). A lack of innovation and limited use of hotel websites can reduce customer engagement (Amoako, Doe, & Neequaye, 2023). Technological advancements offer competitive advantages for Sri Lankan hoteliers (Munasinghe, Gunawardhana, & Ariyawansa, 2018). Emotional, cognitive, sensory, and social experiences influence repurchase intention (Eranda & Muwandeniya, 2022; Oghuma et al., 2016). Satisfied customers, influenced by service benefits and reviews, are more likely to return (Liang, Choi, & Joppe, 2018; Mohamad et al., 2017). Therefore, the hypotheses are as follows:

H_2: Online innovation has a positive impact on customer experience.

Customer experience, digital innovation, and repurchase intention

Repurchase intention reflects customer satisfaction, brand loyalty, and long-term success, signifying trust and a lower likelihood of switching to competitors due to positive past experiences (Trivedi & Yadav, 2020; Wu, Wu, & Schlegelmilch, 2020). Hoteliers increasingly support technological innovation to enhance customer relationships through data sharing and personalized experiences (Lam & Law, 2019). Hotels should focus on marketing and improving customer experiences through targeted innovations to encourage repeat bookings and manage the guest journey effectively (Back et al., 2020; Collins, 2015). The goal is to foster repeat visits and word-of-mouth recommendations (Nobar & Rostamzadeh, 2018), with trust-based customer relationships strengthening long-term vendor ties (Lestari & Ellyawati, 2019; Ruswanti, Eff, & Kusumawati, 2020). Research highlights that social media engagement strengthens the link between customer experience and repurchase intention, though its impact on repeat purchases is not always clear (Majeed et al., 2022). Digital innovations can boost customer experience, brand loyalty, and repurchase likelihood (Wafiyyah & Kusumadewi, 2021). Therefore, the hypotheses are as follows:

H_3: Customer experience has a positive impact on repurchase intentions.

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H_4: Customer experience has a positive impact on mediating online innovation on repurchase intentions.

Conceptual Framework

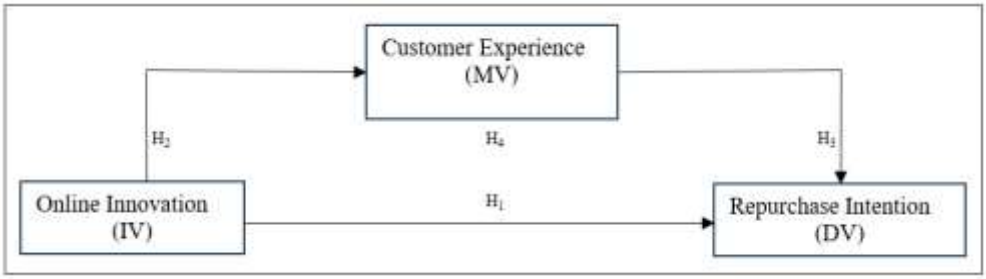

Figure 1: Conceptual Framework

Source: Based on authors' observations.

There are three main variables used in our study. That is an independent variable (Online Innovation), a dependent variable (Repurchase Intention), and a mediator variable (Customer Experience). These mediator variables influence customer experience, online innovation and repurchase intention. Keeping these three variables constant is important, or the result may change. Customers have a strong influence on the hotel industry. Using customer experience, hotels can maintain customer retention and repeat purchases on social media. For that, effective and permanent means should be used.

Methodology

This study investigates the adoption of digital booking platforms among guests at Sri Lankan hotels (three-star and above), focusing on domestic and international users through the technology behaviour framework of Venkatesh Thong and Xu (2012). Data were collected from participants who had stayed at 3-star or above hotels in various regions of Sri Lanka, ensuring the geographical coverage reflects a national perspective rather than being limited to a specific city or province. A statistically powered sample of 385 participants was determined using the Krejcie and Morgan (1970) table, ensuring reliability in social science research. Convenience sampling (Etikan, Musa, & Alkassim, 2016) facilitated efficient data collection through online surveys and in-person interactions with guests who used digital tools to book hotels online and stayed within the past five years, ensuring their familiarity with digital platforms. Data was collected via a structured survey distributed through a QR code linking to a Google Form, allowing participants to respond quickly and easily using their mobile devices. The questionnaires presented in the survey were based on a multiple-choice format with the Likert

scale and rating scale to evaluate the usage of digital tools, experience in the hotel, and repurchase intentions. There was no collection of personal information, and the survey could be filled out at any time, which is private and compliant with ethical research principles.

Data Analysis and Results

Based on Groves and Peytcheva (2008), a non-response bias test was not applied, given that the study had a high response rate, thus reducing the chance of bias. Nonetheless, as a single-source questionnaire was utilized, a Common Method Variance (CMV) test had to be conducted. The one-factor test in the Harman showed that the initial factor explained only 40 per cent of the variance, demonstrating that CMV was not a crucial issue (Podsakoff et al., 2003). The data analysis was done with SmartPLS 4, as it applies to the predictive modelling appointment when the data is non-normal and the sample sizes may vary (Chin & Marcoulides, 1998; Hair et al., 2021). Bootstrapping (5,000 subsamples) was applied to evaluate the significance of paths following the suggestions by Efron and Gong (1983) and Tortosa et al. (2009). The final sample entailed 385 responses, of which physical distribution and Google Forms were used. The survey gave the required background details and a clear definition of important concepts to ensure clarity among the respondents. A pilot testing stage was applied to the survey, including 167 participants, to test the questionnaire questions and enhance the data collection procedures, assessing the research design protocols. The survey validation strengthened the research study by assuring data precision while maintaining visible research methods and enhancing the overall durability of the study data to achieve reliable results. A table presented summary information about the demographic characteristics of participants in the pilot study, and lastly, it captured participant distribution.

Measurement Model Assessment

The research questionnaire received validation through Cronbach's alpha coefficient alongside Composite Reliability (CR) and Average Variance Extracted (AVE). The measurement model demonstrated robustness according to the results displayed in Table 1 (Fornell & Larcker, 1981). All measurement item factor loadings surpassed the advisable threshold of 0.70, indicating construct validity. All constructs in the survey passed reliability tests through Cronbach's alpha and composite reliability measures, which exceeded 0.70. Research results showed that the AVE values exceeded the 0.50 benchmark, which indicates that an important portion of indicator variance stemmed from construct variables. The reliability levels for constructs regarding digital booking adoption, specifically trust in online platforms and repurchase intention, were particularly strong. At the same time, other factors, including perceived ease of use and perceived usefulness, also showed adequate reliability. The study maintains its validity

for digital booking platform assessment in Sri Lanka's hotel industry because the measurement model proves robust and of high quality.

Table 1: Measurement model assessment

Construct	Factor Loadings	Cronbach's Alpha	Composite Reliability (rho_c)	Average Variance Extracted (AVE)
Online Innovation	0.825	0.859	0.904	0.703
	0.865			
	0.806			
	0.856			
Customer Experience	0.767	0.793	0.865	0.616
	0.749			
	0.814			
	0.808			
Repurchase intention	0.825	0.816	0.779	0.645
	0.793			
	0.744			
	0.845			

Source: Authors' compilation, extracted from Smart PLS

Discriminant validity helps to confirm that each construct in a study represents a unique concept and does not overlap significantly with others. Using the Fornell-Larcker criterion, we assess this by checking whether the square root of the AVE for each construct is greater than its correlations with other constructs. As shown in Table 2, most constructs meet this condition, indicating satisfactory discriminant validity. However, there is a slight concern regarding the constructs of Customer Experience (CE) and Repurchase Intention (RI), as the correlation between them (0.808) is marginally higher than the square root of RI's AVE (0.803). This may suggest a degree of conceptual overlap, which needs to be examined further, possibly through alternative measures like the HTMT ratio to ensure the model's validity.

Table 2: Discriminant Validity

Fornell-Larcker Criterion			
	CE	OI	RI
CE	0.785		
OI	0.755	0.838	
RI	0.808	0.703	0.803

Source: Authors' compilation, extracted from Smart PLS

Structural Model

This study employed SmartPLS 4 to develop and analyze the research model, following the guidelines of (Sarstedt, et al., 2019; HenselerHubona and Ray, 2016). A bootstrapping sample

ISBN: 978-624-5553-76-1

size of 5,000 was used to assess the statistical significance of the paths. Figure 1 illustrates the findings on online innovation and repurchase intention within Sri Lanka's hotel industry, analyzed through PLS-SEM.

The structural model results confirm all three hypotheses identified in Table 3 and Figure 2. All paths were statistically significant and directed positively, which means innovations relate positively to customer experience and repurchase intentions. These findings emphasize the importance of online innovations in enhancing the customer experience to positively impact repurchase intentions within the Sri Lankan hotel industry.

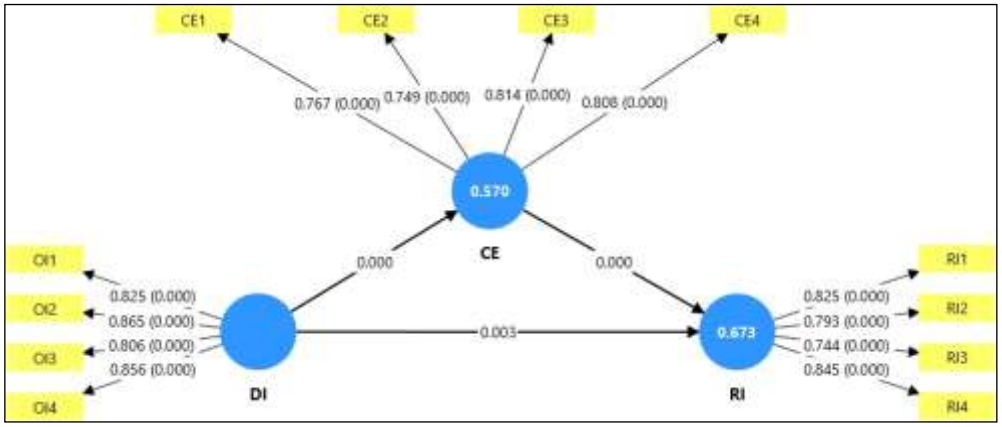

Figure 2: SEM path analysis results of the structural relationship between research variables

Source: Authors' illustration, extracted from Smart PLS

Table 3: Results of Hypothesis Analysis

Path	Coefficient	Sample Mean	SD	*t*-Statistics	*p-value*	Test Results
CE → RI	0.646	0.649	0.066	9.819	0	Supported
OI → CE	0.755	0.757	0.038	20.039	0	Supported
OI → RI	0.216	0.211	0.072	3.106	0	Supported
OI→ CE→ RI	0.488	0.491	0.058	9.240	0	Supported

Source: Authors' illustration, extracted from Smart PLS

Table 3 presents the analysis, which confirms that all proposed hypotheses were supported. Online innovation significantly enhanced customer experience, suggesting that digital tools and platforms improve guests' perception of their stay. Customer experience strongly influences repurchase intention, indicating that positive experiences encourage customers to return. While online innovation also directly affected repurchase intention, a significant indirect effect through customer experience shows that the relationship is not solely direct. The customer experience partially mediates the relationship between online innovation and repurchase intention.

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Discussion

This paper's research question was examined by identifying the role of online innovation in the repurchase intention in the hotel industry of Sri Lanka. In contrast, the customer experience emerged as a key mediating variable. The findings reveal that convenient websites, effective booking systems, and prompt social media responses are relevant to guest satisfaction and ensure the possibility of returning clients. Such results correspond with Lee and Kim (2018), who stressed that digital platforms facilitated customer loyalty through usability and engagement.

In this study, customer experience is found to mediate the connection between online innovation and the repurchase intention to some extent. Although online innovation directly impacts repeat booking behaviour, a positive customer experience significantly affects the same. It means that technology is not everything because how guests experience digital interactions during and after these interactions is critical to developing their loyalty. This coincides with Liang et al. (2018), who identify emotional satisfaction, trust, and interaction facility as key factors of repeated patronage.

However, unlike Amoako et al. (2023), whose study was restricted to one hotel and identified customer experience as a poorly explored phenomenon in the developing world, the present study has more global empirical value due to analyzing various hotel environments. It also confirms the mediational role of the customer experience in digital engagement strategies. This research study underlines the strategic value of the combination of technological innovation and experience-based service delivery by showing that guests who experience flawless online services and at the same time receive personalized attention are much more likely to come back. Against a competitive and recovering hospitality industry backdrop, this integration is an efficient tool for turning first-time visitors into loyal guests.

Conclusion

The study has examined the role of online innovation in developing the intentions of guests to revisit hotels in Sri Lanka, and the concept of customer experience has emerged as a key element that connects technology and loyalty. The findings imply that elements such as convenient websites and social media exchanges promote the practical aspect of service and facilitate emotional contentment and confidence, which are crucial in stimulating repeat bookings. Combining the ideas related to digital adoption and guest experience literature, the study could contribute to the current knowledge of how hotel establishments could improve customer relations by carefully utilizing technology. In practical terms, the implications of the findings are as follows: investing in convenient, user-friendly digital interfaces and personalized communication solutions can assist hotel businesses in forming stronger relationships with their guests, especially in the post-crisis environment where competition and

expectations are at an all-time high. In theory, the research helps fulfil the emergent understanding that the worth of innovation is not only in enhancing operational efficiency but in embellishing the guest's emotional experience. It opens questions to future research, including introducing a managerial perspective, rendering longitudinal assessment, or looking into smaller hotels with poor digital capacity to better understand how such dynamics unfold across different sector branches.

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ISBN: 978-624-5553-76-1

ICME 2025 "Entrepreneurial Bricolage: Steering Volatile Markets through Improvised Strategies and Innovative Thinking"
Proceedings of 14th International Conference on Management and Economics

Impact of Omnichannel Marketing on Consumer Sustainable Buying Behaviour: Special Reference to the Fashion Industry in Sri Lanka

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Abstract

Omnichannel marketing has become a powerful approach for 'squeezing' various communication and sales channels to create seamless and cohesive shopping experiences. Moreover, it is more than just a matter of convenience; it is an essential platform through which it is possible to promote sustainable consumer behaviours. Omnichannel marketing in the context of the Sri Lankan fashion industry can align consumer preferences with the sustainability goals of the fashion industry. This research examines the role of five critical dimensions of omnichannel marketing—connectivity, integration, consistency, flexibility, and personalisation—as drivers of sustainable buying behaviour. Quantitative methodology was employed using self-developed questionnaires distributed to 385 respondents. Consumer sustainable behaviours were in-depth analysed using a 5-point Likert scale to capture the responses. The findings detail that all omnichannel dimensions are statistically significantly related to sustainable consumer decision making, while connectivity and personalisation are the most influential factors. Results show that personalisation has the most significant positive impact on consumer sustainable buying behaviour. The results offer essential learnings for marketers and retailers planning to integrate sustainability into their omnichannel strategies. In this study, consumer behaviour theories are extended and omnichannel marketing is linked to sustainability concepts, which are then translated into practical business recommendations. This research contributes to the burgeoning discourse on sustainable marketing practices in emerging markets such as Sri Lanka by illuminating the interstitial space between digital innovation and environmental responsibility.

***Keywords**: Consumer Sustainable Buying Behaviour, Omnichannel Marketing, Sri Lankan Online Fashion Market*

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ISBN: 978-624-5553-76-1

Introduction

The retail industry is rapidly evolving, and adopting omnichannel marketing for all businesses has become necessary. In simpler terms, omnichannel marketing covers everything — online, offline, mobile platforms, and the consumer can have a seamless experience with the brand. In the fashion industry context, where this shift is especially relevant, customers expect a unified shopping journey (Yeğin & Ikram, 2022). Similarly, there was a digital revolution in the Sri Lankan fashion industry, and online shopping has become strongly popular post-pandemic. Nevertheless, the pressing concern of sustainability has been taking over the fashion industry, and consumers and brands are attempting to embrace environmentally friendly practices (Peiris et al., 2021).

This means that marketing is more than just a total integration of multiple shopping channels; it also affects consumers' buying decisions. Those brands that have successfully implemented omnichannel strategies tend to have stronger relationships with their consumers, stronger loyalty, stronger sales, and encourage sustainable buying behaviour (Komal & Taqa, 2021). Although omnichannel marketing thrives in global markets, its contribution towards promoting sustainable consumer behaviour in Sri Lanka is primarily out of discourse.

Although omnichannel marketing is widely adopted in global fashion markets, its role in influencing the sustainable buying behaviour of Sri Lankan consumers is virtually unexplored. It has been established that omnichannel strategies are crucial in encouraging sustainable consumption in advanced markets (Nguyen, 2023). However, Sri Lanka has not yet caught on to leveraging it for sustainable digital retailing. While there is a growing trend for eco-friendly fashion products internationally, consumers in Sri Lanka are less likely to lean towards this kind of product (Alanadoly & Salem, 2023). In Sri Lanka, there is a lack of research regarding omnichannel marketing and consumer behaviour. Also, there is a visible knowledge gap regarding omnichannel marketing and sustainability between Sri Lankan and other industrialised countries. This research has an empirical and knowledge gap (awareness gap). The novelty researchers identified is that there is no research regarding omnichannel marketing and consumer sustainable buying behaviour. Also, in the Sri Lankan context, no research study has been conducted regarding omnichannel and consumer sustainable buying behaviour. Researchers will fill this empirical and knowledge gap (awareness gap) by doing this research.

Research Objectives

1. To analyse the relationship between omnichannel marketing and consumer sustainable buying behaviour.
2. To examine the impact of omnichannel marketing on consumer sustainable buying behaviour.

ISBN: 978-624-5553-76-1

Literature Review

Omnichannel marketing is a complete picture of a consistent and connected message across multiple brand channels. It combines several touchpoints (e.g., online stores, physical retail outlets, mobile apps, social media platforms, etc.) to give consumers an integrated shopping experience. According to studies, customer engagement and loyalty increase when consumers are free to roam from one channel to another with the same brand experience (Komal & Taqa, 2021).

There has been increasing attention paid to the role that omnichannel marketing plays for sustainability. With the integration of sustainability into the omnichannel retailers, brands can educate consumers on the benefits of responsible consumption with the help of digital tools and encourage the use of eco-friendly products. As an example, ASOS and Stitch Fix are exemplary leading International Fashion retailers who have learned to use omnichannel personalisation to increase the engagement of customers and instigate the purchase of sustainable goods (Peiris et al., 2021).

Consumer buying behaviour that considers the action of men to cover the environmental and social aspects is sustainable. This behaviour is very similar to the behaviour in the fashion industry, with fast fashion responsible for environmental degradation, exploitation of labour, and unnecessary waste (Ciarli et al., 2021). However, sustainable fashion issues are becoming more well-known, and hence more people can become interested in sustainable fashion choices.

However, some factors determine sustainable buying behaviour. Additionally, studies indicate that as the youth generation, specifically Millennials and Generation Z (Salem & Alanadoly, 2024), are more attentive to social, cultural, and environmental issues, they are more inclined to maximise the sustainable aspect in fashion. Social influence is important as peer networks, family, and even online communities affect attitudes related to sustainable consumption (Komal & Taqa, 2021). Such social dynamics allow brands with omnichannel strategies that effectively incorporate sustainability messaging to influence eco-friendly purchase behaviour successfully.

Although sustainable fashion is becoming more popular, various barriers prevent its widespread adoption. The main obstacles are that sustainable products are less available and more expensive, while market awareness is low in emerging markets such as Sri Lanka. Sustainable fashion is often considered to be expensive for many consumers, and so affordability plays a very crucial role in the decision to buy. Moreover, their accessibility is an issue because, unlike conventional fashion items, sustainable products are not as accessible (Peiris et al., 2021).

Similarly, marketing communication has a significant role in overcoming these barriers. Studies show that brands communicating their sustainability efforts (i.e., ethical sourcing, eco-friendly materials, etc., and fair labour practices) have improved consumers' trust and loyalty

(Gensler et al., 2013). Further, engaging personalised marketing plans of strategies matching the sustainability values of consumers can also increase engagement and lead consumers to purchase out of eco-conscious considerations (Sharma & Sharma, 2024).

This research has taken the "Consumer Behaviour Theory" as a theory. Also, "Theory of Planned Behaviour" is followed when researchers write the article.

Methods

Research Design

To collect data, this study adopted a quantitative approach and collected data from 385 respondents in Sri Lanka's online fashion market, using structured questionnaires. The impact of omnichannel factors like connectivity, integration, consistency, flexibility, and personalisation was measured using a five-point Likert scale on sustainable buying behaviour.

Sampling and Data Collection

A convenience nonprobability sampling technique was employed to select Sri Lankan consumers actively purchasing online fashion. The population of this research is uncountable. Then, researchers used convenience sampling because they had to collect 385 responses due to the limited period. This technique was easy to reach respondents without any failure. Researchers used inclusion and exclusion criteria to choose the sample. Before collecting responses, researchers asked, "Are you a sustainable online fashion shopper?" If yes, researchers included them as sustainable online fashion consumers. We surveyed the form of surveys on different online platforms, which will ensure a varied respondent base. In addition, ethical issues, including informed consent and data confidentiality, were strictly followed.

4.3 Data Analysis Techniques

Statistical analysis method, Pearson correlation was used in the study to determine the relationship between independent and dependent variables (Alchemer, 2021). Multiple regression examines the impact of independent variables on the dependent variable. An overview of consumer demographics and purchasing behaviour was provided by using descriptive statistics. Data analytical software was SPSS.

Data Analysis

Reliability Analysis

The study used Cronbach's Alpha to verify that measurement scales are reliable. Analysis of the results showed that all the variables demonstrated good internal consistency: Personalisation ($\alpha = 0.843$), Flexibility ($\alpha = 0.784$), Connectivity ($\alpha = 0.709$), Integration ($\alpha = 0.687$), and Consistency ($\alpha = 0.757$). While rating personalisation as the most important driver of sustainable shopping behaviour, the results confirmed its highest internal consistency. Their

reliability scores convey that the study's findings are robust and can be used to aid future research and marketing strategies in the Sri Lankan fashion industry.

Demographic Insights

Three hundred eighty-five respondents have been asked to fill in the data about their demographics and how such criterion affects sustainable buying behaviour. Results of the analysis show that 55.8% of the participants were aged 21 to 24, the largest group being at 23 years (25.6%), while those aged 22 (13.5%) and 24 years (19.2%) follow. Thus, most respondents were young adults in the study category aimed at digital fashion retail. This group is also highly engaged in online shopping, which makes them a key segment for sustainable fashion retailers looking to integrate an omnichannel strategy as effectively as possible.

Sixty-three-point-three per cent of respondents were female, while 35.6 per cent were male. The predominance of female consumers here shows that women play a more important role in omnichannel shopping and are probably more influential in adopting sustainable fashion practices. Fashion brands should use gender-based marketing strategies to boost their efforts in omnichannel engagement.

As for education, 67.8 per cent had a bachelor's degree and 19.7 per cent had A-level education. The sample is well educated, and awareness of sustainability issues may contribute to attitudes towards eco-friendly fashion. Furthermore, 70.1% of the respondents indicated being students, and 11.9% indicated their professional or managerial occupations. The proportion of students suggests that younger individuals are an important target group for sustainable marketing, as they have a relatively low disposable income.

Further insight is provided from the respondents' income levels, influencing their buying power and sustainability aspects. A large portion (42.1%) of consumers had a monthly income under Rs. 35,000, indicating a financial constraint in purchasing premium sustainable products. However, 29.1% earned between Rs. 50,000 and Rs. 75,000, which is the middle-income segment and more likely to invest sustainably. Therefore, marketers should make their sustainability initiatives meet the affordability and ethical dimensions.

Descriptive Statistics

Key omnichannel factors and the association with consumer behaviour were analysed using descriptive statistics. Connectivity (M = 24.03, SD = 1.861), Integration (M = 23.41, SD = 2.740), Consistency (M = 23.34, SD = 2.544), Flexibility (M = 24.12, SD = 1.830), and Personalization (M = 24.21, SD = 1.411) had the mean scores for each omnichannel variable. The findings of this study imply that personalisation and connectivity played the most important omnichannel roles in affecting sustainable shopping behaviour. Seamless transitions between online and offline platforms, as well as a tailored shopping experience, are what consumers value most.

Correlation and Regression Analysis

Varying levels of omnichannel factors were analysed in correlational analysis to determine their influence on sustainable buying behaviour. Thus, personalisation had the strongest positive correlation with sustainable buying behaviour ($r = 0.929$, $p < 0.01$), thus showing that customised shopping experiences significantly impact consumer sustainable choice. In other words, if brands market their product in a personalised manner, by including an individual's purchasing history to suggest specific promotions or recommendations, their promotion can lead customers to purchase eco-friendly products.

It also noted a positive correlation ($r = 0.158$, $p < 0.01$) with flexibility, indicating that customers would respond positively to the advantages of switching between different channels. While there seemed to be some correlation between integration and consistency, and sustainable buying behaviour, that was not the strongest correlation; instead, it appeared that brand messaging uniformity is important, but not the determinant of sustainable buying behaviour. This means that the consistency of marketing messages across multiple platforms is insufficient for brands to create personalised experiences with flexible customer shopping options.

Results of this study were confirmed by a regression analysis, where all omnichannel variables together significantly explained 93.6% of the variance of sustainable buying behaviour ($R^2 = 0.936$). Of all the predictors, personalisation had the greatest beta value ($\beta = 1.002$, $p < 0.05$) and was the most important predictor of sustainable buying behaviour. Then, connectivity and flexibility positively influenced their resource acquisition behaviour ($\beta = 0.186$ and $\beta = 0.276$, respectively). These results confirm that brands must focus on providing personalised interactions and seamless shopping experiences to affect the clique's environmentally conscious purchase decisions.

Key Findings

This study generates several important insights for retailers and policymakers. The top drivers of sustainable buying behaviour were that personalisation mattered most, meaning consumers respond well to a personalised shopping experience. Retailers could use data analytics and personalisation powered by AI to recommend products that match consumers' preferences towards being sustainable.

Second, we find that younger consumers (aged 21–24) are the most engaged in the online fashion retail space and hence represent a crucial target segment whose sustainability campaigns could be aimed at. Effective marketing efforts are targeted at digital platforms, which include social media, mobile apps, and e-commerce websites, to target the demographic successfully. Third, female consumers are more active omnichannel shoppers; thus, marketing campaigns should be crafted with the female objectives regarding their sustainability values.

ISBN: 978-624-5553-76-1

Moreover, the lower-income groups may challenge acquiring sustainable products due to financial barriers. Affordability-focused projects, such as discounts on eco-friendly products or launches of budget-friendly sustainable fashion lines, should be considered initiatives that brands should take. Finally, supporting strategies such as omnichannel integration and consistency are less important than personalisation and flexibility in enhancing sustainability. Brands must concentrate on providing flawless shopping experiences where users can effortlessly make sustainable choices.

The insights can greatly assist fashion retailers and policymakers, offering tips on adopting sustainable fashion and an omnichannel approach. Long-term consumer behaviour patterns and the effectiveness of targeted sustainability campaigns in emerging markets (Sri Lanka) would be future research areas.

Results and Discussion

Influence of Omnichannel Strategies on Sustainable Buying Behaviour

Results show that omnichannel strategies significantly impact consumer sustainable buying behaviour in Sri Lanka, especially in personalisation and connectivity. However, personalisation proved to be the most influential factor ($r = 0.929$, p The regression analysis emphasized the most significant beta value for personalisation ($\beta = 1.002$, $p < 0.001$), confirming that personalisation is a decisive factor for influencing consumer preferences.

Connectivity and Sustainable Purchasing

Unexpected results were derived from analysing connectivity. While connectivity was shown to relate to accessibility and engagement positively, it also had the least correlation with a more sustainable buying behaviour ($B = -0.244$, $p = 0.000$). This implies that digital connectivity does not directly foster sustainability and may discourage eco-friendly consumption by making fast and handy shopping options more appealing than other eco-friendly consumer goods. This suggests brands should integrate sustainability messaging more effectively into highly connected platforms to ensure they have the time and convenience to encourage consumer spending into more sustainable options.

The Role of Integration and Consistency

It was found that there is a weak and statistically insignificant correlation with sustainable buying behaviour on integration and consistency ($r = 0.029$ and $r = 0.049$, respectively). Therefore, this means that although a seamless omnichannel is valuable for brand interaction, it comprises many factors that do not affect the sustainability of customer decisions. The regression analysis likewise supported this without showing that integration ($B = 0.032$, $p = 0.085$) and consistency ($B = -0.020$, $p = 0.307$) did not contribute significantly to consumer sustainable purchasing behaviour. This indicates that brands should not be cashing in on brand

ISBN: 978-624-5553-76-1

consistency between platforms alone, but should embed further measures of direct sustainability incentives.

Flexibility and Sustainable Consumer Behaviour

Sustainable buying behaviour positively correlated with flexibility ($r = 0.158$, $p < 0.01$). It was not as big a driver as personalisation, but having flexibility with the shopping options (such as multiple delivery methods, easy returns, flexible payment, etc.) did influence buyers to make eco-friendly purchases. Regression results showed a small though positive effect ($B = 0.017$, $p = 0.147$), indicating that providing flexible shopping experiences for consumers may indirectly support sustainability goals by making it easier to choose green products.

Implications for Retailers and Marketers

Accordingly, these findings indicate that Sri Lankan fashion retailers should pay particular attention to include personalisation, which may result in sustainable purchasing behaviour. AI-driven product recommendations and customised promotions can make a big difference in the eco-friendly choice of buying. Additionally, brands must reimagine connectivity and ensure this sustainability messaging is captured along their digital platforms, rather than being drowned out by convenience-led advertising. Similarly, it should use this flexibility to offer more sustainable choices, such as eco-friendly delivery methods or a customer-disputed shopping experience based on shopping habits.

Overall, this study shows that whilst omnichannel strategies help strengthen engagement and loyalty, their direct influence on sustainability depends. Flexibility is the second most crucial driver, with personalisation leading the pack. Although connectivity, integration, and consistency are necessary for sustainability, these still need to undergo interventions to bring about sustainable consumer behaviour.

Conclusion

Summary of Findings

This research indicates that omnichannel marketing can empower consumers with sustainable behaviour within the fashion online sector in Sri Lanka. These findings indicate that personalisation and connectivity are more influential factors; personalisation is the strongest positive correlation to sustainable purchasing behaviour. When shopping is targeted to consumers' preferences, they will favour that shopping experience over another. Moreover, brands that provide customised recommendations will more likely influence these sustainable choices.

Connectivity, however, presented mixed results. Extending the concept of consumer engagement, while found to promote consumer engagement, the study revealed a negative correlation between connectivity means ($B = -0.244$, $p < 0.01$), suggesting consumers may

sometimes forget their sustainable buying behaviour in fast and convenient digital interactions. However, the correlations between sustainable behaviour, integration, and consistency were weak or insignificant, suggesting that a coherent brand experience without more does not increase eco-friendly purchases. However, flexible shopping offered varied delivery options and return policies and had a modest, positive effect on sustainability.

Implications for Retailers and Policymakers

The study provides several practical implications for retailers and policymakers seeking to promote sustainable consumer behaviour in Sri Lanka's online fashion market.

1. Retailers should invest in personalisation strategies- With advanced AI-driven personalisation, it is possible to shift awareness and behaviour toward sustainable buying through eco-friendly personal recommendations with consumer preferences. Modern marketing messages can be customised and paired with live content on your website to show your customers which products contain sustainable ingredients.
2. Digital connectivity is important to enhance, but with a focus on sustainability- However, with connectivity, convenience sometimes trumps sustainability, and retailers must integrate such messages into their digital platforms. It can also help to shift consumer preferences towards more responsible buying behaviour by providing real-time product sustainability ratings, carbon footprint details, or rewards for eco-friendly purchases.
3. Because of this, government policies should support sustainable retailing initiatives – In order to encourage businesses to take on eco-friendly practices, policymakers should provide tax benefits for green product lines or provide funding for online awareness campaigns on wearing sustainable fashion. In addition, a sustainability education program would increase consumer awareness and promote responsible consumption patterns.

Recommendations for Future Researchers

While this study provides valuable insights into omnichannel marketing and sustainable consumer behaviour, several areas remain open for further exploration:

1. Cross-Cultural Comparisons – Further research should be done about how omnichannel strategies impact sustainability behaviour in different communities and economies. Comparison studies between Sri Lanka and other emerging markets can provide deeper insight into universal and region-specific determinants of sustainable buying behaviour.
2. Longitudinal Analysis of Consumer Behaviour – However, the effect of omnichannel personalisation and flexibility on sustainability in the long run is not clear. In future studies, repeated exposure to personalised sustainability messaging should be tracked to test whether such exposure results in lasting behavioural shifts.

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3. The Role of Psychological Factors – Omnichannel marketing may be moderated by eco-guilt and perceived consumer effectiveness (PCE) in their relationship to sustainable consumer behaviour. Understanding consumers' psychological reaction to sustainability could provide a nuanced picture of how they perceive sustainability communications.
4. Social Influence and Digital Community Engagement – Since social media has a significant role in consumer behaviour, research should be performed on how online communities, peer influence, and digital activism influence sustainable purchase decisions in an omnichannel environment.
5. Use a probability sampling technique – According to the respondent's bias, it is better to use a probability sampling technique for further studies regarding this area.

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ISBN: 978-624-5553-76-1

Sustainable Futures for Cultural and Heritage Tourism: A Review of Emerging Themes

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Abstract

Cultural and heritage tourism play a vital role in preserving historical and cultural assets while contributing to socio-economic development. Sustainable tourism practices aim to build socio-cultural individuality, promote infrastructural expansion, and enhance economic activities through value-added revenue streams for local goods and services. This study explores the emerging themes of sustainability in cultural and heritage tourism, addressing key challenges, trends, and innovative practices that contribute to the long-term preservation and responsible management of cultural sites. While several studies have examined sustainability in tourism broadly, a notable research gap remains in understanding sustainability within the specific context of cultural tourism. A systematic literature review (SLR) was conducted by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines to identify and synthesise existing research on sustainable cultural tourism. Nineteen peer-reviewed articles (2009–2025) from Emerald, ScienceDirect, and ResearchGate were reviewed to ensure credible and rigorous findings. The review highlights critical themes, including cultural parks, architectural preservation, and recreation of cultural events, integrating principles of sustainability in cultural tourism policies, arts tourism, and film tourism Furthermore, effective management strategies, such as integrated tourism planning and conservation committees, were identified as essential for balancing preservation with tourism growth. Findings emphasise the need for further research to define sustainability parameters in cultural tourism, ensuring that tourism development aligns with heritage conservation goals while benefiting local communities. The study contributes to the ongoing discourse on sustainable cultural tourism, providing insights for policymakers, researchers, local communities, and industry practitioners to develop more responsible and sustainable tourism frameworks.

Keywords: *Cultural Tourism, Heritage Tourism, Sustainable Tourism Practices*

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ISBN: 978-624-5553-76-1

Introduction

Cultural tourism involves visiting historically and culturally significant sites. Ideally, sustainable tourism aims to foster socio-cultural individuality, promote infrastructural development, commerce, and recreational activities, and revitalise traditional practices by generating value-added revenue streams for local goods and services. Sustainable cultural tourism practices encompass heritage site restoration, the promotion of indigenous arts, and the adoption of green infrastructure (Cranmer et al., 2023). These measures preserve cultural heritage and encourage respectful interactions with local communities. Cultural pathways are inextricably linked to cultural tourism. Cultural routes can connect various tourism sites in the region (Lin et al., 2024). The adoption of sustainable practices across these tourism branches significantly contributes to economic, social, and environmental factors. Initiatives like eco-friendly accommodations and cultural preservation demonstrate the potential of sustainable tourism to minimise adverse impacts while maximising benefits for all stakeholders.

The research problem serves as the foundation for conducting the study, guiding the investigation toward meaningful insights. This study aims to explore and analyse the emerging themes of sustainability in cultural and heritage tourism, addressing key challenges, trends, and innovative practices that contribute to the long-term preservation, responsible management, and socio-economic benefits of cultural and heritage sites. Although most studies have attempted to address common themes related to cultural tourism (Li et al., 2022), a notable gap remains in research on sustainable aspects of cultural tourism, particularly in terms of its economic, social, and environmental dimensions. While sustainability-related challenges and opportunities have been addressed in the broader tourism literature, those related to sustainable cultural tourism remain underexamined (Lin et al., 2024). These gaps highlight the need for more targeted research studies focusing on how sustainability has been addressed in cultural tourism, as well as its challenges and opportunities. This study will also address the further implications of sustainability in preserving cultural heritage, enhancing visitor experiences, and supporting local communities.

Literature Review

Cultural tourism focuses on maintaining and promoting a place's cultural identity and historical significance to improve tourists' experiences (Geçikli et al., 2024). Tourism can be defined as the short-term movement of people to places outside the area where they usually reside (United Nations World Tourism Organisation, 2024). The United Nations Educational, Scientific and Cultural Organisation (UNESCO) is deeply concerned and committed to safeguarding the world heritage destinations. Since 2011, UNESCO, in collaboration with several countries, has been developing world heritage and sustainable tourism programs to support sustainable cultural tourism (UNESCO, 2025). This study, along with other

sociological studies, suggests that developing tourism centred on intangible cultural heritage can enhance its distribution and visibility (Zhao et al., 2024). Ideally, sustainable tourism aims to foster socio-cultural individuality, promote infrastructural development, commerce, and recreational activities, and revitalise traditional activities by creating value-added revenue streams for local goods and services (Cranmer et al., 2023). A study on heritage tourism demand provides insight into visitors' perceptions of the visitor experience at historic locations, including reasons, meanings, desires, and advantages (Buonincontri et al., 2017). Historic cities represent the past and serve as a testament to people's lifestyles and cultures; they also provide a foundation for locals (Mousavi et al., 2016). Furthermore, the economic impact of historic and cultural tourism stimulates funding for conservation initiatives, benefiting communities by attracting tourists who are seeking cultural experiences (Geçikli et al., 2024).

Cultural pathways are inextricably connected with cultural tourism. Cultural routes can connect various tourism sites in the region (Lin et al., 2024). Cultural tourism helps to preserve cultural places while also benefiting local communities by providing meaningful experiences that promote repeat visits. However, overwhelming visitor numbers can impact the environment, underscoring the importance of effective tourist management strategies that preserve these regions for future generations. Maintaining sustainability in heritage sites ensures the preservation of culture and protects heritage. Promoting leadership for sustainable initiatives in cultural tourism enables us to prioritise healthy practices and environmental initiatives. Increasing health and safety concerns among tourists highlight the importance of environmental impact in tourism activities, such as CO_2 emissions. An accomplished implementation of cultural tourism ensures a balance between honouring and respecting shared heritage and utilising policies that protect the environment and communities, thereby ensuring the long-term viability of both culture and the environment (Li et al., 2022).

Cultural and heritage tourism is critical in promoting local economies and ensuring the well-being of communities. Attracting visitors through cultural and heritage tourism brings income for local businesses and creates employment opportunities for local citizens, boosting economic growth. Additionally, promoting cultural tourism facilitates the restoration of endangered cultural sites, designating these sites as sustainable hubs (Rasoolimanesh et al., 2023). Communities living in areas of cultural heritage have a strong connection to their heritage and maintain their cultural identity, which involves the preservation of these cultural sites. This collaborative effort preserves heritage and brings a variety of economic and social benefits (Geçikli et al., 2024).

Cultural heritage is a combination of visible and intangible resources, with tangible resources such as historical sites and relics, and intangible resources such as traditions, tunes and languages. Combining cultural heritage with tourism fosters global awareness and is an effective way to preserve, celebrate, and showcase precious cultural resources. Cultural heritage tourism is a multifaceted medium that combines preservation and exploration, with

the potential to transform societies worldwide. Integrating sustainability into cultural tourism ensures responsible behaviour of tourists, preserves cultural sites, and promotes economic growth and eco-friendly initiatives. This approach protects both cultural and natural resources, enabling future generations to appreciate and benefit from these shared assets. Cultural heritage tourism has evolved from a niche interest to a global phenomenon over the last two decades, thanks to innovative approaches to engaging visitors and preserving heritage. Countries such as China, Italy, and Spain are emerging as industry leaders, with universities and researchers making significant contributions to the advancement of historical tourism studies and practices (Zhang et al., 2022). Studies on the sustainability of cultural tourism have primarily been conducted in countries such as China and the United States. These two countries can be considered among the top contributors to international tourism, boasting a rich and diverse cultural heritage that attracts millions of tourists each year. China is renowned for its rich cultural heritage and historic landmarks, including the Great Wall of China, the Forbidden City, the Mogao Caves, and the ancient city of Pingyao. In contrast, the United States' multicultural and indigenous heritage offers another level of dynamic cultural exposure for tourists. Their differing social, economic, and political systems enable the exploration of varied approaches to cultural tourism development, sustainable practices, and heritage conservation. Furthermore, both countries have demonstrated increasing interest in sustainable tourism initiatives, making them ideal case studies for understanding how cultural tourism can balance economic growth, cultural preservation, and community well-being (Statista Research Department, 2024). There is a lack of studies based on cultural tourism from other geographical regions. Comprehensive studies will help develop global cultural tourism and encourage sustainability in this area, conserving cultural and heritage assets.

Table 01: Sustainable Themes Emerged

Theme	Detailed Explanation
Cultural parks	Farm Cultural Park began with a simple vision: transforming an old structure into a space for temporary art exhibitions. This soon evolved into a broader mission—inviting artists to bring creativity and culture into the city, engaging the local community in the process. As the initiative grew, it expanded its focus to education, establishing programs for children and young people by funding various schools in the city (Destefanis et al., 2020).
Architectural preservation and recreation of cultural events	These outcomes are a result of addressing the emerging issues of cultural tourism in Macau. After the project, recreating memories and events with high technology without harming heritage and cultural sites (Du Cros, 2009).
Integrating principles of sustainability in cultural tourism policies.	The study compares cultural tourism in Bucharest and Paris using benchmarking, SWOT analysis, and Pareto analysis. It highlights Bucharest's deficiencies in cultural tourism infrastructure and suggests improvements, such as digitalisation, enhanced infrastructure, and policy changes, to enhance sustainability and global competitiveness (Stoica et al., 2022).

ISBN: 978-624-5553-76-1

Arts tourism	Art tourism has historical roots, with organised cultural travel dating back to ancient Egypt, Greece, and Rome. It facilitated artistic appreciation, education, and preservation, influencing hospitality, infrastructure, and social networks, thereby shaping the structured development of early tourism (Franklin, 2018).
Film tourism	Film tourism is a unique travel trend in which people explore destinations featured in films or TV shows. It boosts a location's popularity, enriches its cultural significance, and shapes tourist preferences (Liu et al., 2020).

Source: Author Generated Results.

Methods

A Systematic Literature Review (SLR) is a rigorous, auditable method for evaluating and interpreting studies on a specific research question. It identifies gaps that exist in the current empirical literature. By following a straightforward, step-by-step process, an SLR creates a solid base that can guide future research, ensuring that new studies are focused and well-organised (Dos Santos et al., 2022). The study emphasises the gap identified in the lack of comparative research studies focusing on emerging sustainable themes in cultural and heritage tourism. Furthermore, the study focuses on the challenges and opportunities created in cultural tourism concerning the identified sustainable themes. The objectives of the study are addressed in the subsequent chapters, emphasising the importance of sustainability in cultural and heritage tourism.

The PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines were used as the methodology implemented for the literature review. PRISMA is a well-recognised methodology that enhances the quality and credibility of systematic reviews by reducing bias, improving organisation, ensuring reproducibility, and increasing acceptance (Mishra & Mishra, 2023). Further was recognised as the gold standard for reporting systematic reviews across multiple disciplines (Mishra & Mishra, 2023). The Emerald, ScienceDirect, and ResearchGate databases were utilised for the literature survey due to their high impact factors and peer-reviewing processes (Kuhzady et al., 2020). Full-text articles published between 2009 and 2025 were used, based on a high H-index and ABDC ranking. During the screening stage, 43 initially identified articles were excluded because they fell outside the study's scope, leaving 21 articles for further consideration. Ultimately, 19 articles that met the eligibility criteria and were directly relevant to the topic were included in the review.

The article search used titles, abstracts, and keywords, along with Boolean operators "OR" and "AND" to ensure comprehensive coverage. Search terms included: "cultural tourism," "cultural tourism and sustainability," "inclusive cultural tourism and sustainability," "heritage tourism." Data were managed using Zotero software. The inclusion criteria required articles to be peer-reviewed, written in English, and reference sustainable tourism in the title, keywords, or abstract. Exclusion criteria removed non-qualifying content such as book chapters, conference papers, and editorials. Figure 1 outlines the study's methodology.

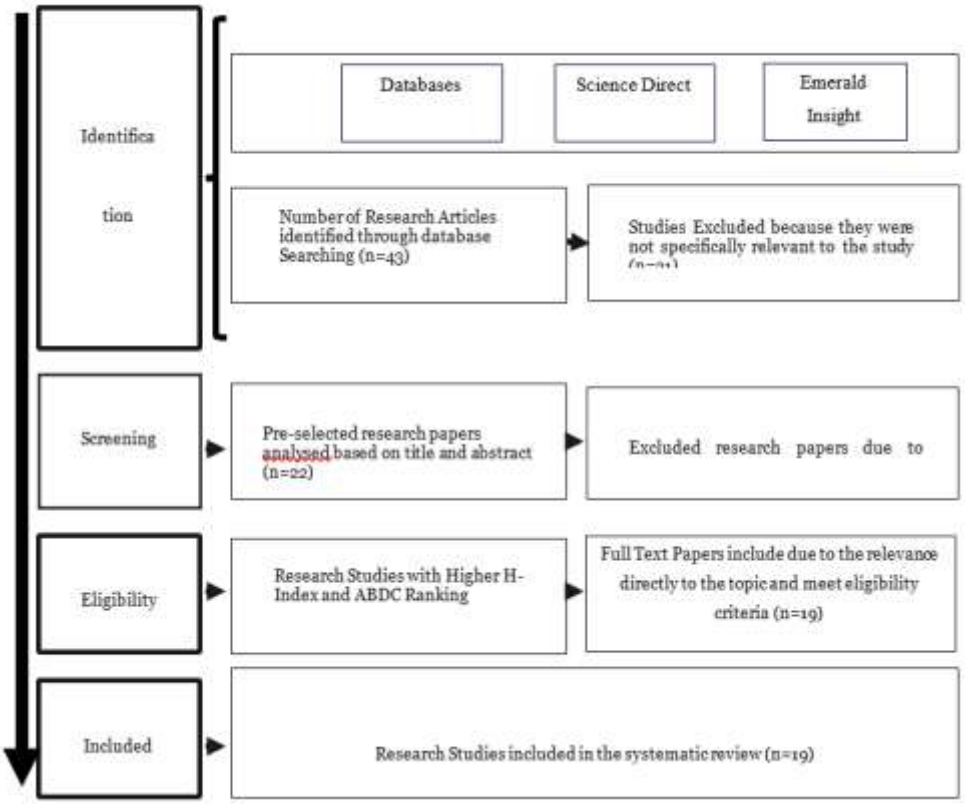

Figure *01*: Literature Pathway (PRISMA Model)

Results and Discussion

The literature identifies several categories of cultural routes based on function, context, and content, as well as planning patterns and conservation tools for regional management. Among these, forming route committees and adopting integrated tourism management are particularly effective in addressing challenges like urban sprawl, site destruction, and depopulation in historic areas (Lin et al., 2024). Additionally, the focus has been mainly on cultural routes within specific historical contexts, which may exclude other forms of cultural tourism (Zhang et al., 2022).

Cultural Parks

Farm Cultural Park is an exemplary model of how cultural parks can contribute to the development of local communities and support sustainable tourism. Evolved from a concept to host temporary art exhibits, it has become a dynamic hub that engages artists, involves the local community, and offers educational workshops for children and youth. By generating cultural pride and offering experiential tourism for tourists, it helps develop the local economy

ISBN: 978-624-5553-76-1

via art-based tourism while supporting local businesses. Still, issues such as balancing preservation and tourism, and achieving sustainable funding, persist. Despite this, cultural parks such as Farm Cultural Park demonstrate the potential to spur economic development, foster cultural exchange, and ensure a socially responsible form of tourism (Destefanis et al., 2020).

Arts Tourism

Arts tourism, an emerging theme under sustainability, can dilute the cultural essence of artistic destinations. Virtual tourism and digital art experiences may reduce physical visitation, and some art destinations remain inaccessible due to high costs, presenting challenges. Revenue generation for locals can be easily facilitated with digital tools like virtual tours. Local economies' revenue is the primary driver of economic growth through attractions like museums, galleries, and related businesses. Technological integration also plays a key role; digital tools, such as virtual tours and AI-driven curation, enhance visitor engagement. Sustainable tourism models are also crucial in maintaining a balance between preservation and tourism. Visitor quotas and eco-friendly initiatives help protect cultural and natural resources while promoting responsible travel (Franklin, 2018).

Film Tourism

An opportunity for economic growth in the country and innovations for the culture without destroying the statues and ruins. In Film Tourism, the distortion of local culture and ecological challenges are all issues to consider. Attracting foreign tourists creates new business opportunities, increases demand for existing businesses, and provides new income avenues for hospitality, transportation, and other industries. However, there is a risk of over-tourism, with visible cultural and environmental impacts that are detrimental to some extent. Film tourism needs to be controlled by restricting the volume of visitors and incentivising green tourism to avoid these economic gains from further degrading the location's appeal for coming generations. Opportunities mentioned include economic growth, destination loyalty, Visitor satisfaction, and digital marketing advances (Liu et al., 2020).

Integrating principles of sustainability in cultural tourism policies.

The study compares Bucharest's and Paris's cultural tourism, identifying Bucharest's infrastructure shortcomings and proposing development through digitalisation, improved physical infrastructure, and policy reforms to enhance it in the interest of sustainable development and global competitiveness. Despite the hurdles to these developments, including budgetary constraints and locals' reluctance to change, they hold significant potential to boost local economies, create jobs, and preserve heritage. Through a focus on sustainable tourism,

Bucharest can attract more tourists, boost community pride, and generate long-term economic and social benefits, ensuring that its heritage remains alive for years to come (Stoica et al., 2022).

Architectural Preservation and Recreation of Cultural Events

In confronting Macau's nascent cultural tourism concerns, specifically architectural conservation and the reenactment of cultural events, both challenges and opportunities reside. Through the implementation of cutting-edge technologies like virtual reality and artificial intelligence in reconstructing history and memory, Macau can offer an immersive experience without compromising its heritage and cultural sites. Doing so provides room for sustainable tourism to enhance the participation of tourists at a level of greater engagement without diminishing the nature of these sites. However, challenges arise in ensuring that technology is used correctly so that it does not compromise the authenticity of the heritage. Such balance is created economically by attracting more tourists and offering employment in the cultural and technology industries, and socially by fostering a deeper connection with Macau's cultural identity and promoting preservation and sustainable tourism for future generations (Du Cros, 2009).

Furthermore, cultural and heritage tourism contributes to preserving intangible heritage and promoting sustainable economic activities, highlighting the importance of striking a balance between preservation and innovation to ensure the long-term sustainability of cultural assets. Lin et al. (2024) proposed an evaluation model for cultural routes, illustrating how tourism can contribute to the conservation of historical sites. Among these, forming route committees and adopting integrated tourism management are particularly effective in addressing challenges like urban sprawl, site destruction, and depopulation in historic areas. However, research on sustainable cultural tourism is limited, as it often relies heavily on theoretical and qualitative analysis without sufficient real-world data. Future research ideas identified through this include investigating sustainable funding models, assessing the long-term impacts of digital tourism, and exploring community involvement strategies in cultural tourism development. Future directions include sustainable planning, ethical tourist management, and integrating local communities to balance tourism benefits with cultural preservation.

Conclusion

This study conducted a systematic literature review to examine emerging themes in sustainable cultural and heritage tourism, providing crucial insights into how tourism can be aligned with the goals of cultural preservation, community development, and environmental responsibility. Using the PRISMA framework, five significant sustainability-driven themes were identified: cultural parks, arts tourism, film tourism, architectural preservation and recreation of cultural

events, and the integration of sustainability principles in cultural tourism policies. These identified themes can be used to showcase diversity and innovation within the cultural tourism sector. Moreover, these approaches or identified sustainable themes will contribute to both enhancing visitor experience and loyalty while promoting the preservation of cultural heritage in the country. Cultural parks are being utilised as a dynamic platform for artistic engagement with nearby communities and tourists, paving the way for cultural exchange and education. Art tourism encourages local artists to create more impactful and creative work, which leads to economic resilience. It has been identified that film tourism is becoming increasingly vital, as it can be utilised as a tool for destination branding and revenue generation. Although it is a good source of income generation, overtourism in cultural places promoted through film tourism will have negative impacts on the environment and nearby communities. Architectural preservation and the recreation of cultural destinations, primarily through emerging technologies such as virtual and augmented reality, demonstrate how tourism can provide immersive experiences without compromising the integrity of historical sites. Furthermore, integrating sustainability principles into tourism policy can ensure long-term development, sustainable green infrastructure, and fair competition, while also enhancing cultural and heritage preservation. While these emerging themes indicate progress, the review also identifies critical gaps in the literature. Much of the existing research is concentrated in specific regions such as China and the United States, with limited representation from other culturally rich areas like South Asia. Furthermore, many studies are conceptual, lacking robust empirical data or longitudinal analysis to assess long-term outcomes. Addressing these gaps is essential to developing globally inclusive and evidence-based models of sustainable cultural tourism. Future research should aim to develop and test sustainable funding mechanisms for heritage tourism, evaluate the lasting impacts of digital tourism innovations on cultural engagement, and explore participatory models that empower local communities in tourism planning and management. Comparative studies across diverse geographic contexts are also necessary to capture the complexity and adaptability of sustainable cultural tourism practices. Such research will not only fill existing knowledge gaps but also support more effective, inclusive, and ethical frameworks for managing cultural and heritage tourism in a rapidly evolving global landscape.

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ISBN: 978-624-5553-76-1

ISBN: 978-624-5553-76-1

Operations and Supply Chain Management

Barriers and Enablers of Female Participation in the Logistics Sector: A Study in the Sri Lankan Context

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Abstract

In the rapidly changing environment of Sri Lanka's logistics sector, gender diversity remains a critical challenge. Several factors influence women's employment in this sector, resulting in a noticeable lack of female participation. Therefore, to bridge this gap, the study's primary objective was to identify the factors that impact female employment in the Sri Lankan logistics sector. The study employed qualitative methods, guided by an inductive approach, to explore the key factors. Data were collected from seventeen female participants through semi-structured interviews, with participants selected using purposive sampling. Thematic analysis was employed to identify patterns in the qualitative data, with coding performed using MAXQDA software. This study identifies the key factors that influence female employment in logistics, including work-life balance, corporate culture, educational background, and operational complexity. While the existing literature review reveals factors such as work-life balance, corporate culture, and educational background, this study introduces operational complexity as a new barrier to female participation in Sri Lankan logistics. The findings of this study provide valuable insights for industry stakeholders and policymakers, helping to address the barriers that limit female employment opportunities in Sri Lanka's logistics sector.

Keywords: Female Employment, Gender Diversity, Logistics Sector, Supply Chain Management

Introduction

The logistics industry, a crucial part of global trade, involves those responsible for managing supply chains, distributing products, and ensuring that products arrive at their intended destinations. Despite being an important sector, the industry is still dominated by men (Kafa et al., 2023), particularly in developing countries such as Sri Lanka (Edirisinghe et al., 2022). According to Kossek et al. (2016), women have historically been prevented from seeking full-

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time employment, with traditional positions mostly involving administrative and household responsibilities. On the other hand, the industry is gradually transforming with more women taking on management, technical, and decision-making activities. Despite these advancements, female representation in the logistics industry remains low, and those who enter the sector continue to face numerous challenges (Maloni et al., 2019).

Gender diversity remains a challenge for female employees in logistics, as workplace diversity efforts often fail to consistently improve supply chain performance. Women make up only 0.9% of Sri Lanka's transportation and storage sector (Department of Census and Statistics, 2023), due to limited employment opportunities (Edirisinghe et al., 2022). Jobs in logistics are often perceived as unsuitable for women, especially in patriarchal societies and predominantly non-Western contexts. Despite sociological barriers, female participation is slowly increasing, with growth hindered by factors such as limited access to education, economic pressures, age, marital status, and family responsibilities (Abraham et al., 2017). Work-life balance remains a critical issue, with long working hours particularly challenging for married women (Nyberg et al., 2015; Sukri et al., 2023).

Gender discrimination is a persistent issue in the logistics industry, reflecting broader patterns of inequality observed in other conservative work environments (Syed et al., 2018). Barriers to career advancement include a lack of support and ingrained social norms (Gunawardane et al., 2023). Although more women pursue technical and management roles (Mejia-Dorantes, 2019), corporate cultures still reinforce gender stereotypes, perpetuating the assumption that specific jobs are more suited to men. Education plays a key role, with many women facing the "glass ceiling", an invisible barrier that limits their advancement to higher leadership positions (French & Strachan, 2008). Investing in education and skill-building programs can foster equal opportunities and enhance the logistics sector's efficiency. However, diversity efforts often stall after reaching initial targets, with male managers still preferred over female managers.

Female participation in the transportation and storage sector in Sri Lanka has gradually increased over the years. There were 24,381 female employees in 2023, making up 4.83% of the total, an increase from 3.38% in 2019 (Department of Census and Statistics, 2023). Despite this growth, female participation in the logistics sector remains significantly lower compared to that of male employees, highlighting broader gender inequalities in the labour market. The continued underrepresentation of women in this sector illustrates the challenges faced by women to gain equal opportunities in male-dominated industries like logistics. (Edirisinghe et al., 2022).

A significant research gap exists regarding female employment in the Sri Lankan logistics sector, particularly in developing countries. While general studies on the gender gap in the logistics sector exist, limited qualitative research is currently available for Sri Lanka. To address this research gap, the current study employs a qualitative approach to identify the

ISBN: 978-624-5553-76-1

fundamental factors influencing female participation in the logistics sector from a Sri Lankan perspective.

Literature Review

The logistics sector is classified as a STEM subject and has historically been dominated by men (Zinn et al., 2018). Women's participation was limited due to the physical demands of the sector, although this has shifted as a result of technological developments and a focus on digital, analytical, and management skills. Women's involvement in logistics has increased as gender diversity and social support for equality have grown (Yang et al., 2024).

Although the logistics sector has experienced significant growth, female representation in Sri Lanka remains low, and there is limited research on the challenges and enablers faced by women in these careers (Kuruppuarachchi & Surangi, 2020). According to Sackey (2005), significant barriers for women in logistics include pay, education, marital status, cultural norms, health, and family obligations. Developing solutions to improve gender diversity in logistics requires an understanding of these concerns.

This literature review identifies four main barriers and Enablers that prevent women from entering the sector. It examines existing research on the challenges faced by women in this field, providing a foundation to understand the factors that limit or support their entry and advancement.

Work-Life Balance

The connection between an employee's employment and other important aspects of their lives is known as work-life balance. Female involvement in a variety of sectors is decreased by work-life conflict and family obligations (Thilagavathy & Geetha, 2021). Both men and women face challenges balancing personal and professional lives, but Nyberg et al. (2015) found that these difficulties are more common among women. Buddhapriya (2009) notes that, particularly in Asian cultures where women are expected to take care of their families, their work-life balance is greatly impacted by family obligations, which can also act as a barrier to career choices (Ansari, 2016; Kargwell, 2008). These responsibilities limit time for professional commitments (Kuruppuarachchi & Surangi, 2020). Additionally, Rust and Mundy (2020) noted that motherhood-related issues prevent women from taking on labour-intensive roles. Another significant issue is irregular work schedules. Abraham et al. (2017) found that having children does not harm women's engagement in formal employment, but rather, marital status has a positive effect on labor market participation.

Work-life balance can be challenging for supply chain employees, who often face demanding schedules and high workloads, particularly for women who are also mothers. According to Zielinska et al. (2024), flexible work arrangements, primarily hybrid models, are crucial for female employees. Flexible scheduling and options for childcare are examples of

organizational support that can increase female involvement and reduce work-life balance issues (Yang et al., 2024; Edirisinghe et al., 2022; Syed et al., 2018). However, Kossek et al. (2016) found that adopting flexible promotion usually results in fewer promotions and lower pay. Zinn et al. (2018) stated that firms must be flexible if they want to use brilliant women fully.

Women often prioritize their families and children over their careers, which may lead them to reconsider or abandon their career goals (Perera et al., 2021). The women's capacity to manage both career and family responsibilities is significantly affected by factors such as workload, organizational flexibility, childcare availability, and family support. Creating a supportive work environment requires addressing these issues. Examining how work-life balance impacts Sri Lanka's logistics industry is crucial, particularly given its significance in shaping trends in female employment.

Corporate Culture

The common set of organizational values, beliefs, habits, and practices that collectively affect employee behaviour and attitudes is referred to as corporate culture (Sohn et al., 2015). Organizational culture has a significant connection with the concept of a glass ceiling and gender inequalities in attitudes (Ezmigna et al., 2024). Ely et al. (2012) found that women are less likely than men to participate fully in workplace decision-making. To remain in logistics, women require encouragement and guidance; however, over-engagement in the sector can reduce family time, job satisfaction, and the likelihood of quitting (Maloni et al., 2019; Ghalebeigi et al., 2023).

Gunawardane et al. (2023) emphasized that supervisor support greatly improves women's job satisfaction and retention. A supportive, equitable environment enhances women's connections and advancement. However, women often face low motivation and high turnover due to a lack of recognition and support (Kafa et al., 2023), while workplace harassment and wage gaps hinder career growth (Afza & Newaz, 2008; Syed et al., 2018). Addressing harassment is linked to increased female management roles (French & Strachan, 2008). Organizations should strive to achieve gender balance at all levels to foster diversity and innovation (Campos-García & Zúñiga-Vicente, 2022). The absence of role models and mentoring limits the participation of female senior roles (Perera et al., 2021), but female board members have a positive impact on female employment (Allemand et al., 2025).

Ezmigna et al. (2024) noted that women in logistics experience limited career advancement, while Zielinska et al. (2024) found that women prefer leaders who offer motivation and clear communication. Female turnover can be reduced by fostering an environment that promotes equality and offers growth opportunities (Sukri et al., 2023). A positive corporate culture, a respectful work environment, and career advancement opportunities are key to improving female retention in logistics.

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Educational Background

Educators play a vital role in shaping the future of the logistics industry, with a focus on education being crucial for improving logistics contributions (Akbari, 2023). Higher education levels correlate with more favourable views on gender equity in the labour market (Gil-Lacruz et al., 2023). The growing gender gap and increasing demand for qualified workers underscore the importance of education and training in empowering women in logistics (Ruel & Jaegler, 2021). Pay disparity remains a common issue, with women often earning less than men despite holding similar qualifications.

Training and development are positively linked to increased female management roles (French & Strachan, 2008). Vocational training programs enhance skills and promote women's employment, reducing the gender gap (Edirisinghe et al., 2022). Incorporating soft skills into vocational training has been found to enhance women's skills and improve their job market prospects (Acevedo et al., 2017). However, Gunawardane et al. (2023) found that both technical and soft skills, alongside experience, are important for women to excel in the field.

Human capital factors like education and experience are crucial for employment opportunities and wage equality (Larson & Morris, 2014). While Sackey (2005) found no significant difference in labour force participation between women with primary and post-primary education, Abraham et al. (2017) highlighted that higher qualifications have a significant impact on female participation in formal wage employment. Effective skill development and vocational training programs are essential to enhance female participation in logistics.

Methods

This study employed an inductive approach, guided by interpretivist principles, to investigate the experiences and challenges faced by female employees in Sri Lanka's logistics sector. An inductive approach was chosen to allow the theory to emerge from the data, making it suitable for under-researched areas, such as female employment in logistics. Interpretivism was selected as it emphasizes understanding individuals' lived experiences (Gunawardane et al., 2023). A qualitative method was employed due to the limited existing studies, allowing for an in-depth exploration of complex social issues. The findings were validated through data triangulation, respondent validation, and comparison with global studies on gender diversity in logistics.

The study targeted 24,381 female employees in Sri Lanka's logistics, transportation, and storage sector (Department of Census and Statistics, 2023). Purposive sampling was used to select 17 females in the Sri Lankan logistics sector, based on three criteria: at least three years of experience (to ensure industry familiarity), holding executive or higher roles (to reflect leadership views), and direct involvement in logistics operations (for relevance). This approach was suitable for identifying participants who could provide rich, meaningful

insights, consistent with the qualitative, interpretivist nature of the study. Participant details are in

Table 01. Participants were recruited via industry contacts and LinkedIn to ensure diverse insights. Semi-structured interviews, guided by an interview protocol, were conducted in person and via online platforms, lasting 45–60 minutes. Data saturation determined the sample size. All interviews were recorded with consent, and the transcripts were transcribed for accuracy. Confidentiality was maintained to encourage honest responses.

Table 01: Details of the Interviewees

Interviewees	Marital status	Current Position	Experience	Interview Format
R1	Married	Export Executive	17 years	Zoom meeting
R2	Married	Management Assistant	4 years	Zoom meeting
R3	Unmarried	Executive	3 years	In-person
R4	Married	Import Senior Executive	25 years	In-person
R5	Unmarried	Manager	5 years	Google Meet
R6	Married	Assistant Manager	6 years	Microsoft Teams
R7	Married	Logistics Head	13 years	In-person
R8	Unmarried	Executive	6 years	Zoom meeting
R9	Unmarried	Import Executive	4 years	In-person
R10	Married	Executive	8 years	Zoom meeting
R11	Married	Procurement Manager	11 years	Zoom meeting
R12	Married	Manager	13 years	In-person
R13	Married	Export Executive	7 years	In-person
R14	Unmarried	Executive	5 years	Microsoft Teams
R15	Married	Assistant Manager	9 years	Zoom meeting
R16	Unmarried	Import Executive	6 years	Microsoft Teams
R17	Unmarried	Export Executive	4 years	Zoom meeting

Source: Authors' Illustration

Data Analysis

The sample size of 17 respondents may limit generalizability; however, data saturation was achieved as no new themes emerged in the final interviews. Thematic analysis was conducted using MAXQDA software due to its user-friendly interface, efficient handling of large qualitative datasets, and robust coding and visualization tools that enhance insight generation. This method allowed for systematic data analysis through multiple coding levels: initial open coding, focused coding, and thematic categorization. Thematic analysis is particularly suitable in this context, as it enables the identification of complex patterns in participants' experiences related to female employment in logistics. Tools, including word frequency queries, helped identify recurring patterns. Theme validation was conducted through cross-checking with prior studies and participant verification, with weighting based on recurrence, emphasis, and frequency analysis. To enhance reliability, secondary data on gender diversity in logistics were reviewed for validation. Table 2 presents the analytical

findings, showing the distribution of themes and weighted percentages of codes derived from the transcriptions.

Table 02: Codes Percentages

Theme	Codes	Percentages
Theme 1 Work-life Balance	Code 1: Workload	13.3%
	Code 2: Family Support	7.1%
	Code 3: Organization flexibility	8.2%
Theme 2 Corporate Culture	Code 4: Team Support	10.7%
	Code 5: Career Ladder	17.3%
Theme 3 Educational Background	Code 6: Prior Knowledge	7.1%
	Code 7: Experience	11.7%
	Code 8: Internal Training	6.6%
Theme 4 Operational Complexity	Code 9: Fieldwork	7.7%
	Code 10: Dynamic	4.6%
	Code 11: Interconnected Work	5.6%

Source: Authors' Illustration based on the result of MAXQDA

Results and Discussion

Work-Life Balance

A key factor affecting women's continued involvement in the logistics sector is 'Work-life balance'. Three related codes emerged from the interviews: 'organizational flexibility', 'family support', and 'workload'. These aspects have a significant impact on women's ability to balance their personal and professional obligations. Work-life balance remains a significant challenge for women in Sri Lanka's logistics sector. Fifteen out of seventeen respondents reported challenges in balancing extended work schedules, particularly during high-demand seasons, which often conflict with family responsibilities. These results align with the conclusions of Buddhapriya (2009), who identified family obligations as a significant barrier to women's workplace participation. R3 commented, *"The workload in the job is quite high. That is why it becomes difficult. If it involves exports, I get home late."* In parallel, R6 expressed, *"Sometimes, I have to work two or three nights in a row. You need to handle that kind of pressure."* These findings align with Rust and Mundy (2020), who reported that irregular work schedules prevent women from engaging in labour-intensive roles.

Family support was identified as a crucial factor in managing work-life balance. Many respondents stressed the importance of emotional and practical support from family members in sustaining their careers. R4 asserted, *"My family is very understanding,"* while R8 stated, *"Without support from home, whether from a husband or parents, it would not be possible."* This finding aligns with previous studies by Buddhapriya (2009) and Abraham et

al. (2017), which have also found that family support helps women navigate professional challenges and reduces their stress.

Organizational flexibility also emerged as a crucial facilitator for women balancing work and personal life. Respondents recognized the value of flexible working arrangements, particularly during maternity periods. R12 remarked, *"I truly received support. If we complete our tasks properly, we are given flexibility."* This is consistent with Zielinska et al. (2024), who prioritize that mixed remote-office structures and flexible policies are essential for female employees. Simultaneously, challenges (Yang et al., 2024; Edirisinghe et al., 2022; Syed et al., 2018) emphasize that organizational support, including flexible schedules and childcare facilities, significantly enhances women's workforce engagement and eases work-life balance issues. However, Kossek et al. (2016) caution that female employees who use adaptable work arrangements often experience lower pay and reduced career advancement opportunities, reflecting ongoing gender imbalances in career advancement.

Corporate Culture

Women's employment involvement and job continuity in logistics are significantly shaped by 'Corporate culture', defining their occupational pathways and lived experiences. Major contributors consist of 'career ladder', opportunities, and 'team support'. While teamwork fosters a collaborative environment, barriers to advancement highlight persistent gender inequalities in the industry. Team support emerged as a key component in generating a positive work environment. All seventeen respondents emphasized that having supportive teams and supervisors was essential in navigating industry challenges. R13 stated, *"I learned gradually, step by step, with immense support from my team and supervisors."* Consistently, R9 highlighted the value of compassionate leadership, observing, *"Our manager was like a father who took care of us."* These findings align with Gunawardane et al. (2023), who emphasized that supervisor support significantly enhances female job satisfaction and retention. Moreover, Kafa et al. (2023) noted that team support and inclusive policies contribute to the career stability of women in logistics. However, the absence of role models and structured mentorship continues to hinder long-term career progression (Perera et al., 2021).

In contrast, the Career ladder highlights persistent gender inequalities in leadership. Many respondents noted that men tend to hold higher positions, thereby limiting female representation. R11 stated, *"Men hold most higher positions. Women have little chance of reaching leadership roles."* R14 similarly pointed out, *"Men get most of the opportunities compared with females."* These findings align with Ezmigna et al. (2024), who reported that women in logistics face limited career growth opportunities. Furthermore, research demonstrates that addressing workplace biases and improving mentorship programs can help reduce gender disparities in leadership roles (Campos-García & Zúñiga-Vicente, 2022; Sukri

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et al., 2023; Allemand et al., 2025).

Educational Background

Educational background emerged as a key theme, derived from three main codes: 'experience', 'internal training', and 'Prior knowledge'. Experience plays a critical role in enabling women to adapt to the logistics sector. R12, who has over 13 years of experience, noted, *"With experience, it is easy to understand this field and stay in it."* Correspondingly, as noted by R5, *"I entered because there was an available position, and I took it without prior knowledge. I learned gradually, step by step."* These results corroborate those of Gunawardane et al. (2023), who emphasized that technical skills and industry experience are crucial for women's success in logistics. In the same vein, Ruel and Jaegler (2021) demonstrated that academic credentials alone are insufficient for career readiness, as practical exposure is crucial for reducing occupational gender imbalances in the field.

Internal training emerged as another vital avenue for skill development. Many respondents reported that they acquired role-specific competencies via on-the-job guidance. R7 pointed out, *"I learned everything on the job by watching and listening to experienced staff."* This supports Acevedo et al. (2017), who highlighted integrating practical skill-building into logistics positions as employment opportunities for women in the field. Furthermore, Edirisinghe et al. (2022) stressed that skills-based training initiatives help dismantle obstacles to women's workforce entry.

Although logistics prioritizes practical learning, prior knowledge was not a significant impediment to female success in the logistics sector. R16 shared*, "I entered because there was an available position, and I took it without prior knowledge."* Correspondingly, R10 stated, *"I started without any specific idea about logistics but grew to enjoy it once I got into the field."* Consistent with Sackey (2005), this study also found that basic education levels do not significantly affect women's participation in the logistics workforce, suggesting the need for higher qualifications to improve employment outcomes. However, Abraham et al. (2017) argued that higher qualifications have a significant influence on female participation in formal wage employment. these findings indicate that while academic qualifications provide a foundation, logistics employers prioritize experience and internal training over formal education. Supporting skill-based learning through structured training and mentorship programs can help enhance female participation in the industry (French & Strachan, 2008).

Operational Complexity

The newly identified theme of 'Operational complexity' emerged from the interviews, categorized under three primary codes of 'fieldwork', 'dynamic nature', and 'interconnected work'. These factors collectively contribute to the challenges faced by women in logistics, particularly those balancing professional and family responsibilities. Fieldwork was one of the

most frequently cited barriers. Many logistics roles require employees to visit ports, warehouses, or customer sites, making flexibility and physical endurance crucial. R1 highlighted this concern, stating, *"Most male employees work in the field, while women are generally assigned to office-based documentation work. Women are not usually sent out for field tasks due to the physical challenges*." R9 elaborated, "*If you go outside, it is a bit harder for a female to bear things like sun, dust, and fatigue than a male."* This reflects a clear gender-based division of tasks, where men are assigned physically demanding roles, while women are often confined to office-based duties. R2 validated this notion by stating, *"They have to go to the port and customs. When we receive a container or baggage, it is the men who are responsible for the clearance process. Women cannot join the wharf team."* This highlights how gender norms and perceived physical limitations shape job allocations within the logistics sector.

Interconnected Work was an essential dimension of operational complexity. The logistics sector requires continuous interaction with multiple stakeholders, including customs officials, warehouse personnel, transportation partners, and suppliers. Effective relationship management is crucial, yet respondents highlighted the extra strain this imposes. R15 noted, *"After coming into the field, you need to develop different ways to deal with various people."* In the same vein, R16 underscored the considerable amount of collaboration needed, noting, *"We have to go to the port and customs."* The imperative to strong communication and negotiation skills, combined with the high-speed logistics environment, compounds the challenges faced by women in the sector.

Logistics' inherently dynamic nature emerged, presenting substantial difficulties. This field necessitates on-the-spot critical decisions and the ability to manage emergent situations effectively. Unlike other professions where tasks can be planned, the field requires continuous readiness for reaction. R4 explained, *"There are any specific challenges for females in logistics. The main point is that this industry is dynamic."* The unpredictability of logistics operations prevents the establishment of consistent workflow patterns, thereby elevating occupational pressure. R14 described the difficulties inherent in daily uncertainty, noting, *"This field is dynamic because of day-to-day changes. We do not know what will happen in this field. That means what we do today may have an impact two or three months down the line."* This ongoing reality featuring transformation necessitates superior adjustment capacity, critical thinking abilities, and the ability to manage sudden workflow interruptions.

Conclusion

This study reveals that while women have made progress in Sri Lanka's logistics sector, they continue to face challenges. Existing literature identifies work-life balance, corporate culture, and educational background as key factors that hinder female participation in logistics. These challenges were confirmed through interviews conducted in the Sri Lankan context.

ISBN: 978-624-5553-76-1

Additionally, operational complexity was identified as a novel barrier to female employment, offering new insights into the existing literature. To promote gender equality, organizations should consider implementing flexible work policies and support systems, such as mentorship programs and childcare services. In the logistics industry, promoting gender diversity can benefit women and the sector as a whole by promoting a more competitive and balanced workforce. This is a crucial step toward achieving gender equality and fostering the growth of Sri Lanka's logistics industry.

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ISBN: 978-624-5553-76-1

ISBN: 978-624-5553-76-1

ICME 2025 "Entrepreneurial Bricolage: Steering Volatile Markets through Improvised Strategies and Innovative Thinking"
Proceedings of 14th International Conference on Management and Economics

How Innovative Culture Shapes Digital Transformation and Organisational Resilience in IT Firms

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Abstract

Within the current technology-driven business environment, IT firms face transformative challenges that demand adaptable methodologies to sustain market leadership and ensure future prosperity. This study aims to identify the impact of Innovative culture on organisational resilience in the Sri Lankan IT sector, with a specific focus on the mediating role of Digital Transformation. Lack of empirical studies that investigate the interplay among Innovative culture, Digital transformation, and organisational resilience brings novelty to this research. Using a quantitative approach, data were collected from over 282 participants who were managerial or above-level employees in the Sri Lankan IT industry via surveys. Partial Least Squares Structural Equation Modelling (PLS-SEM) was employed to analyse the data and test the hypothesised relationship between variables. The study's findings revealed that an innovative culture has a significant positive impact on digital transformation, as the innovative mindset ingrained encourages continuous growth, creativity, and risk-taking, thereby strengthening digital transformation initiatives. Both Innovative culture and Digital transformation have a significant positive impact on organisational resilience. Additionally, it was found that there is a complementary partial mediation of Digital Transformation in the relationship between Innovative culture and Organisational resilience. These findings underscore the importance of fostering an innovative culture and driving digital transformation in the IT industry to ensure sustainable business processes. Findings provide clear directions to industry leaders and policymakers for the strategic use of technology and effective business model design.

Keywords: *Digital Transformation, Industry 4.0, Innovative Culture, Organisational Resilience*

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ISBN: 978-624-5553-76-1

Introduction

In the era of rapid technological advancement, organisations in the Information Technology (IT) sector face unprecedented challenges that demand adaptive approaches to maintain competitive advantage and ensure long-term sustainability. Digitalisation involves not only the adoption of technology but also embraces creativity as a cultural process. This dynamic is fueling Organisational Resilience (OR) through the association of Innovative Culture (IC) and Digital Transformation (DT) (Lou et al., 2024). The integration of advanced digital solutions is crucial for improving efficiency and productivity, driving organisations to undergo DT, which is a process that involves the adoption of novel technologies, digital infrastructures, and platforms to revolutionise business and entrepreneurship (Brodny & Tutak, 2024). However, the successful DT in organisations depends not only on technological infrastructure but also on various organisational factors, including structure, competencies, supportive organisational culture, and leadership to drive meaningful change (Codara & Sgobbi, 2023).

IC plays a crucial role in DT, as it fosters adaptability, risk-taking, learning from failures, and collaboration, which are essential for adapting to the dynamic landscape of digital technologies and maintaining resilience in the face of disruptions (Khalayleh et al., 2024). An IC paradigm is vital, particularly within the IT sector, which is characterised by incessant disruption and rapid transformation. This facilitates the integration of DT within the fundamental operational frameworks of IT firms, thereby fostering adaptability, continuous learning, and prompt responses to fluctuations in the marketplace (Bindel Sibassaha et al., 2025).

The IT sector of Sri Lanka serves as a pivotal component of the national economy, accounting for approximately 3.5% of the GDP and providing services to more than 500 organisations spanning diverse sectors (EDB, 2025). This industry is currently contending with unpredictable demand, challenges related to the retention of skilled human capital, and fluctuations within the supply chain, thereby underscoring the necessity for resilient and sustainable business processes (Li & Wang, 2024; Safonov et al., 2022).

OR helps an organisation's ability to anticipate, prepare for, respond to, and adapt to both minor and major disturbances while maintaining business continuity (Juwita et al., 2024). While resilience in manufacturing depends on physical aspects, for IT firms, resilience is predicated upon the interplay between cultural and digital dimensions, wherein a prioritisation of risk tolerance is evident (Hooi & Chan, 2023). For IT companies operating in volatile markets characterised by rapid technological advancement, evolving customer expectations, and global economic fluctuations, resilience has become essential for long-term sustainability (Juwita et al., 2024). While some organisations have successfully utilised digital solutions to ensure business resilience in dynamic market conditions, others struggle with DT due to its complexity and unpredictability (Li et al., 2024).

This study seeks to examine the relationship between IC, DT, and OR within the IT sector of Sri Lanka. Specifically, it aims to address the following research questions:

RQ1: Does innovative culture significantly impact organisational resilience in the IT sector?

RQ2: Does innovative culture significantly impact digital transformation in the IT sector?

RQ3: Does digital transformation significantly impact organisational resilience in the IT sector?

RQ4: Does digital transformation significantly mediate the relationship between innovative culture and organisational resilience?

The findings of this study will contribute to both theoretical understanding and practical applications in the field of organisational management, providing IT sector leaders in Sri Lanka with insights on cultivating an IC that facilitates DT and enhances OR in a rapidly evolving technological landscape.

Research problem

Digital technologies, collectively referred to as DT, are known to improve predictive maintenance, operational excellence, and business continuity. However, the interplay between IC, DT, and OR has not been comprehensively addressed. Existing literature predominantly focuses on the direct impacts of DT on OR, with limited exploration of its mediating role in fostering OR through IC (Lou et al., 2024; Zhang & Li, 2025). Although DT has been studied comprehensively in the context of manufacturing and supply chain management, its implications within the service sector remain underexplored. Research gaps persist in understanding how DT interacts with IC to drive OR in service-oriented organisations. Studies by Mikalef & Gupta (2021) and Wijethunga et al. (2023) highlight this gap, emphasising the need for research that extends beyond the manufacturing sector to address the unique challenges of service industries. Further, IC is an underserved area by scholars, particularly in the IT sector. Although innovation is acknowledged as essential for product development in the IT sector (Adiguzel et al., 2024; Gemici et al., 2024), few studies have investigated IC as a fundamental organisational discipline or its role in fostering resilience during DT (Lou et al., 2024).

IC, which is characterised by flexibility, creativity, risk-taking, and adaptability, is gaining recognition as a key enabler of OR. However, there are a few theoretical frameworks that regard IC as a central entity. Although Nambisan et al. (2019) and Butt et al. (2024) have explored aspects of innovation and creativity, there is a lack of theoretical knowledge, frameworks that specifically incorporate IC as a key entity.

In the context of Sri Lanka's IT sector driving toward technological development and innovation, there is a lack of investigation into how an IC can be developed across organisations, reinforcing resilience against market turbulence and resistance (Georgescu et al., 2024; Hooi & Chan, 2023). With the IT industry being driven by technological

ISBN: 978-624-5553-76-1

advancements, such innovations are expected not only to be locally created but also to adopt the strategic alignment of DT to ensure business continuity and adaptability (Saeedikiya et al., 2025). Therefore, this study aims to address these gaps by investigating the complex interactions among IC, DT, and OR within Sri Lanka's IT sector.

Literature Review

Innovative culture

IC is a distinct organisational culture (OC) that nurtures innovative activities and thinking patterns within the organisation (Davies & Buisine 2018). Cui et al. (2023) define IC as an organisational environment that enhances employees' ability to develop innovative tendencies, identify opportunities, and take risks to contribute to organisational growth. (Deep 2023; Leron & Baconguis 2021; Wang et al. (2022) argue that IC establishes an environment that encourages innovation, thereby empowering employees to possess the skills and capabilities essential for promoting adaptability within organisations. Hargitai & Bencsik (2023) highlight that several critical factors shape an IC in an organisation, including leadership, adaptability, digital readiness, trust, and collaboration, and that supportive leadership plays a crucial role in promoting training and development among employees. According to Zhang et al. (2008), competitiveness and the constant search for new prospects take centre stage in an outward focus that is the core of IC. Organisations, particularly those in the IT sector, can better position themselves to navigate the complexity of the digital age by placing a high priority on innovation. This strategy ensures their competitiveness in a constantly changing market while also enhancing their capacity to develop new products and services. For this reason, cultivating an IC within IT companies is not only advantageous but also necessary for long-term success and acquiring resources. In addition to that, research has indicated that an effective IC enhances OR by encouraging employees' agility, adaptability, and cooperative problem-solving skills (Georgescu et al., 2024).

Organizational Resilience

OR is defined as the ability of an organisation to adapt to and recover from adversity (He et al., 2023). In organisational studies, resilience is frequently associated with the ideas of robustness, integrity, and agility (Bouaziz & Smaoui Hachicha, 2018). Hence, OR is reinforced by the combined efforts of integrity, robustness, and agility, which allow firms to withstand sudden changes and disruptions while maintaining their ethical standards and sustaining their basic operationality (Duchek, 2020; Kantur & Say, 2015).

The capability of elements, systems, and other units of analysis to endure stresses and demands without suffering harm, degradation, or loss of functionality is known as robustness (Bouaziz & Smaoui Hachicha, 2018). The ability of an organisation to quickly and effectively adapt to

ISBN: 978-624-5553-76-1

changes, recognise and utilise opportunities, and tackle threats in unstable environments is referred to as its agility (Okuwa et al., 2016). Integrity refers to the adherence to ethical principles and maintaining trustworthiness and reliability in operations (Kantur & Say, 2015). These encourage IT companies to adopt new technologies and processes, promoting a culture that inspires continuous development and quick adaptation to market developments in the digital era.

According to Georgescu et al. (2024), OR can be strengthened directly and indirectly by strategic human resource management (SHRM) techniques when they align with a positive IC. In addition, Liu et al. (2024) found that flexibility within organisational workplaces is essential for building resilience. Thus, an organisation's capacity to endure and grow in the face of adversity is greatly enhanced by a well-managed IC that values broadening and encourages innovative, collaborative, and inventive practices. These studies suggested a relationship between IC and OR. However, this area requires further study because it has not been thoroughly explored. Therefore, we hypothesise the following as H_1:

H_1 - There is a significant positive impact of IC on OR in the IT sector.

Digital Transformation

DT has been widely acknowledged as the critical enabler of organisational competitiveness in the 21st century. It fundamentally alters business operations by integrating digital technologies. Westerman et al. (2019) have argued that DT surpasses the integration of new technologies, as it requires internal revision of business models and organisational strategies. The combined implementation of technologies such as AI (Artificial Intelligence), IoT (Internet of Things), CC (Cloud Computing), and BDA (Big Data Analytics) has become integral for the implementation of DT, enabling organizations to innovate and compete in the digital economy (Moghrabi et al., 2023; Yaqub & Alsabban, 2023). Each of these technologies influences an organisation's structure, strategy, and processes to meet the expectations of volatile business environments (Verhoef et al., 2021). Hence, AI serves as a transformation enabler, facilitating automation, improving decision-making, and delivering personalised experiences by analysing customer data (Aldoseri et al., 2024). Similarly, IoT broadens the reach of DT by integrating physical devices into digital ecosystems, enabling real-time data collection and predictive maintenance (Kariuki et al., 2025; Yaqub & Alsabban, 2023). On the other hand, CC provides a critical foundation for DT by providing scalable, flexible, and cost-effective infrastructure that is essential for businesses to adapt to dynamic digital demands (Marston et al., 2011). BDA empowers organisations to analyse extensive data to derive actionable insights from large data sets, thereby refining decision-making and operational efficiency (Farouk et al., 2025).

Interactions among IC, DT, and OR

Novel technologies offer benefits such as remote monitoring, real-time data analytics, and automated processes, enabling organisations to adapt to changing conditions and maintain

operational continuity quickly (Said et al., 2022). Leal-Rodríguez et al. (2023) and Moshood et al. (2024) point out that encouraging behavioural aspects such as self-innovation, knowledge sharing, and self-efficacy among employees contributes to fostering an innovative mindset and a culture that supports DT. The innovative mindset in IC will facilitate a smoother transition into DT, encouraging employees to adapt to the inevitable changes. Sivulca et al. (2024) highlight that digital culture and DT are mutually conditioning variables, implying that not only can IC facilitate the adoption of DT but also further embed an innovative mindset within the organisation. This demonstrates that IC will provide a strategic advantage in the process of implementing DT. Therefore, it requires an in-depth analysis for IC and DT. Therefore, we hypothesise the following as H_2:

H_2 - There is a significant positive impact of IC on DT in the IT sector.

OR and DT work together harmoniously to create a vital foundation for success in the uncertain digital economy. Accordingly, DT substantially enhances the OR by incorporating cutting-edge technologies that enable quick responses to disruptions and market fluctuations. Organisations implementing DT can survive crises and stay competitive through increased flexibility, effective management, and robust cybersecurity practices (Said et al., 2022). Moreover, digital capability integration fosters a future-oriented organisational culture that promotes ongoing innovation and flexible approaches required for sustained resilience (Pattij et al., 2022).

Pattij et al. (2022) emphasise that DT facilitates the strategic alignment of digital capabilities and continuous adaptation, thereby driving innovation and enhancing organisational competitiveness. Consequently, it confirms that DT will serve as the critical component that bridges IC and OR in firms. Furthermore, an effective IC develops innovation and sustains learning, enabling firms to use digital tools more effectively and improving their ability to withstand disruptions (Westerman et al., 2019). Hence, DT not only amplifies the positive effects of any organisational change but also acts as a transformative catalyst for the organisation's capacity to deal with uncertainties and maintain competitiveness over a longer term. Hence, these three areas require proper analysis and attention. Therefore, we hypothesise the following as H_3 and H_4:

H_3 - There is a significant positive impact of DT on OR in the IT sector.

H_4 - DT mediates the relationship between IC and OR in the IT sector.

Methods

The study employed a quantitative research design using cross-sectional primary data. A purposive sampling technique was adopted for the target population of managerial and above-level employees in Sri Lankan IT companies. This sampling technique is specifically adopted to select participants who are directly involved or possess knowledge of business processes and digital technologies within their organisations. A list of IT organisations was formed using the

Sri Lankan Export Development Board website (EDB, 2025). The sample size of the study was determined using the 10 times rule (Hair et al., 2022). Then, an online questionnaire with a five-point Likert scale was distributed to 328 managerial-level and above employees in those organisations, collecting 296 responses for the data analysis, with a 90.24% response rate. Following data cleaning and alignment with the sample criteria, the final count of data that satisfied the requirements was 281.

The study employed Partial Least Squares Structural Equation Modelling (PLS-SEM) to analyse the collected data, using SmartPLS version 4.1.0.9 software for initial model assessment. PLS-SEM is suitable when research is associated with latent and complex variables due to its ability to handle complex models (Hair et al., 2022), out of which the "DT" is a latent variable. Moreover, PLS-SEM is useful when evaluating the theoretical framework from a predictive perspective, which allows the generalisation of the proposed framework to a real-world context. Also, PLS-SEM shows robustness in handling small to medium sample sizes and non-normal data distributions to provide accurate results (Hair et al., 2022). Both the measurement and the structural model are assessed to ensure the reliability and validity of the constructs and to examine the hypothesised relationships between the variables.

Results and Discussion

Demographic Profile

Table 01: Demographic Distribution

Variable	Item	Frequency	Percentage
Gender	Male	209	74.4%
	Female	72	25.6%
Age	24-34 years	108	38.4%
	35-44 years	139	49.5%
	45-54 years	29	10.3%
	55-64 years	5	1.8%

Source: Based on survey data collected by the authors

Among the 281 participants, 74.4% of the respondents are "Male," while only 25.6% of the respondents are "Female", showcasing an unequal distribution ratio of 3:1 (Male vs. Female). The highest number of responses (49.5%) was reported in the age range of 35-44 years, and the second highest (38.4%) is in the 24-34 years age range, indicating a younger population.

Measurement Model Assessment

The measurement model represents the relationship between the indicators and their corresponding variable.

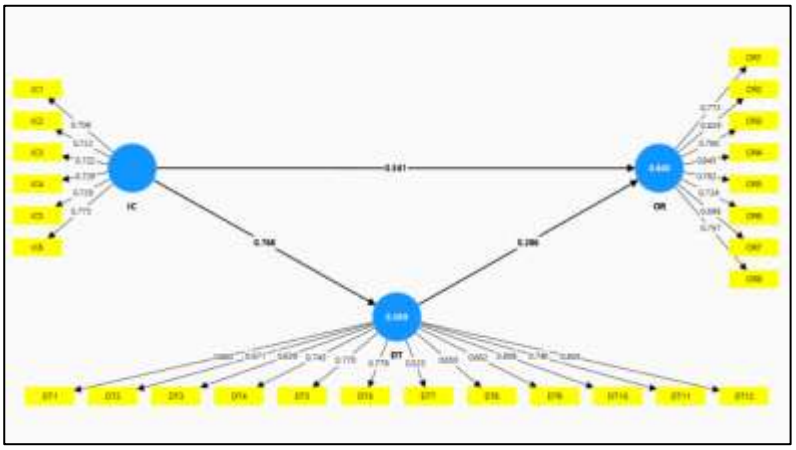

Figure 01: Measurement Model

Outer loadings of items should be above the threshold of 0.708 to confirm the indicator's reliability (Hair et al., 2022). Hence, it can be interpreted that most of the indicators surpass the minimum threshold. Some loadings are less than 0.708 but can still be used for analysis, as they correspond to theoretically valid indicators derived from established measuring instruments. The internal consistency reliability of the data set was assessed using Cronbach's Alpha (CA) and Composite Reliability (CR), while validity was measured through convergent and discriminant validity. All the variables in the study have obtained CA and CR values higher than 0.7, indicating that they are in the satisfactory to good range of internal consistency reliability (Hair et al., 2022). The convergent validity of the model is assessed using Average Variance Extracted (AVE) values. Since all AVE values are greater than the threshold of 0.5, the measurement model has achieved the convergent validity (Hair et al., 2022).

Table 02: Measurement Model Assessment

Variable	Indicator	Outer Loadings	Cronbach's Alpha	Composite Reliability	AVE
IC	IC1	0.706	0.825	0.873	0.534
	IC2	0.722			
	IC3	0.722			
	IC4	0.729			
	IC5	0.729			
	IC6	0.775			
DT	DT1	0.663	0.908	0.923	0.503
	DT2	0.671			
	DT3	0.639			
	DT4	0.743			
	DT5	0.77			
	DT6	0.779			

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	DT7	0.523			
	DT8	0.65			
	DT9	0.662			
	DT10	0.808			
	DT11	0.74			
	DT12	0.805			
OR	OR1	0.724	0.903	0.922	0.598
	OR2	0.698			
	OR3	0.757			
	OR4	0.772			
	OR5	0.829			
	OR6	0.768			
	OR7	0.845			
	OR8	0.782			

Source: Based on survey data collected by the authors

The Heterotrait-Monotrait (HTMT) ratio of the correlations is used to assess the discriminant validity of the measuring instrument. Since all HTMT values are less than 0.9, it can be considered that the discriminant validity of the measurement model has been established (Hair et al., 2022).

Table 03: Discriminant Validity – HTMT ratio Matrix

	DT	IC	OR
DT			
IC	0.885		
OR	0.785	0.896	

Source: Based on survey data collected by the authors

Structural Model Assessment

The structural model explains the relationships among the variables in the study. The analysis was conducted at a 5% significance level, where a hypothesis was rejected if its p-value was greater than 0.05 (insignificant) or if its t-statistic was below 1.96.

Table 04: Hypothesis Testing

Hypothesis	Relationship	Path Coef.	T statistics	P-value	Decision
H_1	IC → OR	+0.561	9.548	0.000	Supported
H_2	IC → DT	+0.768	25.369	0.000	Supported
H_3	DT → OR	+0.286	4.683	0.000	Supported
H_4	IC → DT → OR	+0.219	4.432	0.000	Supported

Source: Based on survey data collected by the authors

H_1 evaluates whether the IC has a significant and positive effect on the OR in the IT sector. The results indicate that IC has a significant positive impact on OR (H_1: $\beta = +0.561$, $t = 9.548$, $p < 0.05$). Hence, H_1 is supported. H_2 evaluates whether IC has a significant and positive effect on

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DT in the IT sector. The results indicate that IC has a significant positive impact on DT (H_2: $\beta = +0.768$, $t = 25.369$, $p < 0.05$). Hence, H_2 is supported. H_3 evaluates whether DT has a significant and positive effect on the OR in the IT sector. The results indicate that DT has a significant and positive impact on the OR (H_3: $\beta = +0.286$, $t = 4.683$, $p < 0.05$). Hence, H_3 is also supported.

Mediation analysis was conducted to assess the mediating role of DT in the relationship between IC and OR. The findings revealed a significant indirect effect of IC on OR through DT (H_4: $\beta = +0.219$, $t = 4.432$, $p < 0.05$). Furthermore, the direct effect of IC on OR is also significant (H_1: $\beta = +0.561$, $t = 9.548$, $p < 0.05$), and both the direct and indirect effect of IC on OR are point in the same direction (positive), These results suggest complementary partial mediation of DT in the relationship between IC and OR. Hence, H_4 is supported.

Discussion

These findings indicate that IT organisations with stronger ICs demonstrate higher levels of resilience when facing disruptions and challenges. This relationship aligns with the understanding that innovation-oriented organisations tend to cultivate adaptive capabilities, enabling them to respond effectively to environmental changes. When organisations foster a culture that encourages experimentation, risk-taking, and creative problem-solving, they naturally develop the flexibility and adaptability that form the foundation of OR (Campagna & Bhada, 2024). The results suggest that IC acts as a strong catalyst for DT initiatives within IT organisations. Organisations with cultures that prioritise innovation are more likely to embrace new digital technologies, implement digital solutions, and transform their business processes through digitalisation (Campagna & Bhada, 2024). The strong correlation demonstrates that creating an environment that values experimentation and continuous learning is crucial for successful DT journeys (Yaroslava et al., 2024).

The study also confirmed that DT alone does not fully explain variations in OR. Organisations that have progressed further in their DT journey tend to show greater OR in the face of disruptions (Reis & Melão, 2023). Digital technologies enable organisations to develop more flexible operations, enhance situational awareness, and respond more effectively to changes in their business environment (Yaroslava et al., 2024). The complementary partial mediation suggests that IC enhances OR both directly and indirectly through enabling DT. The partial nature of this mediation indicates that while DT is an important mechanism through which IC influences OR, other mechanisms likely exist as well (Campagna & Bhada, 2024; Reis & Melão, 2023).

Conclusion

This research provides empirical evidence supporting the important role that IC plays in facilitating DT and enhancing OR in the IT sector. The findings highlight the dual pathway

ISBN: 978-624-5553-76-1

through which IC influences OR both directly and indirectly through DT. Its focus on the Sri Lankan IT sector fills a significant gap in the literature by providing both theoretical advancements and practical recommendations for industry leaders operating in dynamic, technology-driven settings. For organisations seeking to thrive in an increasingly volatile business environment, cultivating an IC represents a strategic imperative that can simultaneously drive DT initiatives and build OR capabilities.

The study holds significant implications for both academics and practitioners. The study contributes to the theoretical understanding of the interrelationships between IC, DT, and OR. By empirically validating the mediating role of DT, the research advances understanding of the mechanisms through which IC enhances OR. The findings extend existing theoretical frameworks by highlighting the complementary nature of direct and indirect effects of IC on OR capabilities. Cultivating an IC should be prioritised as a strategic initiative, as it contributes both directly to OR and indirectly through enabling DT. DT initiatives should be approached not merely as technological implementations but as strategic enablers of OR. IT leaders in Sri Lanka should focus on building innovation capabilities at all organisational levels to create a foundation for both successful DT and enhanced OR.

The cross-sectional nature of the data limits the establishment of causal relationships with certainty. Additionally, the sample was limited to the IT sector in Sri Lanka, which may limit the generalizability of the findings to other sectors or geographical contexts. Future research could explore other sectors, such as healthcare, telecommunications, and finance, to assess the broader applicability of the identified associations. In addition to DT, future research may also consider mediators like sustainability, managerial approach, change management, and employee engagement. Additionally, comparative studies across regions are recommended to evaluate the global relevance of the model and identify context-specific differences in approaches to IC, DT, and OR.

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ISBN: 978-624-5553-76-1

ISBN: 978-624-5553-76-1

Through the Lens of Practice: Exploring Cloud ERP Hurdles in Sri Lanka's Manufacturing Sector

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Abstract

This research investigates the difficulties experienced in implementing Cloud-Based Enterprise Resource Planning (ERP) in the manufacturing industry of Sri Lanka. While more businesses are embracing the future-proof benefits of cloud ERPs that are scalable and flexible for SaaS, as well as cost-efficient with greater data accessibility, many organizations find migrating away from traditional on-premises ERP systems daunting. The research is qualitative, and the primary data is collected from semi-structured interviews with four informants - IT managers, project managers, ERP consultants and business analysts of large organizations in the manufacturing sector. Interview data were subjected to thematic analyses, identifying four key themes: challenges concerning transition, implementation effects, differences in adoption practices, and performance effects. Technical issues, including the integration with legacy systems, data migration and security, were commonly mentioned. Other primary barriers were organizational resistance, inadequate training, and disruption in operations. Finally, the study demonstrates that firm size and resource availability significantly impact adoption strategies, as larger companies tend to have more formal and staged approaches to adoption. The results suggest that the decision-making processes within the organization have changed for the better, along with data visibility and operational effectiveness improvements. This study analyzes the previously researched information and tries to fill the gap by focusing on the specific socio-economic context of a developing country. It also puts forth suggestions for ERP system insiders that include the involvement of stakeholders as early as possible during the project's life cycle, proper project planning in terms of scope, and adequate funding for changing management tasks. This research will be helpful for professionals and policymakers working to improve the effectiveness of ERP systems in developing countries.

Keywords: *Cloud-Based ERP, Manufacturing Sector, Implementation Challenges, ERP Adoption*

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ISBN: 978-624-5553-76-1

Introduction

ERP systems, which combine all essential corporate operations into a single platform, including finance, human resources, procurement, inventory, and manufacturing, have revolutionized how businesses operate. ERP systems, which were formerly hosted on-premises, are now shifting to cloud-based solutions because they provide scalability, real-time data sharing, increased accessibility, and lower IT infrastructure expenses. Cloud ERP is particularly appealing to modern organizations because of these advantages, which help them remain competitive in rapidly evolving industries. The shift to cloud ERP has been accelerating globally. Still, emerging nations face more obstacles in adopting and deploying such systems due to wide variations in worker capabilities, infrastructure, and digital preparedness. The transition from traditional ERP systems to cloud-based solutions for Sri Lankan manufacturing companies, a sector that substantially contributes to the country's GDP and employment, involves intricate technological connections, change management, cost, and employee adaptation. Although there is growing interest in digital transformation in the region, there is limited research on the barriers and success factors of cloud ERP implementation in the Sri Lankan manufacturing sector. Lack of local knowledge can lead to implementation failures, resource wastage and missed opportunities for process improvement. This study aims to fill this gap by exploring the real-life experiences of stakeholders involved in cloud ERP implementation in large-scale manufacturing companies in Sri Lanka. Using a thematic analysis approach, the research will uncover cloud ERP systems' challenges, impacts, adoption strategies, and performance outcomes. The findings will be helpful for practitioners, ERP vendors, and policymakers in supporting more effective and sustainable ERP transitions in similar contexts.

Cloud-based ERP systems have become game-changers with flexibility, scalability, real-time access, and cost savings over conventional on-premises ERP solutions. Research from throughout the world shows how cloud ERP can promote competitive advantage, improve agility, and facilitate digital transformation (Gangwar, Date & Ramaswamy, 2015). Despite these acknowledged advantages, cloud-based ERP systems are still not widely used in Sri Lanka's manufacturing sector. This discrepancy brings up a crucial point: Why is the shift to cloud ERP taking longer than expected in an environment where these technologies may be able to solve persistent operational inefficiencies?

ERP adoption is influenced by both internal and external factors, according to theoretical viewpoints on technology adoption, including institutional theory and the Technology-Organization-Environment (TOE) paradigm (Gangwar et al, 2015). The majority of the research now in publication, however, concentrates on industrialized nations with strong IT ecosystems and makes assumptions about the level of digital readiness and change management maturity that might not apply to developing countries like Sri Lanka (Oliveira,

Thomas & Espadanal, 2014). This discrepancy suggests a more profound theoretical conflict between the specific realities of infrastructure, culture, and institutional restraints and international best practices in ERP deployment. Thus, a deeper comprehension of how these global-local conflicts appear in Sri Lanka's manufacturing sector and the factors that facilitate or impede effective cloud ERP integration are required.

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Most empirical research on ERP adoption focuses on industrialized nations, where institutional support and digital maturity allow for more seamless transitions. Because structural and contextual restrictions differ greatly in emerging countries like Sri Lanka, the lessons derived from these studies might not apply. Although there are some local studies, they frequently adopt a broad perspective and fall short of a thorough grasp of the particular obstacles, stakeholder viewpoints, and strategic concerns faced by the manufacturing sector. This study fills the empirical gap by performing a qualitative investigation on cloud ERP usage among Sri Lankan manufacturers. This study identifies context-specific obstacles, facilitators, and decision-making procedures through in-depth interviews with critical stakeholders, such as IT managers, operational personnel, and implementation consultants. The findings will advance theory and practice by providing solid insights into how cloud ERP systems can be implemented successfully in limited situations.

Literature Review

Cloud-based enterprise Resource Planning (ERP) systems represent a significant shift from traditional on-premises ERP models. They offer numerous advantages, such as scalability, cost efficiency, remote accessibility, and reduced hardware dependency, making them especially attractive for organizations aiming to modernize their IT infrastructure (Abd Elmonem et al., 2016). These systems allow firms to streamline business processes across departments by utilizing a centralized platform hosted on the cloud, reducing the need for in-house server maintenance and IT support. The flexibility and real-time access that cloud ERP platforms offer are often cited as key drivers behind their increasing adoption.

However, transitioning from legacy ERP systems to cloud-based platforms presents substantial challenges. Technical complexities, such as integration with existing systems, data migration, and security concerns, are commonly reported across various industries and regions (Ahn & Ahn, 2020). Organizational barriers such as employee resistance to change, lack of proper training, and weak change management practices continue to hinder successful ERP implementation (Gupta et al., 2004). These issues delay implementation and can reduce system effectiveness if not adequately addressed. Within Small and Medium-Sized Enterprises (SMEs), Lewandowski et al. (2013) found that financial limitations and inadequate IT infrastructure make it difficult for smaller firms to benefit from cloud ERP systems fully. They also emphasized the importance of organizational readiness, including leadership support and IT capability, in determining adoption success. Moreover, Elragal and Al-Serafi (2011) highlighted that while ERP implementation typically leads to improved operational efficiency and strategic alignment, organizations must first overcome a steep learning curve and potential disruptions to ongoing operations during the transition.

Despite this growing body of literature, most existing studies focus on ERP adoption in developed economies, with relatively little empirical attention on emerging markets like Sri Lanka. Developing countries often face unique challenges, such as limited access to skilled personnel, inconsistent internet connectivity, and cultural resistance to digital transformation, which can significantly alter the implementation landscape. Wickramasinghe and Karunasekara (2010) further argued that top management support and effective vendor collaboration are crucial for overcoming adoption barriers in Sri Lankan firms.

Despite its economic significance, the understudied field of ERP stakeholders' experiences in Sri Lankan manufacturing enterprises will be examined to close the gap. By doing this, the study will validate and expand on findings from around the world and offer localized insights that will be helpful in building ERP adoption strategies in Sri Lanka and other developing nations. Ultimately, this study will contribute to the body of knowledge by offering helpful advice for ERP consultants, vendors, and legislators. It will also bolster the claim that effective cloud ERP adoption requires the management of a strategic and cultural shift in addition to a technical one.

In academic literature, the deployment of cloud-based ERP systems has generated continuous discussions, especially concerning the applicability of adoption models in various socioeconomic circumstances. Many popular frameworks, including the Technology Acceptance Model (TAM) and the Technology-Organization-Environment (TOE) framework, were created and validated primarily in industrialized nations with developed digital infrastructures (Oliveira et al., 2014; Gangwar et al., 2015). These models frequently presume a high level of organizational maturity and technology preparedness. This may not be the case in poor nations like Sri Lanka, where adoption outcomes are greatly impacted by cultural

opposition and infrastructure limitations. The difference between organizational preparedness and technical feasibility is another topic of discussion. However, cloud ERP solutions are technically feasible; their successful deployment may be hampered by organizational opposition, a lack of change leadership, and a staff shortage (AlBar & Hoque, 2019). Furthermore, studies from emerging economies are increasingly highlighting the risks associated with data security, vendor dependency, and control over IT assets, even though cloud ERP is marketed for its cost-effectiveness and scalability, especially for small- and medium-sized enterprises (SMEs) (Hofmann et al., 2020). The last level of discussion concerns whether ERP systems should be viewed as strategic facilitators of digital transformation or as operational tools alone, a distinction frequently muddled in developing environments (Gupta et al., 2018). This study adds empirical insights highlighting the need for more context-sensitive frameworks and implementation strategies suited to resource-constrained environments by examining these issues through the lens of practice in Sri Lanka's manufacturing sector.

Technology-Organization-Environment (TOE) Framework

In recent years, the use of cloud ERP in manufacturing sectors, especially in developing nations like Sri Lanka, has drawn more scholarly attention. Nonetheless, literature frequently addresses adoption difficulties in a disjointed way. The Technology-Organization-Environment (TOE) framework (Tornatzky & Fleischer, 1990) is the foundation for this review, giving it a logical structure and enhancing comprehension of these obstacles. According to the TOE framework, three contextual dimensions, technological, organizational, and environmental, impact an organization's decision to adopt new technologies.

In the context of technology, earlier research has focused on problems such as perceived data risk in cloud environments, lack of personalization, and system complexity (Ali et al., 2022; Gangwar et al., 2015). These technical issues frequently discourage manufacturing companies from switching from on-premises to cloud-based ERP systems. The organizational context includes internal opposition to change, digital preparedness, and support from upper management. According to studies, many manufacturing SMEs in Sri Lanka lack the leadership commitment and IT skills necessary for a successful Cloud ERP installation (Premkumar, 2003; Jayasinghe & Wickramasuriya, 2021). The environmental setting encompasses industry competition, vendor support, and regulatory pressures. Additional obstacles are created in underdeveloped nations by the unsteady policy climate and dearth of cloud infrastructure (Alshamaila et al., 2013; Low et al., 2011). These difficulties are made worse by the lack of local vendor knowledge regarding Cloud ERP solutions.

This study systematically explains the complex and interconnected issues facing Sri Lanka's manufacturing industry by interpreting the review through the TOE lens. Thanks to this

theoretical lens, our investigation aligns with accepted theoretical models, which also enables us to place our findings within a larger scholarly discussion on technology adoption.

Methods

The complex and situation-specific difficulties of deploying cloud-based ERP systems in Sri Lanka's manufacturing sector were examined in this study using a qualitative research design. The greatest way to thoroughly examine lived experiences and comprehend people's complex perceptions and interpretations in practical implementation scenarios is through qualitative approaches. This study's philosophical perspective is interpretive and constructivist, acknowledging that reality is socially produced and comprehended through participants' meanings and interactions. While the epistemological perspective stresses co-constructing knowledge through the researcher's contact with participants, the ontological approach recognizes different realities formed by individual and organizational factors. The qualitative technique made it possible to gather rich descriptive data for this exploratory study, which gave researchers a comprehensive understanding of the obstacles, procedures, and results of cloud ERP adoption.

A purposive sampling technique was used to select individuals with direct experience and expertise in ERP implementation. Selected four professionals from major manufacturing companies in Sri Lanka, each playing a crucial role in their organization's ERP transformation journey. The group included a Project Manager, an IT Manager, an ERP Consultant, and a Business Analyst. Choose these roles to capture various insights, covering technical, managerial, consultative, and analytical viewpoints on ERP implementation. To gather data, we conducted semi-structured virtual interviews, which allowed us to dive into specific themes while allowing participants to discuss what mattered most to them. This method fostered a conversational environment that encouraged openness, depth, and reflection. Interview questions focused on participants' experiences with system integration, organizational change management, project timelines, training practices, stakeholder engagement, and the perceived impacts on performance.

Although this study involved a small sample size (n = 4), data saturation was considered to have been achieved. Each participant, Project Manager, IT Manager, ERP Consultant, and Business Analyst, was selected purposively to represent key stakeholder roles directly involved in cloud-based ERP implementation in large Sri Lankan manufacturing firms. These roles provided diverse yet complementary insights. Data collection showed that the core themes began to repeat across the interviews, with no new significant insights emerging by the fourth interview. This indicates that saturation had occurred, where additional interviews were unlikely to produce new thematic information.

The concept of data saturation, as discussed by Guest, Bunce, and Johnson (2006), supports the idea that in focused, homogenous studies, saturation can be reached with a relatively small number of interviews sometimes as few as 4-6 participants if the data collected is rich and the research question is narrowly defined. Given the specificity of the research focus (cloud ERP implementation in manufacturing) and the depth of experience of the participants, the data collected was sufficient to identify key patterns, allowing for meaningful thematic analysis. The study also employed triangulation through participant diversity to enhance the credibility and completeness of the findings.

Thematic analysis, a methodical and adaptable technique for finding, examining, and summarizing patterns (themes) within qualitative data, was used to examine the data after it was gathered (Braun & Clarke, 2006). The researcher started with data familiarization, then moved on to initial coding, theme development, theme review, theme naming, and reporting under Braun and Clarke's six-phase procedure. Instead of drawing from any pre-existing theoretical framework, the themes were allowed to arise from the data through an inductive reasoning approach. Despite the relatively small sample size (n = 4), thematic sufficiency was attained since, following the third interview, no new codes or themes surfaced, indicating that data saturation had been reached. The synthesis of participant viewpoints through this analytical method allowed for significant insights into similar and dissimilar experiences. A thematic study shed light on the social and cultural factors influencing ERP migrations in Sri Lankan manufacturing companies and capturing technical and operational difficulties. To lessen researcher bias, the coding process was carried out instinctively, with continuous memo drafting and the preservation of an unambiguous audit trail. Additionally, member checking was used, in which participants were given topic summaries to confirm their interpretations. Triangulation was also used to increase the results' legitimacy and dependability by contrasting interview results with pertinent corporate records and publicly accessible organizational data. This thorough analytical process contributed to developing a contextually aware and grounded understanding of the difficulties, which informed practical suggestions for future research and practice.

This study employed member checking, which involved discussing important themes with participants for validation in order to assure trustworthiness. In order to cross-validate findings, triangulation was accomplished using insights obtained from various stakeholder roles, including project manager, IT manager, ERP consultant, and business analyst. By adhering to a systematic thematic analysis procedure and keeping an audit trail of coding choices, researcher bias was reduced. These procedures ensured the results were reliable and based on the participants' opinions.

Data Analysis

Demographic Profile

Table 01: Demographic Profile of Respondents

Participant Role	Years of Experience	Company Type
Project Manager	6	Large Manufacturing
IT Manager	4	Large Manufacturing
Erp Consultant	3	ERP Vendor Firm
Business Analyst	3	Manufacturing Consultant

Source: Authors compiled based on the interviews conducted

Thematic Analysis Overview

Transition Challenges, Impact on Implementation, Adoption Variations, and Performance Changes were the primary themes identified from the interview data analysis. Employee opposition, delays to everyday operations, and technological challenges encountered when integrating cloud ERP solutions with older systems were all included in the transition challenges. These challenges are consistent with findings by Abd Elmonem et al. (2016), who emphasized that data migration and change resistance are common barriers to successful ERP implementation. Impact on Implementation looked at issues such as timeline delays and cost overruns, often resulting from unexpected technical complications and weak management practices. This observation aligns with Gupta et al. (2004), who noted that inadequate preparation can significantly hinder the success of an ERP initiative. Adoption Variations investigated how an organization's size and preparedness affected how it adopted ERP technology. While smaller enterprises tended to rely more heavily on outside contractors for support, larger firms typically chose phased techniques that harnessed in-house expertise. This finding corresponds with the work of Lewandowski et al. (2013), highlighting the critical role of organizational readiness and available resources in the adoption process.

An IT manager described the transition as “stressful due to incompatible data and staff resistance,” while an ERP consultant admitted “we underestimated the need for change management, which delayed the entire process.” A project manager emphasized that “our internal IT capacity helped us roll out the system more smoothly, although initial data migration took longer than expected.” A business analyst observed that “real-time data access has significantly improved our decision-making speed and accuracy,” adding that “after full adoption, we saw a noticeable improvement in process coordination across departments.”

Finally, Performance Changes demonstrated that despite a brief decline in productivity during the shift to cloud ERP systems, businesses eventually gained from better data access, more effective decision-making, and increased operational efficiency in the post-implementation

stage. These outcomes are consistent with the conclusions drawn by Elragal & Al-Serafi (2011), reinforcing the idea that initial challenges can lead to significant long-term gains.

Results and Discussion

The findings of this study highlight that the transition from on-premises ERP systems to cloud ERP systems is a complex and challenging process, especially in the Sri Lankan manufacturing sector. Based on thematic analysis of qualitative data from key stakeholders, including project managers, IT managers, ERP consultants, and business analysts, four general themes emerged: Transition Challenges, Impact on Implementation, Adoption Variations, and Performance Changes.

First, it was discovered that the firm's technological preparedness significantly influenced transition difficulties. Many businesses encountered problems integrating legacy apps, data migration issues, and security concerns, especially when storing sensitive company information in distant cloud environments. These challenges align with the findings of Abd Elmonem et al. (2016) and Ahn & Ahn (2020), who identified similar technical and organizational barriers in ERP transitions worldwide. Implementation is made more difficult by the additional insights this study offers that are unique to Sri Lanka, such as the lack of qualified cloud ERP specialists in the country. Secondly, the impact on execution was evident through the reallocation of resources, unanticipated costs, and delayed schedules. Stakeholders cited insufficient planning and underestimating the change management requirements as the leading causes of employee resistance and poor system adoption. These observations echo the conclusions of Gupta et al. (2004) but also highlight the need for more proactive stakeholder involvement and better training mechanisms in the Sri Lankan context.

The third theme, adoption variations, was particularly noteworthy. Larger firms with well-established IT departments and financial resources adopted structured and phased implementation approaches, which minimized disruptions. In contrast, smaller firms often rely on third-party vendors and experience fragmented adoption, longer timelines, and inconsistent system usage. This supports Lewandowski et al. (2013), who argued that organizational size and readiness significantly impact ERP adoption success. This study also highlights the difficulties that even larger businesses face because of the infrastructure gaps and lack of local vendor support typical in developing nations. After complete implementation, most firms saw increases in data accessibility, decision-making speed, and operational efficiency, despite temporary productivity declines, according to the theme of performance changes. According to business experts, real-time data visibility increased by 30%, allowing for quicker and better-informed decision-making. These findings align with Elragal & Al-Serafi (2011) but expand on their work by showing how cultural factors, training adequacy, and employee adaptability directly affect the speed at which such benefits are realized.

The study found that transitioning from traditional to Cloud-Based ERP systems in Sri Lanka's manufacturing sector involves significant challenges, including technical integration, employee resistance, and operational disruptions. As one project manager stated,

"*Migrating legacy systems was not just about data; it was about rethinking the entire workflow.*"

This supports Abd Elmonem et al. (2016), revealing unique regional technical readiness limitations. Resistance to change was echoed by an ERP consultant who noted,

"*Some staff feared the system would replace their roles.*"

This deepens existing literature by highlighting cultural factors that intensify resistance. Interestingly, even large firms struggled due to a lack of local expertise, as an IT manager remarked,

"*Despite our budget, we had to rely entirely on foreign consultants.*"

This challenges the assumption that financial resources alone ensure smooth adoption. On performance outcomes, a business analyst observed,

"*We now make decisions in real-time—we no longer wait for reports.*"

While these improvements align with Elragal & Al-Serafi (2011), the findings also emphasize that contextual planning and stakeholder engagement are crucial for success. By integrating empirical evidence and interpretation, this section avoids repetition, enhances theoretical relevance, and reflects on unexpected dynamics uncovered during the study.

This study confirms many of the well-known ERP transition issues compared to the international literature, but it also offers contextual details specific to developing countries like Sri Lanka. Issues including conservative business cultures, internet stability, and limited cloud infrastructure exacerbated traditional ERP obstacles. Therefore, even if cloud ERP has clear strategic and technical advantages, localized strategies, stakeholder alignment, and human capital investment are crucial for effective deployment in Sri Lanka.

Conclusion

According to the study's findings, cloud-based ERP systems have a lot of potential to revolutionize operations in Sri Lanka's manufacturing sector but putting them into practice successfully is not easy. From data transfer problems and legacy system compatibility to employee opposition and talent shortages, the study identified some organizational, operational, and technical obstacles that impact the ERP change process. Notwithstanding these difficulties, the study also shows that, when properly handled, cloud ERP improves operational effectiveness, data accessibility, and strategic decision-making in quantifiable ways. Key stakeholders mentioned improved cross-departmental integration, more flexible business responses, and increased real-time visibility into operations. However, deliberate planning and contextual adaptation are necessary to realize these advantages. The study highlights the significance of creating customized implementation plans that consider Sri

Lankan businesses' unique resource limitations and technical preparedness. In order to lessen opposition and increase user familiarity with the system, stakeholder training and change management have become essential facilitators. Additionally, a phased deployment strategy, like those used by larger companies, can lessen operational disruptions and permit departmental adaptability over time. Ultimately, this work advances scholarly knowledge and real-world application by illuminating the distinct ERP deployment environment in a developing economy. It emphasizes that cloud ERP systems are not a one-size-fits-all solution and that an organization's ability to handle the socio-technical and contextual difficulties involved in the transformation process significantly impacts how effective the system is. The research emphasizes the importance of developing tailored implementation strategies that suit Sri Lankan firms' specific resource constraints and technological readiness. Stakeholder training and change management emerged as critical enablers in reducing resistance and building user system familiarity. Moreover, a phased deployment approach can help mitigate operational disruptions and allow gradual adaptation across departments, as practised by larger firms. Ultimately, this study contributes to both academic understanding and practical application by shedding light on the unique ERP implementation landscape in a developing economy. It underscores that cloud ERP systems are not a one-size-fits-all solution, and their effectiveness depends greatly on how well organizations address the socio-technical and contextual complexities involved in the transformation process.

This study contributes to the existing body of knowledge by extending socio-technical systems theory and change management frameworks in the context of cloud-based ERP implementation within developing economies, specifically Sri Lanka's manufacturing sector. It adapts these theories by emphasizing the critical role of contextual factors such as resource constraints, legacy system challenges, and cultural resistance unique to emerging markets, thus enriching the theoretical understanding of ERP adoption beyond traditional developed-world settings. However, the study has several limitations. The sample size was relatively small and focused primarily on large manufacturing firms in Sri Lanka, which may limit the generalizability of the findings to other industries, smaller firms, or different geographical contexts. Additionally, while providing rich insights, the qualitative approach may be complemented by quantitative studies for broader validation. Future research could explore comparative studies across different sectors or countries to assess how varying economic and cultural environments influence cloud ERP implementation. Moreover, further theoretical development could investigate integrating emerging technologies such as artificial intelligence with cloud ERP systems and their impact on organizational change dynamics. Finally, longitudinal studies would be valuable to understand the long-term effects of phased ERP deployment strategies and change management practices in similar developing economies.

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ISBN: 978-624-5553-76-1

Barriers to Big Data Analytics Adoption in Supply Chain Operations: Evidence from Sri Lankan Manufacturing Sector

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Abstract

The rise in technology in the various sectors of the industry has caught the attention of organizations. Among the numerous developments, big data (BD) has also become a great field of study. Despite the increasing global emphasis on big data analytics (BDA) in optimizing supply chain operations, there remains a significant gap in understanding the specific barriers to its adoption in developing economies, particularly in Sri Lanka. While previous research has emphasized the performance benefits of BDA, limited empirical work addresses the challenges that hinder its implementation. This study addresses that gap by empirically investigating the technological, organizational, and environmental barriers to BDA adoption in the Sri Lankan manufacturing sector. This study follows a quantitative approach to explore the barriers and adoption level of BDA in supply chain operations within the manufacturing sector in Sri Lanka. Using the Technology–Organization–Environment (TOE) framework and an ordered probit regression model, we analyze data from 164 supply chain professionals across multiple Sri Lankan manufacturing sector sub-sectors. According to the findings of this study, the hypotheses, data quality, technological infrastructure, data security, organizational culture, financial constraints, talent management, regulatory support, and competitive pressure have been accepted. Theoretically, this research extends the TOE framework by validating its applicability in an underexplored context. It provides actionable insights for policymakers and practitioners aiming to foster data-driven transformation in emerging markets.

Keywords: Adoption, Big Data Analytics, Barriers, Manufacturing, Supply Chain

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ISBN: 978-624-5553-76-1

Introduction

Big data analytics (BDA) in businesses is an emerging phenomenon which is also attracting the attention of innovation, operations management and strategy (Patrucco et al., 2023). Supply chain management (SCM) generates a large amount of data from processes like demand forecasting, production planning, inventory management and procurement. In this process, BDA is an important tool for analysing, predicting, optimizing the operations and overall making real-time decisions. In Sri Lanka, the manufacturing industry provided 17.9% of the country's GDP at the current market values (Department of Census and Statistics, 2023). The manufacturing sector is important in encouraging industrial growth in the current economic condition. Given this, the manufacturing sector must leverage the full capacity of data. The leverage of data can be gained with BDA, as it is known as a tool that converts raw data into valuable insights, gaining a competitive advantage (Gunasekaran et al., 2017). According to the research done by Dubey et al. (2020). Businesses can utilize BDA to make real-time decisions to save costs, optimize resources, and analyse customer preferences to develop new products and services. As a result, organizations and managers prioritize decisions made based on data over individual perspectives (Babu et al., 2024). Despite the critical significance of BDA, adopting data tools for BDA is in its early stages in Sri Lanka, as studies provide supporting evidence. Studies found that Sri Lankan companies exhibit a low readiness to adopt BDA, and they often fail to leverage BDA enablers for value creation fully (Lasanthika & Wickramasinghe, 2020; Weerasinghe & Jayamaha, 2022). The integration of BDA is hindered by organizational, technological and environmental barriers. Although the researchers have focused on the benefits of using BDA in the supply chain within the manufacturing sector (Mikalef & Krogstie, 2020; Popovič et al., 2018). A significant gap exists in analyzing the barriers to BDA implementation in the Sri Lankan manufacturing sector. The studies have used the technology-organisation-environment (TOE) framework to address factors affecting the adoption of BDA globally, but the applicability of the TOE framework in the Sri Lankan context remains insufficiently studied. Further, some of the global studies have used structural models, Delphi- based analytic hierarchy process (AHP) approach, multiple regression and the decision-making trial and Evaluation Laboratory (DEMATEL) as analytic methods to analyse the barriers to BDA implementation (Khan, 2019; Lasanthika & Wickramasinghe, 2020; Moktadir et al., 2019; Raut et al., 2021), but the use of ordered probit analyse is underexplored to explore the adoption level of BDA in SCM in Sri Lanka. For a successful BDA implementation, it is crucial to address these gaps to position Sri Lanka's manufacturing sector as a key competitive player in the digital global economy. The main aim of this study is to investigate the impact of key barriers in implementing BDA in SCM and to explore the adoption level of BDA. The main research objectives are as follows.

Objective 1: Identify the key barriers affecting the adoption of Big Data Analytics (BDA) in supply chain operations within the Sri Lankan manufacturing sector.

Objective 2: Apply the Technology-Organisation-Environment (TOE) framework to systematically categorize and analyze the impact of key barriers on BDA adoption in supply chain operations of the Sri Lankan manufacturing sector.

Objective 3: Interpret the empirical results on BDA adoption barriers to offer actionable insights for the Sri Lankan manufacturing industry.

This study offers a meaningful contribution to the theory and practice of BDA in the Sri Lankan manufacturing sector. Theoretically, it explores how the TOE framework's technological, organizational, and environmental factors affect the implementation of BDA in supply chain operations in an emerging economy. This highlights the factors faced by developing countries, which are often understudied. Additionally, the study introduces the need for supportive policy frameworks to encourage new technological innovations.

Literature Review

Technology- Organization- Environment Framework (TOE)

The TOE framework has been incorporated as this study thoroughly investigates the internal and external barriers affecting BDA implementation in SCM within the manufacturing sector. As TOE describes influence on an organisation's innovation initiatives in the context of technology, organization, and environment (Eveland & Tornatzky, 1990). As the study done by Tu, (2018) Stated that the TOE framework provides a wide-ranging perspective on an organisation's elements, rather than one or two elements. Thus, the TOE framework is considered suitable for this study as it provides a comprehensive understanding of barriers to BDA implementation.

Big Data Analytics (BDA)

A collection of a massive volume of data from various sources is known as big data. (Jha et al., 2020). Generally, big data is characterized by the 3Vs. The 3Vs are variety (different types of data), velocity (the speed at which data is generated or delivered), and volume (the size of the data) (Lutfi et al., 2022). The tool that transforms this data into actionable insights is referred to as big data analytics (Ammar et al., 2021). The studies have explored the influence of BDA on the overall performance of the company, especially in increasing the operational and financial performance of the organization (Ammar et al., 2021). However, implementation of BDA is considerably low in Sri Lanka due to several barriers.

Big Data Analytics Adoption

Big Data Analytics adoption has become a critical focus for firms aiming to increase operational efficiency and competitive advantage, particularly within the manufacturing sector. BDA adoption involves integrating advanced analytical tools and techniques to transform vast

volumes of structured and unstructured data into meaningful insights that support strategic and operational decision-making (Maroufkhani et al., 2019). BDA adoption is increasingly recognized as a key enabler for improving production quality, reducing errors, and optimizing costs across diverse sub-sectors (Dehkhodaei et al., 2023). Within supply chain operations, BDA facilitates enhanced visibility, risk mitigation, and inventory management by enabling

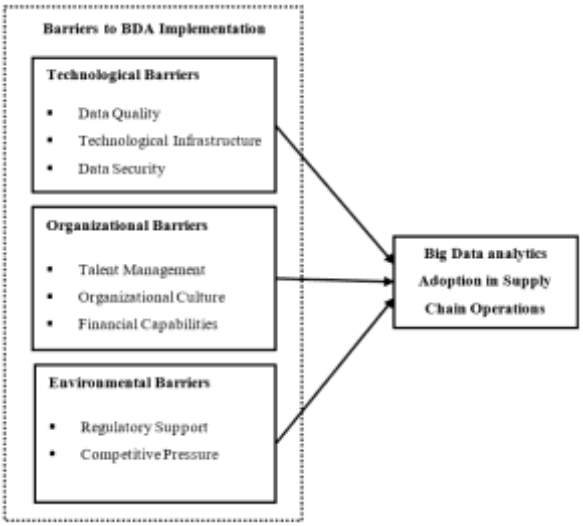

Figure 1: Conceptual framework

organizations to shift from reactive to predictive decision-making models (Koot et al., 2021; Lai et al., 2018). This transition is vital for Sri Lankan manufacturers facing complex and dynamic market demands, highlighting the strategic importance of BDA adoption to drive innovation and operational excellence in the industry.

Source: Author's compilation

Barriers to BDA Implementation

The literature identifies several key barriers to implementing Big Data Analytics (BDA). While most studies agree on the critical impact of data quality on analytics effectiveness (R. Dubey et al., 2020; Kothapalli, 2023)Some emphasize the challenge of managing diverse data types (structured, semi-structured, unstructured), whereas others focus more on trustworthiness and integration issues. (Arunachalam et al., 2018; Ivert & Jonsson, 2014). Similarly, regulatory support is generally recognized as crucial (Hasan et al., 2024; Lai et al., 2018). However there is an inconsistency regarding the extent to which government policies either enable or delay adoption, reflecting contextual differences across regions (Youssef et al., 2022; Zhu & Kraemer, 2005). Financial and organizational barriers, such as lack of talent and cultural resistance, are frequently cited, yet their relative importance varies by industry and firm size.

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(Atapattu et al., 2023; Fredriksson, 2015). Despite the growing body of work, gaps remain in understanding how these barriers interact within developing country contexts like Sri Lanka.

Technological Barriers

Data Quality: Data quality is considered important for accurate and consistent analysis. Due to high volume and variety, maintaining the quality can be a significant barrier. Low-quality data can lead to incorrect conclusions, and identifying the reasons for inconsistency can be difficult (Kothapalli, 2023). The organizations encounter challenges with data quality due to complex data sources, and incomplete and outdated data (Tambuskar et al., 2024). Hence, it impacts the effectiveness of the insights derived from BDA. The findings from the literature emphasize the importance of the quality of data. However, data quality as a barrier to implementing BDA is underexplored.

H1: Data quality has a significant positive impact on BDA adoption in supply chain operations.

Technological Infrastructure: According to Watson (2014), the technological infrastructure is a key barrier while implementing BDA, as it needs high processing capacity, robust storage, and seamless hardware-software integration. For a successful BDA implementation, the ability to adapt and scale IT assets is crucial, which is also known as infrastructure flexibility (Alzboun, 2023). However, the Sri Lankan manufacturing sector might face difficulties due to insufficient investments in modern digitalized technical systems and a shortage of skilled professionals.

H2: Technology infrastructure has a significant positive impact on BDA adoption in supply chain operations.

Data Security: Additionally, protecting data security and privacy is a significant concern. With the increasing dependence on digital information, there is an increased risk of cyberattacks and data breaches (Ramanathan et al., 2014). In addition, security measures for data are not enough, support configurations for resiliency of data from alterations are lacking, and intrusion detection analysis becomes a challenging task, which involves reviewing logs, network flow and systems processes (Sivarajah et al., 2017). The lack of modern infrastructure, which defines data security requirements, can be a significant barrier to BDA implementation.

H3: Data security has a significant positive impact on BDA adoption in supply chain operations.

Organizational Barriers

Talent Management: The successful implementation of BDA requires a workforce proficient in data science, analytics, and domain-specific knowledge. According to Jha et al. (2020), companies in smaller cities face greater difficulties attracting such talent than those in metropolitan areas, where the talent pool is richer. In several studies, talent management or

the lack of skilled personalities in organizations has been a prominent factor for the failure of BDA implementation and has indicated that this barrier should be given attention (Dehkhodaei et al., 2023). This study aims to investigate the impact of talent management on BDA implementation.

H4: Talent management has a significant positive impact on BDA adoption in supply chain operations.

Organisational culture: A strong analytic culture fosters investment in BD resources, tools, and expertise, directly influencing how analytic processes are structured (Holsapple et al., 2014). While decision-makers in established firms recognize the benefits of data-driven changes, they often struggle with long-standing business models, necessitating clear rationales for BDA adoption. (Gust et al., 2017). Companies that cultivate a data-driven culture can significantly enhance performance, whereas resistance to change hampers BDA initiatives. (Dubey et al., 2018). The study explores the impact of organisation culture and its role in successful BDA integration.

H5: Organisational culture has a significant positive impact on BDA adoption in supply chain operations.

Financial Capability: The high costs associated with BDA technologies and infrastructure present a significant barrier, particularly for small and medium enterprises that struggle to invest in essential hardware, software, and training (Arunachalam et al., 2018). While larger companies may successfully allocate resources, smaller firms in developing economies often face financial constraints that hinder BDA adoption. (Atapattu et al., 2023). This study examines how financial capability impacts the adoption of BDA within the Sri Lankan manufacturing sector.

H6: Financial capabilities have a significant positive impact on BDA adoption in supply chain operations.

Environmental Barriers

Regulatory Support: To manage complications such as investment, data security, quality and implementation procedures, support from the government can be perceived as beneficial. According to Hassan et al. (2021), government regulation protects the public interest while supporting technological innovation and improving quality and cost-effectiveness. The importance of government support by providing clear policies, procedures, initiatives, and investments, has been stated by (Raut et al., 2021) emphasizing that it promotes and encourages organizations to embrace new technologies.

H7: Regulatory support has a significant positive impact on BDA adoption in supply chain operations.

Competitive Pressure: Competitive pressure, driven by customers, suppliers, and rivals, plays a pivotal role in the adoption of BDA as organizations strive to maintain a competitive edge (Nedev et al., 2014). Studies indicate that increased BDA adoption by competitors compels businesses to integrate such technologies to sustain market positioning (Lautenbach et al., 2017). Conversely, firms in industries where BDA is not widely used may be less inclined to adopt it, especially if they are risk-averse. This study explores the impact of competitive pressure on successful BDA implementation.

H8: Competitive pressure has a significant positive impact on BDA adoption in supply chain operations.

Methodology

This study investigates the barriers impacting BDA adoption in Sri Lanka, focusing on a population of 2500 manufacturing companies identified in the Department of Census and Statistics and the Ministry of Industries in Sri Lanka in 2023. According to the G*Power analysis program, for a population of 2,500, a sample size of 160 is appropriate (Faul & Lang, 2009). The sample size was determined at a 95% confidence level and a 5% margin of error. The significance level considered in the study was $\alpha = 0.05$. The stratified random sampling ensures that the sample accurately represents the diverse sub-sectors within the manufacturing supply chain industry. To ensure representative sampling across different sub-sectors in the manufacturing industry, the population of 2,500 manufacturing firms is divided into six strata based on the type of manufacturing, such as textile and apparel, food and beverages, electronics, chemical manufacturing, machinery and equipment and other manufacturing. The sample size of 160 firms is proportionally distributed across these strata as presented in Table 1.

Table 1: Sample Overview

Sub-Sector (Industry Type)	Population (S)	Proportion (%)	Sample Size (n)
Textiles and Apparel	850	34%	54
Food and Beverages	600	24%	38
Electronics	400	16%	26
Chemical Manufacturing	300	12%	19
Machinery and Equipment	200	8%	13
Other Manufacturing	150	6%	10
Total	2500	100%	160

The questionnaire comprised 25 questions across six sections: demographics, BDA adoption (dependent variable), and three dimensions: technological barriers, organizational barriers, and environmental barriers. The survey targeted supply chain professionals, managers, and industry with in-depth knowledge of BDA implementation processes. To increase reach and response rates, the survey was distributed via a Google Form link shared with participants via

email and LinkedIn. The collected data was analyzed using STATA, employing an ordered probit regression model to examine the impact of the eight independent variables and BDA adoption. The ordered probit regression model is a statistical technique designed for analysing ordinal dependent variables with more than two outcomes (Aitchison & Silvey, 1957). The Ordered Probit Model is ideal for scenarios where the dependent variable is ordinal, meaning the outcomes are ordered but the intervals between categories remain undetermined. This study divides the adoption level of BDA into three levels: low, moderate, and high, making it appropriate for this model. Unlike linear regression models, which are designed for the outcome's linearity, the ordered probit model protects the ordinal nature of the dependent variable with or without equal intervals between categories, making it more appropriate for real-world scenarios (McKelvey & Zavoina, 1975). Additionally, it is more appropriate than logistic regression, which is designed for binary outcomes. Furthermore, the ordered probit model divides the dependent variable into ordered categories using threshold values. This method allows for estimating the probability of a firm moving from one level of adoption to another, depending on the extent of BDA barriers. These thresholds are crucial for interpreting how changes in independent variables influence the probability of movement across different categories (Wooldridge, 2010).

This study measured the dependent variable, BDA adoption in supply chain operations, based on Likert scale answers. Those responses were categorized into three ordered levels (k=3).

Group 01: Low (y = 1) = Mean value of BDA adoption less than 2.5

Group 02: Moderate (y = 2) = Mean value of BDA adoption greater than or equal to 2.5 and less than 3.5

Group 03: High (y = 3) = Mean value of BDA adoption greater than or equal to 3.5 and less than 5

The general equation of the ordered probit model is structured as follows:

$$y_i^* = x_i'\beta + \varepsilon_i$$

Where y_i is the latent variable, which is significant, for data analytics adoption. x_i is the independent variable, β is the coefficient of the model and ε_i is the error term. Therefore, the ordered probit model equation was constructed as follows in this research.

$$Y\ (BDAA = 0, 1, 2) = x_i(\beta_0 + \beta_1 DQ + \beta_2 TI + \beta_3 DS + \beta_4 TM + \beta_5 OC + \beta_6 FC + \beta_7 RS + \beta_8 CP) + \varepsilon_i$$

Table 2: Operatıonalızatıon Varıables

Type of variable	Variable Name	Indicators	Question Items	Sources
Dependent Variable	BDA Adoption	The intention of BDA Implementation Regular Use of BDA BDA Recommendation	Q1-Q3	Tu, (2018)

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Independent Variables	Data Quality	Data Capture systems Incomplete Data Issues Consistent Data Storage	Q4-Q7	Lai et al. (2018)
	Technology Infrastructure	IT Infrastructure Limitation Software Capacity Hardware Limitation	Q7-Q10	Chen et al. (2015)
	Data Security	Data Security Concerns Access Control Vulnerability Privacy Policy Complexity	Q11-Q14	Janczewski et al. (2016)
	Talent Management	Analytics Capability Gap Skilled Resources Gap Continuous Education	Q15-Q18	Chen et al. (2015)
	Organizational Culture	Learning as an Investment Learning for Survival Management Support	Q19-Q22	Chen et al. (2015)
	Financial Capabilities	Financial Resource Limitation BDA Investment Need	Q23-Q24	Chen et al. (2015)
	Regulatory support	Government Policy Support Business Law Concerns Government Incentives	Q25-Q28	Lai et al. (2018)
	Competitive pressure	Competitor Influence Competitive Pressure Competitor Response	Q29-Q32	Lai et al. (2018)

A pilot test was carried out to determine the reliability and validity of the survey instrument with 35 samples. Cronbach's alpha was employed to establish internal consistency, with an alpha value greater than 0.70 considered reliable. To assess the convergent validity of the pilot study, factor loading and average variance extracted values were employed. All the constructs are considered valid because all the respective AVE values are greater than 0.5, which confirms the convergent validity. The Fornell-Larcker Criterion was utilized in examining the Discriminant validity of the pilot test, with all correlation coefficients being less than the square root of AVE of the constructs, which proves that the questionnaire satisfies the discriminant validity of the pilot test.

Results and Discussion

The descriptive statistics of the variables provided in Table 3 Define the distribution and variation of dependent and independent variables among the sample organizations, which were 164.

Table 3: Descriptive Statistics Of Variables

Variable	Analytical Sample =164 Means (if Numerical)	Standard Deviations
Dependent Variable – BDA Adoption (BDAA)		

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Low	17.07%	
Moderate	23.78%	
High	59.15%	
Independent Variables		
Data Quality (DQ)	3.6707	0.0684
Technological Infrastructure (TI)	3.1992	0.0793
Data Security (DS)	3.6544	0.0692
Talent Management (TM)	3.5884	0.0766
Organizational Culture (OC)	3.9146	0.0699
Financial capabilities (FC)	3.6951	0.0698
Regulatory Support (RS)	2.9228	0.0680
Competitive Pressure (CP)	3.3760	0.0712

To measure the internal consistency for each construct, which consists of more than one indicator, Cronbach's alpha was tested in SPSS software for one dependent variable and eight other dependent variables of the model. The data gathered from the survey are reliable due to alpha values being greater than 0.7, as presented in Table 4.

Table 4: Internal Consistency

Variable	Number of Obs.	Number of items	Cronbach's alpha	Corrected Item - Total Correlation	Cronbach's Alpha If Item Deleted
BDAA	164	3	0.884	0.408	0.790
DQ	164	2	0.700	0.594	0.765
TI	164	3	0.814	0.274	0.809
DS	164	3	0.804	0.632	0.760
TM	164	2	0.843	0.456	0.783
OC	164	3	0.874	0.594	0.765
FC	164	2	0.844	0.520	0.775
RS	164	3	0.815	0.463	0.782
CP	164	3	0.830	0.509	0.776
Total Cronbach's Alpha = 0.798					

To assess multicollinearity among the independent variables in the ordered probit model, a correlation matrix was examined as presented in *Table 5*. The correlation matrix provides a sufficient diagnostic in an ordered probit model, ensuring that low multicollinearity is crucial because high correlations between explanatory variables can inflate standard errors and obscure the proper relationship between predictors and the outcome variable. The matrix showed no excessively high correlations, suggesting that multicollinearity is unlikely to bias the model estimates significantly.

Table 5: Correlatıon Matrıx

Variable	DQ	TI	DS	TM	OC	FC	RS	CP	BDAA
DQ	0.878								
TI	0.206	0.854							
DS	0.474	0.526	0.851						
TM	0.28	0.396	0.453	0.930					
OC	0.472	0.064	0.371	0.294	0.895				
FC	0.37	0.194	0.445	0.398	0.445	0.931			
RS	0.371	0.123	0.22	0.199	0.379	0.219	0.855		
CP	0.334	0.108	0.348	0.14	0.417	0.412	0.414	0.864	
BDAA	0.445	-0.169	0.240	0.143	0.519	0.136	0.427	0.411	0.901

As mentioned in the methodology section, ordered probit regression was employed as the data analysis tool. After conducting a forward stepwise technique, the final ordered probit model was developed, and the final results are presented in Table 6.

Table 6: Fınal Ordered Probıt Model Results

			Marginal Effects (in percentages)		
Variable	Estimate	Robust SE	Low BDA (Y = 1)	Moderate BDA (Y = 2)	High BDA (Y = 3)
TI	0.6146***	0.1660	-0.0999***	-0.0504***	0.1503***
OC	0.5236***	0.1617	-0.0851***	-0.043***	0.1281***
RS	0.4094***	0.1412	-0.0665***	-0.0336***	0.1001***
DQ	0.391**	0.1562	-0.0635**	-0.0321**	0.0956***
FC	0.4534**	0.1821	-0.0737**	-0.0372**	0.1109**
DS	0.4227**	0.1868	-0.0687**	-0.0347**	0.1034**
CP	0.3163**	0.1410	-0.0514**	-0.0259**	0.0773**
TM	0.2564	0.1992	-0.0417	-0.021	0.0627
Ancillary parameters			Marginal effects after ordered probit		
Low	2.1454	0.6252	0.1725	0.2365	0.5910
Moderate	3.2468	0.6517			
Pseudo R2	0.3028				
Log-likelihood	-109.0812				
Number of observations	164				

***Significant at the 1% level; **Significant at the 5% level; *Significant at the 10% level

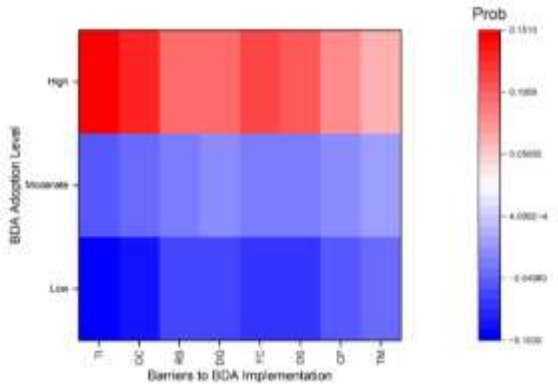
ISBN: 978-624-5553-76-1

The adoption of BDA in supply chains is significantly influenced by several key factors, as evidenced by this study conducted in the Sri Lankan manufacturing sector. Among these, technological infrastructure is the most influential, positively affecting BDA adoption at a 99% confidence level. A 1% improvement increases the likelihood of high BDA adoption by 0.1503 percentage points. This finding aligns with prior research (Watson, 2014) and reinforces the

TOE framework's emphasis on the importance of technological readiness. The relatively strong marginal effect size of infrastructure compared to other variables suggests that even

Figure 2: Heatmap Of Barriers Affecting Bda Adoption

incremental infrastructure improvements can produce meaningful shifts in adoption levels, particularly in resource-constrained contexts such as Sri Lanka. This highlights the critical role of a robust, flexible infrastructure in enabling advanced analytics. Recommended solutions involve investing in scalable cloud-based systems, improving data governance, and enhancing cybersecurity and IT training.



Source: Author's compilation

Organizational culture also plays a pivotal role. Supportive cultures enhance BDA adoption by promoting readiness, learning, and innovation, increasing the adoption probability by 0.1281 percentage points. This aligns with literature emphasizing the value of a data-driven and change-ready culture. A supportive, adaptive culture was associated with greater BDA uptake, supporting prior findings (Gupta & George, 2016) Moreover, highlighting the organizational context as more than a structural factor shapes the willingness and capability to implement new technologies. Importantly, the findings suggest that investments in cultural readiness and skill development can drive adoption and the depth and quality of BDA integration. These insights extend the TOE framework by emphasizing internal alignment and human capital as dynamic organizational enablers.

Regulatory support emerged as another significant factor. Strong, clear regulations encourage BDA uptake, with a 1% increase raising high adoption likelihood by 0.1001 percentage points.

This dual potential of regulation as both enabler and constraint aligns with Zhu & Kraemer, (2005) It offers a nuanced contribution to the TOE framework by highlighting the importance of policy clarity and alignment with innovation goals. Effective policy frameworks are vital in emerging economies to reduce uncertainty and foster innovation. The study urges introducing financial incentives (e.g., tax reliefs), industry-specific standards, and stronger public-private partnerships and knowledge-sharing forums.

Data quality plays a foundational role in successful BDA adoption by ensuring insights consistency, accuracy, and reliability of insights. The study finds that a 1% improvement in data quality increases the probability of high BDA adoption by 0.0956 percentage points, highlighting its practical significance. This aligns with findings by Dubey et al. (2020) and Kothapalli (2023), who emphasize that poor data quality undermines analytical accuracy. Technologies like Hadoop and MapReduce support data integrity, but these must be paired with strategic data management practices, especially in resource-constrained settings. Competitive pressure is another important environmental factor, where a 1% increase leads to a 0.0773 percentage point rise in high BDA adoption. This suggests that market-driven urgency can act as a catalyst for adoption consistent with Chen et al. (2012) but only when firms are organizationally and technologically equipped to respond, reinforcing the TOE framework's emphasis on contextual readiness.

Financial capability significantly shapes adoption behaviour, with a 1% improvement raising high BDA adoption probability by 0.1109 percentage points. This finding echoes Atapattu et al. (2023), who note that SMEs, in particular, face constraints in funding advanced analytics. The results suggest that to overcome financial barriers, organizations can adopt phased implementation strategies, pilot programs to demonstrate ROI and explore cost-effective solutions such as cloud-based analytics linking the findings to both organizational and environmental dimensions of TOE. Data security also emerged as a critical factor, where a 1% enhancement improves the likelihood of high adoption by 0.1034 percentage points. This underscores the need for robust cybersecurity frameworks to reduce the risk of breaches and build stakeholder confidence, as supported by Ramanathan et al. (2014) and (Sivarajah et al. (2017). Finally, talent management strongly influences BDA adoption, where a 1% increase raises the probability of high adoption by 0.0627 percentage points. This aligns with Fosso Wamba et al. (2015) and Teresa & Fantinelli, (2024), who highlight the role of skilled personnel and data-driven mindsets in driving BDA success. The findings highlight the organizational pillar of TOE, indicating that workforce development, analytics training, and knowledge-sharing are enablers and essential strategic investments for BDA integration.

Conclusion

This study offers significant contributions to understanding Big Data Analytics (BDA) adoption in supply chain operations within the manufacturing sector of Sri Lanka, enriching theoretical,

methodological, and practical domains. Theoretically, it advances the TOE framework by empirically validating the role of technological, organizational, and environmental factors specific to a developing country's context, thus extending its applicability beyond prior research focused on developed economies. Methodologically, using an ordered probit model allows for a granular analysis of adoption levels as low, moderate, and high, offering nuanced insights into the drivers and barriers that influence each stage of adoption, which enhances the robustness of existing BDA adoption research.

The study provides industry leaders, policymakers, and supply chain practitioners with actionable insights. Key policy recommendations include introducing financial incentives such as tax breaks and subsidies to lower entry barriers, especially for SMEs, and establishing national frameworks that promote data governance, security, and interoperability. Encouraging public-private partnerships to foster knowledge sharing and innovation is also vital for creating an enabling environment for BDA integration. Moreover, firms are urged to adopt incremental implementation strategies focusing on high-impact areas like demand forecasting, supported by leadership engagement and workforce development, to overcome cultural and organizational challenges.

Despite these contributions, the study has several limitations that lead to avenues for future research. Findings are limited to the Sri Lankan manufacturing sector and may not generalize to other industries. The modest sample size and reliance on LinkedIn/email surveys may introduce bias. Rapid tech changes also threaten the long-term relevance of some findings. Future studies should consider larger and more diverse samples, including perspectives from logistics providers and technology vendors, and explore how adoption barriers differ by firm size and sector. Additionally, the rapidly evolving nature of BDA technology calls for longitudinal studies to track adoption over time and assess sustained impacts. Finally, conflicting findings in the literature concerning the dual role of regulatory support highlight the need for deeper investigation into how different regulatory environments influence adoption dynamics.

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ISBN: 978-624-5553-76-1

Organizational Behavior

The Impact of Leadership Styles on Emotional Well-Being: A Study of Non-Executive Employees in a Selected Private Bank in Sri Lanka

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Abstract

The present study examines how four different leadership styles, namely Leader Member Exchange (LMX), Destructive, Laissez-Faire, and Transformational leadership, impact the emotional well-being of non-executive employees in a selected private bank in Sri Lanka. The stress levels have increased, with the level of absenteeism and employee turnover in post-pandemic work, where there have been concerns about how leadership behaviour can be used to boost staff morale. Although many previous studies have determined leadership as the predictor of well-being in the workplace, empirical studies on the specific category of non-executive banking employees in Sri Lanka are restricted. The research design used was a quantitative cross-sectional design. The structured questionnaire, developed based on validated constructs selected within the existing literature on leadership and emotional well-being, was used to collect the data. Using stratified random sampling, the sampling scheme consisted of 160 a total population and 113 a sample of non-executive employees of Selected Private Bank in Sri Lanka. Pearson correlation and multiple regression were used on the data through SPSS to determine the impact of each style. They found that transformational leadership had the best effect on emotional well-being, followed by Laissez-Faire and LMX. Destructive Leadership had an insignificant effect on the sample. The findings highlight the importance of positive and encouraging leadership in building emotional health. The research is helpful in leadership empirical studies and fills the gap in the few studies on leadership effectiveness in the South Asian banking scenario.

Keywords: Destructive Leadership, Emotional Well-being, Laissez-Faire Leadership, Leader-Member Exchange, Leadership Styles, Sri Lankan Banking Sector, Transformational Leadership

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ISBN: 978-624-5553-76-1

Introduction

Ramlall (2015) points out that leadership styles are essential in dealing with staff morale, work output, and the mood in the office. Martino (2016) demonstrated in his study that strong leadership is vital in banking, since leaders in this field are constantly under pressure. The study by Jian (2016) also pointed out that the research looks at the impact of leadership styles on non-executive bank workers in Sri Lanka, mainly at the Selected Private Bank in Sri Lanka. In addition, Schneider (2017) points out that employee satisfaction significantly impacts workplace productivity. After that, Erdogan and Bauer (2017) pointed out that many non-executive workers face challenges that may negatively affect their emotional health. On a different note, Ptacek (2018) highlighted that challenges in this profession involve unpredictable work, struggle to be recognised, and inability to move ahead. Therefore, according to Bauer and Erdogan (2018), knowing how leadership styles affect their emotions can give helpful advice on how to build better organisations and keep staff happy.

Moran (2018) says that an individual's emotional well-being includes producing positive feelings, moods, and thoughts and coping with stressful or challenging circumstances. Following this, Langeland (2019) believes that when people have emotional well-being, they are happy, overcome challenges, and have fulfilling ties with others. So, Pawar (2019) confirmed that people with good emotional well-being can deal with stress, control their feelings, and adjust when things in their environment change. On the other side, Lazarus (2020) sees that emotional well-being affects people's mental health and can make a difference in relationships, jobs, and a person's entire life. Still, Savina & Moran (2021) put forward that significant contributors to emotional well-being are being self-aware, controlling feelings, having support from others, feeling there is a reason to live with purpose, and doing activities that make you satisfied and happy. Similarly, Zeidner (2022) mentioned that building emotional well-being requires us to be mindful and to care for ourselves, have a healthy lifestyle, and get help from professionals when the need arises.

It studies four styles of leadership: Leader-Member Exchange (LMX), Destructive Leadership, Laissez-faire Leadership, and Transformational Leadership. The way a company is led can affect how employees talk with each other, their motivations, and their stress. Alternatively, Bernerth and Hirschfeld (2022) stress that leader-member exchange (LMX) is directed at cultivating strong positive relationships between an organization's leadership and its followers. On the other hand, Iliev (2022) notes that Destructive Leadership includes aggressive and dangerous actions toward employees that may result in a toxic atmosphere at work. Moreover, Akcan (2023) observed that Laissez-faire Leadership means giving employees less direction, sometimes confusing team members. So, Asif (2024) explains that Transformational Leadership offers employees an exciting vision, cultivating a happy and motivated workplace.

Research Problem

It has been reported by Nevarez (2019) that the number of people away from work due to stress and turnover from non-executive employees has increased substantially at the Selected Private Bank in Sri Lanka in the past few years. HR managers have found that many employees leave because leadership at each branch is not always consistent or helpful. In 2023, Erdogan and Bauer noticed that when some executives from Colombo were asked about their departure, they explained that being assigned ill-defined tasks by their supervisors caused increased anxiety for them and specific team morale problems. Additionally, according to Ptacek (2018), over 40% of customer service officers in the Western Province mentioned that their supervisors become "indifferent" or "unavailable" when job pressure rises, mostly during year-end banking activities. Although research from other countries connects leaders' styles with their employees' well-being, the studies done in Sri Lanka focus mainly on executives and do not single out specific institutions. Having no organisation-focused data, the Selected Private Bank in Sri Lanka's HR group cannot make informed decisions for leadership development. For this reason, research was carried out to see how the leadership styles affected the emotional well-being of non-executive staff at Selected Private Bank in Sri Lanka.

Research Gap and Significance

Despite intensive research on leadership style in organisational behaviour and human resource media, the context-specific impacts of leadership on the emotional health of the non-executive workers in the Sri Lankan banking industry are under-researched. Most available studies on the subject in Sri Lanka are either confined to executive or managerial-level counterparts or universalise the results in their study of a wide range of industries, which are not always applicable to specific organisations (Nandram,2020). Moreover, although most of the studies conducted globally support the role of leadership on well-being, most of them take place in a Western or highly developed one, and they cannot be generalised in developing economies and South Asia (Nevarez,2019).

At the local level, the few available studies (Rashtchi, 2023) either explicitly or indirectly relate leadership behaviours to employee outcomes. However, even then, they do not relate them to such key but less treated psychological constructs as emotional well-being. Besides, no research has been identified that has concurrently compared two or more leadership styles (e.g., LMX, Transformational, Laissez-Faire, Destructive) in one banking institution of Sri Lanka, based on the same methodological approach. This gap is filled in this study by using non-executive employees in an organisation that solely uses and relies on non-executive employees as the backbone in running customer services and administrative operations, namely Selected Private Bank in Sri Lanka, a licensed commercial bank in Sri Lanka.

The study population (160 non-executives) is a practical and objectively applicable sample, as they help us interpret the role of leadership behaviours in shaping mental health in the workplace, particularly in the post-pandemic environments where work digitisation, work pressure, and work role ambiguity have risen.

By basing the study on the Job Demands Resources model, the Leader-Member Exchange theory, and the Toxic triangle Framework, the research not only incorporates both the psychological and behavioral theories into the context of this study; it also incorporates the two theories which can be used to explain how leadership style operates as either a demand or a resource in the workplace. Through such a theoretical lens, it is possible to develop a more sophisticated grasp of how positive leadership (e.g., transformational) can promote well-being. In contrast, destructive or passive leadership can reduce well-being. The Significance of the present study is both practical and theoretical. In practice, the results may be used to develop leadership among employees at Selected Private Bank in Sri Lanka, especially when determining the most effective leadership styles to help the non-executive staff maintain well-being. It may give rise to specific training, modifications in performance evaluation, and cultural transformation policies that will result in less burnout and higher retention. The study theoretically adds to the scant context-specific literature on leadership in South Asia as a source of evidence to conduct comparative and longitudinal studies of leadership in an identical organisational environment.

Aim and Objectives

To determine the impact of four leadership styles (LMX, Destructive, Laissez-Faire, and Transformational) on the emotional well-being of nonexecutive employees at Selected Private Bank in Sri Lanka.

Specific Objectives

- Assess the impact of Leader–Member Exchange quality on employees' emotional well-being.
- Assess the impact of Destructive leadership behaviours on employees' emotional well-being.
- Assess the impact of Laissez-Faire leadership on employees' emotional well-being.
- Assess the impact of Transformational leadership on employees' emotional well-being.

Literature Review

Employee emotional well-being in banking is primarily shaped by the leadership style, since there are frequent interactions and much pressure at work. To have emotional well-being, a person must handle stress, keep good relationships, and be emotionally strong when facing

difficulties. Here, four main leadership styles are explored: Leader Member Exchange (LMX), Destructive Leadership, Laissez-Faire Leadership, and Transformational Leadership, and their impact on workers' emotional well-being is explained using recent publications and well-known theories. This theory suggests that the relationship between leaders and employees in an organisation is unique for each person, meaning the amount of trust, communication, and mutual obligation involved is not the same. Supportive relationships between leaders and employees usually result in better emotional well-being, increased safety, and greater happiness at work. A study led by Li et al., published in 2024, discovered that greater LMX quality is related to less burnout for service industry workers. Employees in commercial banks in Sri Lanka, according to Pawar (2023), who had strong relationships with their supervisors, were found to have less emotional exhaustion and better morale. Thus, having supportive supervisors is beneficial, as it acts as a buffer for job-related stress, mainly for non-executive members of the banking sector.

However, destructive leadership means displaying behaviours such as shouting, criticising others publicly, being passive-aggressive, and intentionally lowering the performance of staff members. They may result in workplaces where people's mental health is negatively impacted. Based on their research, Rajbanshi (2020) understands this style using the Toxic Triangle Framework, which depicts an interaction between destructive leaders, easy-to-manipulate followers, and specific work environments. Ryan (2024) concluded that destructive supervision strongly affects the employees of South Asian banks by leading to employee disengagement, more employee absences, and emotional exhaustion. The researchers also found that 40% of junior staff in Sri Lankan banks suffered stress at work and lost motivation because of the recent emotionally harmful actions by their supervisors. The results suggest that untreated toxic leadership can badly affect employee emotions. This leadership style requires the boss to sit on the sidelines, not influence decisions, and fail to guide the team throughout major projects. Based on Full-Range Leadership Theory, Bass and Riggio say that Laissez-Faire leadership is the least successful and tends to result in uncertain work roles and a lack of security. This style was examined by Shurbagi (2023) among Sri Lankan retail banks, and they discovered that employees with laissez-faire supervisors tended to feel more worried and less satisfied at work.

Stephen (2022) also claimed that when managers did not act promptly and low involvement made the front-desk workers feel less secure, causing their emotions to become unstable. They imply that a lack of leadership can harm staff through open mistreatment. Transformational leadership, on the other hand, is noted for boosting people's psychological well-being. Transformational leaders guide their people, foster new ideas, and help each person individually. Based on their study, Wijesinghe and Karunaratne claim that resilience and satisfaction at work among Sri Lankan financial institution employees were significantly raised

by transformational leadership. According to Subramaniam (2021), transformational leadership lowers the chances of fatigue and stress among teams that must handle heavy workloads. These findings prove that having transformational leaders encourages emotional well-being and substantial achievements based on visionary and caring leadership. The researchers used four theories to build a solid understanding of how leadership affects people's emotional well-being. LMX Theory indicates that improved trust and better communication between a leader and followers lead to reduced stress. Leadership is highlighted in the JD–R Model as an important resource that addresses the problems of high job demands and possible burnout (Wellman,2026). Full-Range Leadership Theory by Yang (2019) ranks types of leadership from best to worst and points out the differences between transformational and laissez-faire styles. In addition, the Toxic Triangle Framework, Ytterstad and Olaisen (2022), explains the role of several factors in causing destructive leadership and harm to employees.

Even though these models are important everywhere, research in Sri Lanka is mainly found in narrow studies about employees other than the top executives in a company. Many local studies simplify results for all sectors or only discuss manager-level personnel. Therefore, applying these models to the non-executive staff of Selected Private Bank in Sri Lanka in the study helps fill an important research gap and is therefore helpful academically and practically for the banking sector in Sri Lanka.

Conceptual Framework

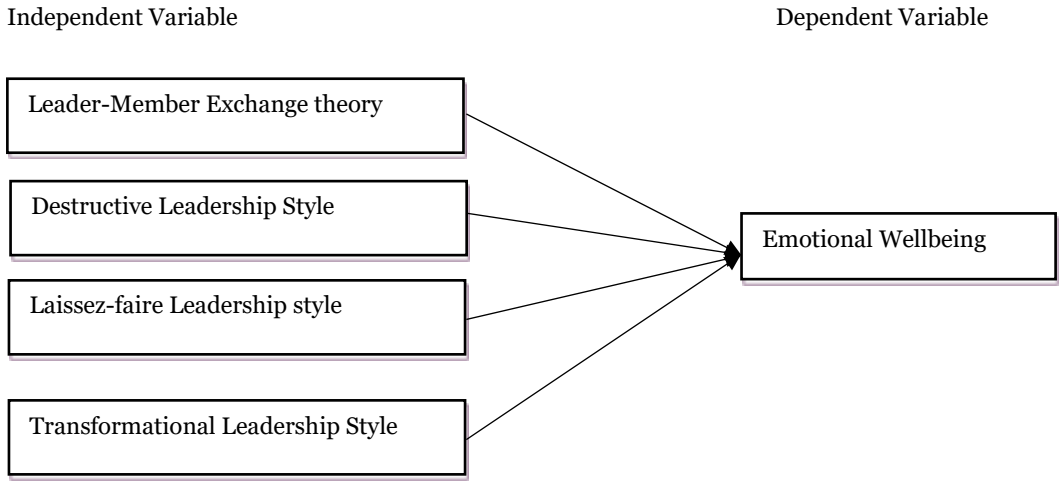

Figure 1: Conceptual Framework

Research Questions

How does Leader–Member Exchange (LMX) impact the emotional well-being of non-executive employees at Selected Private Bank in Sri Lanka?

ISBN: 978-624-5553-76-1

What is the impact of Destructive Leadership on the emotional well-being of non-executive employees at Selected Private Bank in Sri Lanka?
What is the impact of Laissez-Faire Leadership on the emotional well-being of non-executive employees at Selected Private Bank in Sri Lanka?
What is the impact of Transformational Leadership on the emotional well-being of non-executive employees at Selected Private Bank in Sri Lanka?

Methods

Research Methods

Singer (2016) mentioned that studying car crashes in a short amount of time contributed to the decision to use positivist philosophy. Using positivism, studies that use a limited time could organise the data collection and analysis process, making it more efficient. By depending on facts and numbers, positivism allowed the study to proceed faster, as interpretivism usually takes much longer because it involves an in-depth analysis of qualitative evidence. So, using positivism allowed for the best results within the time frame accessible to the team. According to Tjora (2018), the deductive approach was preferred since it enabled the researcher to test theories and hypotheses from the literature. Starting from established theories on leadership styles and emotional health, the researcher could plan data collection using the deductive approach, which made the study more orderly. According to Sabol (2019), the research project chose a case study approach for various theoretical reasons. Thanks to case studies, leadership styles and their influence on employees' well-being in the banking industry could be observed. The case study approach made it possible to see Selected Private Bank in Sri Lanka from many angles based on its unique situation. That is why we have chosen to use case studies, as they fit well with the deductive approach in this study. With the help of theories and concepts like leadership and emotional health, the case study strategy lets the researcher relate theories to actual examples and review or improve old concepts. Furthermore, with the case study strategy, it was possible to use different information gathering techniques like interviews, observation, and reviewing documents. It resulted in more detailed and thorough data collection, which enabled the researcher to analyse the research phenomenon from several aspects.

Selecting case study research was important so our results would be helpful in academia and banking activities in Sri Lanka. The primary purpose of this study was to help management by providing valuable insights and recommendations that could boost emotional well-being, by paying special attention to a single organisation. The research objectives of this study were met by using the case study method to study how leaders' styles affect staff emotional well-being in Sri Lankan banks. Inggs (2020) discovered that the mono-quantitative method was preferred

because it only relied on data that could be counted, such as answers from surveys. With this process, people could measure and study leadership formats and emotional well-being, which also permitted the detection of similarities and correlations in the data collected.

Uribe and Guillen (2020) also chose a cross-sectional study to collect information at once from non-executive workers in the Sri Lankan banking sector and see how leadership and feelings connect. The research could focus on one subject briefly and compare results among different groups or variables. Besides, setting a time limit helped the team collect data quickly and efficiently by making the data collection process suitable for the project's resources and schedule. Rashtchi & Ghazi Mir Saeed (2023) considered several main aspects when selecting questionnaires for the study. Collecting data from many people was possible using questionnaires, which helped researchers explore the link between leadership and emotional well-being. So, using a standard layout in questionnaires helped guarantee consistent results and less possibility of error in the findings. Thanks to the numbers gathered in the questionnaire data, it was easy to analyse the data with statistics, following the study's mono-quantitative format. Having created questionnaires, it became possible to measure how leaders behave and how they feel accurately. Likert scales and closed-ended questions, the survey form allowed easy quantification of results, so it was convenient to use statistical tools such as SPSS. Also, questionnaires were effective when researchers wanted to apply ready-made theories to form research issues. The researcher can measure leadership styles and emotions by choosing suitable specific questions for the questionnaire. Questionnaires were employed in this study to gather data that could be trusted and used objectively to look at how leadership affects employee emotions in the banking industry.

Sampling Framework

The study used stratified random sampling to select a group that covers all non-executive employees from the Selected Private Bank in Sri Lanka branches in the Western Province. The total number of non-executive staff comprised 160 people: bank assistants, customer service officers, tellers, and back-office clerical staff. Referring to the Morgan table, 113 samples were selected out of 160 people from the population. Instead of selecting employees randomly from the whole department, the survey included an even number from each department section (branch operations, finance, service processing) using the same selection method. People who worked as permanent non-executives for the past year were considered in the study.

Results And Discussion

Summary of the Descriptive Statistical Analysis

Table 1: Descriptive statistical analysis summary

Variables and Description	Descriptive Analysis				
Leader-Member Exchange Leadership Style	Trust	Open Communication	Respect	Empowerment	Individualized Support
Mean	4.20	4.05	4.36	3.83	4.07
Median	4.00	4.00	4.00	4.00	4.00
Mode	4	4	4	4	4
Standard deviation	.825	.864	.519	.915	.787
Destructive Leadership Style	Micromanagement	Intimidation	Transparency	Blame	High Turnover
Mean	4.42	3.95	4.30	4.23	3.75
Median	4.00	4.00	4.00	4.00	4.00
Mode	4	4	4	4	4
Standard deviation	.495	.915	.498	.779	1.184
Laissez-faire Leadership Style	Absence of clear direction	Rare provision of feedback	Minimal Involvement	Frustration	Autonomy
Mean	3.57	4.02	4.36	4.38	3.78
Median	4.00	4.00	4.00	4.00	4.00
Mode	2	5	4	4	5
Standard deviation	1.238	.866	.483	.488	1.230
Transformational Leadership Style	Clear Vision	Individual Concern	Encouragement	Motivating	Charisma
Mean	4.36	4.33	4.42	4.71	4.43
Median	4.00	4.00	4.00	5.00	4.00
Mode	4	4	4	5	4
Standard deviation	.483	.471	.495	.457	.498
Emotional Well-Being	Satisfied	Work-life-balance	Engaged	Relationship	Stress level
Mean	4.12	4.42	4.36	4.46	4.35
Median	4.00	4.00	4.00	4.00	4.00
Mode	4	4	4	4	4
Standard deviation	.594	.497	.501	.501	.654

Source : (The author developed,2025)

The descriptive statistics of the main variables regarding the four leadership styles and emotional well-being appear in Table 1. The Means, Median, Mode, and Standard deviation of each indicator analysed are indicated under their associated leadership styles and emotional well-being dimensions. Leader-Member Exchange (LMX) Leadership Style indicators: trust (M = 4.20), respect (M = 4.36), and individualised support (M = 4.07) have consistently high

scores, which is very high, implying that the participants of the survey view their supervisors as supportive and respectful. The relatively small standard deviations (their values varied between 0.519 and 0.915) indicate low diversity in the answer; most employees share this perception. This augers well with Objective 1 and agrees with Pawar's (2019) study, which concluded that high-quality LMX is linked with better scores in emotional stability. The indicators of the Destructive Leadership Style also indicate relatively high mean scores, giving the indicators micromanagement (M = 4.42) and blame (M = 4.23), implying that certain employees are exposed to damaging supervisory behaviours. The standard deviation of the turnover is high (SD = 1.184), which indicates a disparity in the perceptions, probably due to a difference in the department/branch. Although the findings are parallel to items in the Toxic Triangle Framework, the results have not been entirely successful since the regression analysis showed no notable strength of predictive ability. This contrast brings into play a potential disjunction between perceived behaviours and their perceived psychological effects.

Laissez-faire leadership Style receives conflicting results. Cues such as minimum participation (M = 4.36) and frustration (M = 4.38) are above average, meaning the employee is unsatisfied with this kind of leadership. Autonomy (M 3.78), however, shows a moderately positive score. The high SD values, especially on the dimensions of absence of clear direction (SD = 1.238) and autonomy (SD = 1.230), would mean that different teams would have had different experiences.

This favours Objective 3 and somewhat agrees with Wickramasinghe (2023), who pointed out that passive leadership may also be viewed as powerful, particularly in low-supervision cultures. Motivation (M = 4.71), charisma (M = 4.43), and individual concern (M = 4.33) indicators of Transformational Leadership Style were above the mean of all the styles of leadership. The standard deviations were regularly low (an average of 0.47-0.49), indicating a general agreement about the existence of transformational behaviours. These results unequivocally align with Objective 4 and the literature, including researchers like Savina (2021), who relate transformational leadership with greater emotional resilience. These studies are also mentioned in Emotional Well-Being indicators, which also had high mean scores: relationship quality (M = 4.46), engagement (M = 4.36), and work-life balance (M = 4.42), implying that most non-executive employees at the Selected Private Bank in Sri Lanka have positive perceptions of their emotional well-being. The mean stress level score is also relatively high (M = 4.35), which can lead to the conclusion of proper coping mechanisms/effective organisational support systems. The standard deviations on these items are also in low order (the greater number are below 0.60), thus indicating that the participants gave consistent answers.

Reliability Analysis

Reliability Statistics for Leader-Member Exchange Leadership Style

Table 2: Cronbach's alpha for Leader-Member Exchange Leadership Style

Cronbach's Alpha	N of Items
.606	5

According to Table 2, Cronbach's alpha for the independent variable Leader-Member Exchange Leadership Style with five attributes is .606. This indicates that the index is **reliable** and can be accepted, as Cronbach's alpha is greater than 0.6.

Reliability Statistics for Destructive Leadership Style

Table 2: Cronbach's alpha for Destructive Leadership Style

Cronbach's Alpha	N of Items
.678	5

According to Table 3, Cronbach's alpha for the independent variable Destructive Leadership Style with five attributes is .678. This indicates that the index is **reliable** and can be accepted as Cronbach's alpha is greater than 0.6. This level of internal consistency suggests that the attributes used to measure Destructive Leadership Style are moderately correlated and reliably capture the construct.

Reliability Statistics for Laissez-Faire Leadership Style

Table 3: Cronbach's alpha for Laissez-Faire Leadership Style

Cronbach's Alpha	N of Items
.838	5

According to Table 4, Cronbach's alpha for the independent variable Laissez-Faire Leadership Style with five attributes is .838. This high value indicates excellent internal consistency and reliability for the scale items, suggesting that they are well-correlated and effectively measure the same underlying concept. This index is **reliable** and can be confidently accepted for further analysis.

Reliability Statistics for Transformational Leadership Style

Table 4: Cronbach's alpha for Transformational Leadership Style

Cronbach's Alpha	N of Items
.694	5

According to Table 5, Cronbach's alpha for the independent variable Transformational Leadership Style with five attributes is .694. This value indicates good internal consistency and reliability for the scale items. The alpha coefficient greater than 0.6 signifies that the attributes are well-correlated and measure the same underlying concept, making the index **reliable** and acceptable for further analysis.

Correlation Analysis

Table 5: Correlation between leader-member Exchange Leadership style and Emotional Well-being

		Leader_member_Exchange	Emotional_Wellbeing
Leader_member_Exchange	Pearson Correlation	1	.635**
	Sig. (2-tailed)		.000
	N	113	113
Emotional_Wellbeing	Pearson Correlation	.635**	1
	Sig. (2-tailed)	.000	
	N	113	113

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

The link between Leader Member Exchange (LMX) leaders and emotional well-being was positive, and the correlation was moderately strong ($r = 0.635$, $p < 0.01$). This finding shows that the employees who experience greater trust, respect, and support from their supervisors report better emotional well-being. This correlates with Objective 1 and is consistent with the Leader-Member Exchange theory, which proposes that above-average quality leader-follower relations promote greater emotional and psychological results in working conditions.

Table 6: Correlation between Destructive Leadership Style and Emotional Well-being

		Destructive_Leadership_Style	Emotional_Wellbeing
Destructive_Leadership_Style	Pearson Correlation	1	-.577**
	Sig. (2-tailed)		.000
	N	113	113
Emotional_Wellbeing	Pearson Correlation	-.577**	1
	Sig. (2-tailed)	.000	
	N	113	113

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

In the case of Destructive Leadership Style, there was a moderate negative relationship with the emotional well-being ($r = -0.577$, $p < 0.01$).

It implies that the more destructive behaviours, such as micromanagement, intimidation, or blame, the more likely the employees will have lower emotional well-being. The fact complements Objective 2 and validates the available literature, Rajbanshi (2020), which indicates the detrimental impact of toxic supervision on employees' morale and mental well-being.

Table 7: Correlation between Laissez-faire Leadership Style and the Emotional Well-being

		Laissez_fair_Leadership	Emotional_Wellbeing
Laissez_fair_Leadership	Pearson Correlation	1	.430**
	Sig. (2-tailed)		.000
	N	113	113
Emotional_Wellbeing	Pearson Correlation	.430**	1
	Sig. (2-tailed)	.000	
	N	113	113

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

In the case of Laissez-Faire Leadership Style, a moderate positive correlation was found between emotional well-being and Laissez-Faire ($r= 0.430$, $p < 0.01$). This says passive leadership behaviours like less feedback and little involvement may not be the best, but they are not always considered harmful. In some situations, employees might take non-interference from managers as independent and trust, especially when they are sure about themselves. This finding confirms the presentation of Objective 3. It indicates that the impacts of laissez-faire leadership on emotional well-being in the context of the Selected Private Bank in Sri Lanka are complicated. To some extent, this conclusion is corroborated by another study by Ryan (2024), who found that although laissez-faire leadership style can produce ambiguity, some employees of the independent type could benefit from minimal supervision.

Table 8: Correlation between Transformational Leadership Style and Emotional Well-being

		Transformational_ Leadership_Style	Emotional_Wellbeing
Transformational_Leadership_ Style	Pearson Correlation	1	.761**
	Sig. (2-tailed)		.000
	N	113	113
Emotional_Wellbeing	Pearson Correlation	.761**	1
	Sig. (2-tailed)	.000	
	N	113	113

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

Lastly, the highest correlation was recorded between Transformational Leadership Style and emotional well-being ($r = 0.761$, $p < 0.01$), i.e., the better the Transformational Leadership Style, the more it positively influences stabilisation of the employee on the emotional front. That directly contributes to Objective 4 and aligns with the literature, such as the work by Sabol (2019), which said that transformational leadership also predicts employee resilience and motivation.

Multiple Regression Analysis

Table 9: Collinearity Diagnostics

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions				
				(Constant)	Leader_member_Exchange	Destructive_Leadership_Style	Laissez_fair_Leadership	Transformational_Leadership_Style
1	1	4.968	1.000	.00	.00	.00	.00	.00
	2	.018	12.670	.04	.00	.02	.07	.00
	3	.008	13.609	.03	.06	.05	.03	.02
	4	.005	13.104	.00	.07	.04	.02	.00
	5	.002	12.344	.02	.01	.07	.08	.09

a. Dependent Variable: Emotional_Wellbeing

This table evaluates the multicollinearity of the independent variables. All the condition indices are less than a critical value of 30, and no two variables possess a significant % of variance on the same dimension. This shows that there are no serious multicollinearity problems. Therefore, the predictors of the regression model (four leadership styles) are independent and stable enough to analyse the data.

Table 10: Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Correlations			Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance	VIF
1 (Constant)	.727	.305		2.381	.019	.122	1.333					
Leader_member_Exchange	.126	.061	.158	2.070	.041	.005	.247	.635	.195	.109	.479	2.087
Destructive_Leadership_Style	.069	.060	.087	1.148	.253	-.050	.188	.577	.110	.061	.488	2.048

ISBN: 978-624-5553-76-1

Laissez_fair_Leadership	.204	.039	.372	5.191	. 000	.126	.282	.730	.447	.274	.544	1.837
Transformational_Leadership_Style	.448	.102	.364	4.370	.000	.245	.651	.761	.388	.231	.401	2.494

a. Dependent Variable: Emotional_Wellbeing

In Table 11, the regression coefficients are presented. Transformational Leadership was influential and significant, as well, on emotional well-being (beta = 0.364, p < 0.001) than Laissez-Faire Leadership (beta = 0.372, p < 0.001) and Leader-Member Exchange (beta = 0.158, p = 0.041). Destructive Leadership also proved insignificant (beta=0.087, p=0.253), meaning that the presence of other styles nullifies its impact. All values of VIF were less than 5, validating that there was no multicollinearity. In Objective 1, emphasis was placed on the influence of Leader-Member Exchange on emotional well-being. Great regression impact (x = 0.158, p = 0.041). These findings validate that high-quality interpersonal relationships between supervisors and employees boost emotional well-being. This aligns with the LMX theory and past studies by Stephen (2022), who also obtained the same findings in the Sri Lankan-based commercial banks. Objective 2 was concerned with the influence of Destructive Leadership. Destructive Leadership did not demonstrate a statistically significant unique impact (0.087, p = 0.253) in the regression model. Nevertheless, its harmful impact is supported by descriptive data and literature (Shurbagi, 2023). The finding shows that destructive leadership may influence well-being, but its impact is blunted by considering other types of leadership simultaneously.

Objective 3 focused on the influence of Laissez-Faire Leadership. This was significant and positive, p < 0.001, regression analysis (beta 0.372). The discovery contradicts the orthodox understanding (e.g., Bass & Riggio, 2022) but agrees with Subramaniam (2021), who stated that autonomy in the context of laissez-faire supervision could benefit experienced employees. Passive leadership, in the case of Selected Private Bank in Sri Lanka, can be defined as trust, which is mainly understood by the employees doing the job. Objective 4 evaluated the influence of Transformational Leadership. The positive regression impact is significant (0.364, p < 0.001). The results are correlated with the JD-R model and, before it, studies published by Akcan (2023), which confirm that inspirational and supportive leadership can significantly boost emotional resilience and motivation.

Table 11: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.836[a]	.699	.688	.22129	2.051

a. Predictors: (Constant), Transformational_Leadership_Style, Leader-member Exchange, Laissez-Faire Leadership, Destructive_Leadership_Style

b. Dependent Variable: Emotional_Wellbeing

The four leadership styles explain variance on emotional well-being in about 69.9 per cent (R 2 = 0.699, Adjusted R 2 = 0.688), which is a strong predictive model as demonstrated in this model summary. The standard error (0.22129) is relatively low, with the Durbin-Watson statistic of 2.051, which states there is no considerable autocorrelation in the residuals and justifies the reliability of the regression model.

Table 12: ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	12.269	4	3.067	62.639	.000[b]
	Residual	5.288	108	.049		
	Total	17.558	112			

a. Dependent Variable: Emotional_Wellbeing

b. Predictors: (Constant), Transformational_Leadership_Style, Leader-member Exchange, Laissez-faire_Leadership, Destructive_Leadership_Style

The overall statistical significance of the regression model is corroborated using an ANOVA table, that is, F = 62.639, p < 0.001.

This implies that the combination of all the leadership styles will strongly influence the outcomes of the emotional well-being, and hence the use of multiple regression in this analysis.

Table 13: Coefficient correlations

Model		Transformational_Leadership_Style (R)	Leader-Member Exchange (R)	Laissez-faire Leadership (R)	Destructive_Leadership_Style (R)
1	Correlations	Transformational_Leadership_Style	1.000	-.200	-.488	-.369
		Leader_member_Exchange	-.200	1.000	-.212	-.435
		Laissez_fair_Leadership	-.488	-.212	1.000	.079
		Destructive_Leadership_Style	-.369	-.435	.079	1.000
	Covariances	Transformational_Leadership_Style	.010	-.001	-.002	-.002
		Leader_member_Exchange	-.001	.004	-.001	-.002
		Laissez_fair_Leadership	-.002	-.001	.002	.000
		Destructive_Leadership_Style	-.002	-.002	.000	.004

a. Dependent Variable: Emotional_Wellbeing

This is a table of intercorrelations among independent variables. The lowest positive correlations were found between Laissez-Faire and Transformational Leadership (r = -0.488) and Leader-Member Exchange and Destructive Leadership (r = -0.435). As much as there are moderate correlations, none is high enough to be a worrying point about multicollinearity.

These findings justify the validity of the regression model and state that the measurement of the independent variables is a meaningful measure of leadership behaviours.

Conclusion

The Pearson correlation of 0.635 (Table 6) also shows a moderately positive correlation between Leader-Member Exchange (LMX) leadership style and emotional well-being. This implies that the better the quality of the interactions between the leader and the team members in terms of trust, communication, and support, the better the employees' emotions. This result supports existing literature about LMX theory. It gives a positive answer to the research question: How does Leader–Member Exchange (LMX) impact the emotional well-being of non-executive employees at Selected Private Bank in Sri Lanka? A significant and positive correlation was detected. The negative Pearson correlation of -0.577 (Table 7) indicates a moderate negative relationship between Destructive Leadership and emotional well-being. What it points to is that the more one engages in toxic behaviours like micromanagement and intimidation, the less that person feels emotionally well. This observation confirms Asif's (2024) assumption that defensive leadership can dramatically negatively impact employees' morale. Through the study, the second research question is: How does Destructive Leadership impact the emotional well-being of non-executive employees at the Selected Private Bank in Sri Lanka? Will therefore be answered affirmatively, as there is a statistically significant negative correlation between the Destructive Leadership Style and emotional well-being.

The coefficient correlation between Laissez-Faire Leadership and emotional well-being is 0.430 (Table 8), showing a moderate positive relationship. Although a lack of direction is considered one of the negative aspects of the laissez-faire leadership approach, in this respect, it can provide employees with a certain degree of independence that some of them embrace. Nandram (2022) further says that some teams thrive on very little supervision as long as they are a group of experienced and task-oriented people. Thus, the third research question, namely, what is the impact of Laissez-Faire Leadership on the emotional well-being of non-executive employees at Selected Private Bank in Sri Lanka? The results answer and prove this. The most significant relationship identified in the study is denoted with a Pearson correlation of 0.761 (Table 9) to weigh the correlation between Transformational Leadership and

emotional well-being. The finding proves that works like Pawar (2019) indicate that transformational behaviours like vision, encouragement, and empathy significantly impact increased emotional well-being.

The fourth research question: How does Transformational Leadership impact non-executive employees' emotional well-being at the Selected Private Bank in Sri Lanka? The answer is also positive, and a robust positive relationship was confirmed. The research proves strong correlations between the four leadership styles and the emotional well-being of non-executive employees in the Selected Private Bank in Sri Lanka. The above findings are helpful on a theoretical and practical level as they confirm the theoretical leadership models in the context of the Sri Lankan banking industry and provide approaches to leadership development initiatives to enhance staff well-being.

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Barriers to LGBTIQ+ Inclusion Despite Formalized Policies: A Sri Lankan Experience

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Abstract

This study explores the remaining obstacles to openness to LGBTIQ+ inclusion within a local organizational context (Pride-H) in which LGBTIQ+ inclusivity is formalized through LGBTIQ+ inclusive policy and practices. By delving into the complexities of achieving genuine workplace diversity and equality, the study sheds light on the obstacles that impede the organization's efforts in promoting LGBTIQ+ acceptance. The qualitative research methods employed, particularly semi-structured in-depth interviews, enrich the study by capturing the nuanced experiences of individuals within Pride-H. The identified barriers encompass a range of challenges, including the exclusion of LGBTIQ+ individuals in personal spaces, the difficulties faced by closeted individuals, stakeholder reluctance, microaggressions, and the risks associated with stereotyping and unconscious biases. These barriers are not unique to Pride-H but reflect broader challenges encountered by organizations globally in their quest for true inclusivity. The study concludes by advocating proactive measures by Pride-H to address these issues, positioning the organization as a model for others seeking to champion equality and diversity. The study calls for a harassment-free and non-discriminatory workplace and underscores the need for comprehensive efforts in reshaping organizational culture and attitudes, beyond mere policy implementation.

Keywords: *Diversity, Equality, Exclusion, Inclusion, LGBTIQ+, Microaggression, Non-discrimination, Obstacles, Organization, Policy, Practice, Workplace*

Introduction

Sri Lankan society takes a conservative stance on gender and sexuality. Accordingly, in Sri Lanka, sexual conservatism regulates individuals through gender roles based on a rigid male/female binary construct; sex is limited by a "logic of reproduction" (CPIN, 2018). Sri Lanka is one of seventy-two nations worldwide where homosexual relations/sodomy between consenting adults are illegal (Human Rights Watch, 2020). The anti-sodomy laws stipulated under English law have made homosexuality illegal in the Sri Lankan legal system. According to the Penal Code Sections 365 and 365A, homosexuality is considered a "carnal intercourse

ISBN: 978-624-5553-76-1

against the order of nature (i.e., any type of sex that is considered unnatural)" and "any act of gross indecency with another person, respectively, which are interpreted to encompass all non-heterosexual acts and gender-variant states of being" (Ellawala, 2019, p.88). In addition, the Vagrancy Law and Section 399 of the Penal Code, which deal with "cheating by personation" (i.e., impersonation), are also used against the LGBTIQ+ community in Sri Lanka, particularly against transgender people (Chowdhury, 2021). These legal sanctions further legitimize the social constraints on homosexuality and promote sexual stigma in the country (Adikaram & Liyanage, 2021). Amidst the legal and social barriers to homosexual affairs, LGBTIQ+ employees in the country face numerous challenges at work.

Transphobia and homophobia are expressed in various ways in Sri Lankan workplace cultures: directly, indirectly, vertically, horizontally, and structurally. Direct verbal or physical harassment, nonverbal signals in the workplace, administrative actions, and workplace norms and rules are all possibilities (Institute for Participatory Interaction in Development, 2017, p.39). The above facts reveal the stigma and inequality directed toward LGBTIQ+ workers in Sri Lankan workplaces. Because of ingrained biases in society and organizations, LGBTIQ+ employees in Sri Lanka fear for their jobs and lives (Rathnayake, 2021). Employees who identify as LGBTIQ+ in Sri Lanka confront numerous obstacles at work (Adikaram & Liyanage, 2021). They frequently experience discrimination when applying for jobs, getting promotions, receiving different employment benefits, and dealing with various difficulties (Chowdhury, 2021). According to a survey by Equal Ground (2021), 38% of LGBTIQ+ employees do not work in an environment that is friendly and non-discriminatory. Regarding job opportunities and benefits, 16% had been discriminated against during job interviews, 10% had been denied employment benefits (such as salary increases, promotions, or transfers), and 3% had been fired because of their sexual orientation or gender identity expression.

However, globally, there is a growing demand for businesses to address diversity and inclusion within their workplaces through diversity and inclusion policies and practices. To comply with global business and human rights standards and foster change, many organizations implement diversity management (DM) practices to improve equity and equality at work. Accordingly, several organizations in the Sri Lankan corporate sector have disclosed their LGBT-inclusive policy and practices to their stakeholders. However, it is a blind spot to explore whether such organizations could eliminate all forms of LGBT discrimination through LGBT-inclusive policies, especially in non-Western contexts like Sri Lanka, where hegemonic heterosexual masculinity still reigns.

Research Objective

- To explore the reigning obstacles to openness to LGBTIQ+ inclusion within a local organizational context in which LGBTIQ+ inclusivity is formalized through LGBTIQ+ inclusive policy and practices.

ISBN: 978-624-5553-76-1

The Case of "Pride Holdings"

Pride Holdings (Pride-H - a pseudonym used to protect the confidentiality and anonymity of the company) has consistently taken a progressive stance when recognizing workplace diversity throughout its one-hundred-and-fifty-year history. Pride-H is a local group conglomerate that operates many strategic business units in different sectors, employing more than twenty thousand employees. They take pride in identifying themselves as an inclusive company with a history of promoting non-discrimination and anti-harassment within their working environment. They had formalized anti-harassment and non-discrimination in the internal policy framework. As a highly performance-driven company, rather than pondering the personal grounds of the individuals, they have achieved tremendous success as a local organization. Diversity and inclusion were vital subjects throughout the history of Pride-H. For example, if we refer to their policies, such as equal opportunity, code of conduct, and non-discrimination policy, they have been in place for about twenty years. They have clear policies and guidelines regarding zero tolerance of harassment and discrimination. However, till 2015, the non-discrimination and anti-harassment policy did not specifically address LGBTIQ+ employees. The policies had not demarcated boundaries beyond gender, age, ethnicity, political affiliation, and being differently abled.

Nevertheless, in 2015, the Executive Director of a community organization working for LGBTIQ+ community rights requested that the leadership team of Pride-H discuss the importance of including LGBTIQ+ terminology in the non-discrimination policies. Since the company did not have a policy that specifically addressed sexual orientation and gender identity expression, in 2015, the company brought gender identity and sexual orientation into the policy in collaboration with two prominent LGBTIQ+ community organizations. It made efforts to become a truly inclusive company. Being fully aware of the Penal Code 365, 365-A, which illegalizes homosexuality in the country, they absorbed LGBTIQ+ terminology into their policies since their premise, culture, and foundation integrated respect and value for diversity and inclusion over a more extended period.

In this case, I examine the remaining obstacles to openness to LGBTIQ+ inclusion within a local organizational context where LGBTIQ+ inclusivity is formalised through LGBTIQ+ inclusive policies and practices. Even though there is abundant research in the field of workplace discrimination, harassment, and microaggressions targeting LGBTIQ+ individuals (E.g., Sue *et al.*, 2007; Nadal *et al.*, 2008; Sterzing *et al.*, 2017; Nair *et al.*, 2019; Gates & Viggini, 2014; Adikaram & Liyanage, 2021), exploring obstacles that LGBTIQ+ employees face in an organizational setting in which non-discriminatory policies are well-designed and implemented is limited in the existing literature.

Literature Review

LGBTIQ+ individuals are becoming increasingly prominent in the Workplace. Progressive employers understand the importance of attracting people from all walks of life and cultivating a workplace culture that values diversity and equality and represents the society in which they operate (Stonewall, 2010). However, sexual orientation and gender identity discrimination are still frequent in private and public sector organizations (Sterzing *et al.*, 2017; Nair *et al.*, 2019). Because of apparent non-conformity with heteronormativity (the social notion that being heterosexual is "normal") and stereotypes of how women and men are expected to seem and behave, discrimination, harassment, and exclusion from the labor force are experienced by sexual minorities (ILO, 2012). This non-conformity with traditional heterosexual norms deems non-heterosexuals as abnormal and creates stigma.

Stigma is a social construct based on prejudice or negative stereotyping that causes others in society to treat people with stigmatizing qualities with contempt and negativity in everyday encounters (Burke, 2007). Indeed, those whose religious views and ideals identify LGBTIQ+ people as having improper and aberrant lives are one of the primary obstacles to workplace unity (Zugelder & Champagne, 2018). Dealing with deeply rooted prejudices and stereotypes remains a significant challenge for contemporary businesses. In particular, addressing long-standing biases against LGBTIQ+ individuals continues to be difficult (Cunningham, 2011; Woods, 2011; Fullerton, 2013). These prejudices often work against LGBTIQ+ individuals, resulting in patterns of discrimination, especially in recruitment processes. For example, research has shown that homosexual applicants are frequently rated lower than their heterosexual counterparts in terms of competence, social skills, and suitability for hiring (Bryant-Lees & Kite, 2019). Additionally, Bryant-Lees and Kite (2019) exposed the negative attitudes about homosexuality, beliefs about sexual orientation as a choice, and beliefs in traditional gender roles as significant predictors of recruitment and selection ratings for homosexual applicants but not heterosexual applicants. Compared to other diversity characteristics, sexual orientation remains the so-called "last acceptable and remaining prejudice" in modern society and organizations (Ozeren, 2014). Accordingly, the mere consideration of sexual prejudices alone does not provide a broader understanding of the complexities of sexual orientation discrimination at work. When the interrelationships between gender-associated ideas, heterosexism, and sexual prejudice are examined, a clearer picture emerges (Bryant-Lees & Kite, 2019). Thus, sexual prejudices and heterosexism lead to the LGBTIQ+ stigma in the workplace, and it remains a significant challenge for both the organization and LGBTIQ+ individuals. The stigma and discrimination against sexual minority employees highlight the necessity of creating inclusive work cultures that accept LGBTIQ+ diversity.

Coworkers' adverse reactions are another crucial challenge that LGBTIQ+ employees face. According to Ragins (2004), LGBTIQ+ employees are often subjected to unfavorable reactions from their heterosexual coworkers. These negative responses are influenced by a variety of factors, including coworkers' feelings of emotional threat and the beliefs often rooted in religious convictions that LGBTIQ+ individuals are responsible for their stigmatization. Such perceptions are strongly driven by homophobia, with some coworkers assuming that LGBTIQ+ individuals could avoid discrimination by simply choosing to be heterosexual. Emotional reactions may also stem from fear or perceived threats associated with homosexuality, whether directly—such as concerns about health or safety—or symbolically, as in the case of religious or political conflicts (Hays-Thomas, 2017). Moreover, LGBTIQ+ employees often face additional challenges in forming and expressing their sexual identity, compounded by a lack of social support during this process (Ragins, 2004). Family, friends, and educational institutions frequently provide little support for LGBTIQ+ employees' identity development.

There is some opposition to LGBTIQ+ inclusion, which has created a culture that prevents many LGBTIQ+ persons from being open about their sexual orientation/gender identity and hence from actively 'passing' as heterosexuals (Ellis, 2009). Gay employees behave more masculinely, while lesbian employees behave more femininely to comply with society's mandatory heterosexist norms (Ozeren, 2014). As a result, many more personnel try to hide their identity or 'pass' as heterosexual. They are more likely to embrace identification practices that they perceive as 'acceptable' in the Workplace. Some LGBTIQ+ employees choose not to disclose their sexual orientation in the workplace due to fear of stigma and discrimination, even though they are open about it in their private lives. It takes much emotional energy to live a *double life* in the public and private arenas (Clair *et al*., 2005). This process of disclosure may result in sexual identity disclosure disconnects, in which different levels of sexual identity disclosure are made at work and home (Ozturk & Tatli, 2016). Situations with strong 'disclosure disconnects,' in which a person has been exposed to everyone else in one domain but no one in another, are the clearest cases of sexual identity conflict (Ragins, 2004). When an LGBTIQ+ worker discloses his or her sexual identification in one area but not another, 'sexual identity conflict' ensues (Ragins, 2008; Ozturk & Tatly, 2016). Disclosure of sexual identity is not an all-or-nothing situation but instead takes place on a continuum in both work and non-work contexts. These disconnects can lead to a loss of control over the disclosure process and sexual identity conflict as people try to manage one or even two sexual identities with varying disclosure levels at work and home. These counterfeiting identity management strategies might be linked to increased psychological distress and work disengagement (Lipka, 2010). As a result of psychological stress, job conflict, attributional uncertainty, and a drive to establish consistent identities across life domains, disclosure disconnects create distinct diversity management issues centered on employee well-being (Ragins, 2008; Sabat *et al*., 2014).

ISBN: 978-624-5553-76-1

Therefore, this sexual identity conflict can be seen as a significant challenge faced by sexual minority employees at work.

Hence, sexual identity conflict is emphasized as a significant workplace challenge faced by sexual minority employees; it is worth understanding the reasons for maintaining such a dual identity or the concealment of identity at work. Individuals conceal their sexual orientation at work (Wright *et al.*, 2006; Stonewall, 2010; Sabat *et al.*, 2014; Human Rights Campaign Foundation, 2008) for several reasons. Fear of discrimination is the primary reason why many LGBTIQ+ individuals opt to conceal their sexual orientation at work (Duffy & Visconti, 2014). Moreover, fears of career advancement, a lack of visible senior LGB staff, temporary employment status, previous negative experiences of discrimination and harassment, a desire for privacy, and "macho" or religious attitudes/behaviors of coworkers may all deter LGBTIQ+ people from coming out (Wright *et al.*, 2006). When LGBTIQ+ individuals come out of the closet (publicly open about their sexual identity), they mainly get rid of the sexual identity conflict. Gay and lesbian individuals who open up about their sexual orientation at work are more likely to be satisfied with their jobs than gay men and lesbians who are not open about their sexual orientation at work (Colgan *et al.*, 2007; Drydakis, 2014; Salter & Sasso, 2021). Moreover, gay and lesbian employees who report being more open about their sexual orientation are more engaged in their jobs and have fewer problems at home (Day and Schoenrade, 2000). For example, some people may feel more at ease with themselves because of not having to disguise their identity at work, or they may form closer bonds with coworkers due to being more open and honest after coming out (Salter & Sasso, 2021). Additionally, Liyanage and Adikaram (2019) expose that when individuals are publicly gay and accept their identity, they are more engaged in coping with stigma. In contrast, when they were closeted, they were more passive, whether they accepted the label. Therefore, it is evident that overcoming the challenge of the concealment of the identity of LGBTIQ+ employees is beneficial from both the employee and employer perspectives.

In essence, prejudice, stereotyping, discrimination, adverse coworker reactions, invisibility, and sexual identity conflict remain significant workplace challenges for LGBTIQ+ employees.

Methods

In this study, under the ontological stance, I embraced multiple realities by looking at various types of data from individuals' viewpoints and experiences. Being an interpretive study, inevitably, the qualitative approach is used as the method of inquiry to meet the objectives of this study. I recognized the exploratory case study strategy (Yin, 1993) as the most appropriate strategy for designing this research. The rationale for choosing the case study design was to get a holistic understanding of the phenomenon through a thorough investigation and successfully cope with the phenomenon's inherent complexity.

Obtaining a wide range of insights from organizational and non-organizational players is important because the study uses the case study strategy. As shown in Table 1, a total of sixteen (16) participants were selected for the study using the purposive sampling method. In selecting the participants, I expected a mix of the organization's different levels and functions. Additionally, I interviewed a director of a community organization who was actively involved when Pride-H introduced its Diversity and Inclusive policy.

To ensure the anonymity and confidentiality of the participants, I used pseudonyms.

Table 01: Participants of the study

Positional Level	Name (pseudonyms)	Position
Senior Management	Kalani	Assistant Vice President
	Meena	Assistant Vice President
Functional Management	Dilshan	DE & I Policy Developer- Head of Group HR
	Ruvini	DE & I Policy Developer- Head of Corporate Communication
	Vishwa	HR Head (BU-A)
	Heshan	HR Head (BU- B)
	Velma	HR Manager
	Sudesh	HR Head (BU- C)
	Diana	HR Head (BU- D)
	Pubudu	HR Manager
	Mahesh	HR Manager
Executive Employees	Rashitha	Employee- Finance
	Veronica	Employee- HR
	Amali	Employee- Accounting
	Pasindu	Employee- HR
	Daniel	Leader- LGBTIQ+ Community Organization

Source: Interview data

In this study, I gathered data through semi-structured in-depth interviews, each lasting approximately 30-45 minutes. All interviews were conducted online, face-to-face, using the Zoom platform. The method of data analysis employed in this study is thematic analysis. The refined themes include LGBT exclusion in personal spaces, negative reactions from some stakeholders, closeted LGB individuals, microaggressions, stereotypes, and unconscious biases.

Results and Discussion

Pride-H has implemented LGBTIQ+ inclusive policy and practice, making a bold decision in the Sri Lankan corporate sector. In their journey, they faced different obstacles, and still, they are dealing with several obstacles regarding LGBTIQ+ diversity and inclusion. The company gradually addressed the obstacles under its control, but some areas remain beyond its control. Some obstacles are challenging to eradicate because they are deeply embedded in the systems.

LGBTIQ+ Exclusion in Personal Spaces

In Pride H, it was revealed that the organizational members are ready to accept LGBTIQ+ individuals and treat them equally at work. However, the participants revealed some specific areas in which the organizational members still feel uncomfortable when working with LGBTIQ+ individuals.

> *Nevertheless, we recently surveyed with questions such as, "Would you be comfortable sharing a room with the LGBTIQ+ community when going on a staff trip... would you be comfortable with sharing a washroom..." I think that gets down to a little more detail, and the result of that questionnaire shows that they welcome the community, but there may be some personal discomfort in a few areas.* (Dilshan- PD)

The company has conducted an internal survey, identifying that organizational members are ready to welcome the LGBTIQ+ community but show reluctance in instances such as sharing washrooms or a room during an office trip. Such personal discomfort is depicted in certain areas, especially in sharing personal spaces and washrooms.

> *They have no problem sitting next to an LGBTIQ+ person doing something. However, when it gets closer within their personal space, some of them, I think, might feel uncomfortable.* (Ruvini- PI)

As Ruvini says, the employees of Pride-H do not feel reluctant to sit next to an LGBTIQ+ person and work with him or her. However, sharing dormitories or a room during an office trip, they feel uncomfortable with LGBTIQ+ individuals.

> *I think people might feel uncomfortable with this, something I know about washrooms. Because if you know, let us say if it is a transgender person and knowing that when you go to the washroom, [...] Uh, I feel that there might be a little bit of a difficulty... There can be certain uncomfortable situations when it comes to the washroom, but you know, lunchrooms or any other office space, and I do not feel fear or issue when sharing with LGBTIQ+.* (Amali- EMP)

Amali constructs the same idea that previous participants started. She straightforwardly mentions that she will feel uncomfortable when sharing the washroom, knowing that a person is a transgender person, even though she does not feel any anxiety about sharing office space or a lunchroom with an LGBTIQ+ person.

Thus, in terms of sharing personal spaces and washrooms other than the office spaces, the organizational members still show anxiety towards LGBTIQ+ individuals. This can be reflected in terms of "cisgender privilege". Access to gender-segregated areas such as restrooms, changing rooms, and sports teams is an instance of cisgender privilege (Price & Skolnik, 2017). Transgender employees still face underprivileged in using gender-segregated spaces compared to cisnormative binary gender categories.

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Negative Reactions of Some Stakeholders

Pride-H is gradually addressing the resistance that arises from different parties. Almost all the internal stakeholders have already gotten into LGBTIQ+ inclusivity, but some external stakeholders show adverse reactions.

In the beginning, Pride-H also faced subtle pushback from its internal stakeholders. As Dilshan says,

> *It is not easy at all, and in the discussions that we have with people and when we have our awareness sessions, there is a large community who still do not feel right about it, who push back, who argue, who debate, and sometimes not openly, but sometimes subtly. Because some people are uncomfortable, I think it is essential to accept that fact, and we have had many conversations where we have been pushed back and said, "What are you trying to do? This is against religion". You know various things, but we believe we are making progress; the amount of pushback we are getting is less and less now.* (Dilshan- PD)

The primary argument of parties opposing LGBTIQ+ inclusivity is that it does not align with Sri Lankan culture and contradicts religious beliefs. Since the company is in a strong position, having made progress and continuously raising awareness, it has now managed to overcome such resistance from internal stakeholders.

> *One of the suppliers said, "Why do you want to get into this? This [homosexuality] is not in our culture". However, we are OK with that. We do not have to agree with it, everyone. If someone wishes not to deal with us because of a particular stand that we have, that is fine with us; they can choose to do that, but we have the integrity to communicate everything we do so that people can choose for themselves.* (Ruvini-PD)

Again, the same argument was made by a supplier of Pride-H. The company can make a minimal impact in changing the stances of its external stakeholders, like suppliers. Moreover, the company again firmly holds to its stance on LGBTIQ+ inclusivity.

> *One of the other things we find is that people sitting in Colombo in certain senior management positions assumed that it would not be practical. Given the differences in non-urban culture, they currently assume that hiring someone like that for an outlet would be problematic, as the village people might not like it, and similar concerns.* (Ruvini- PD)
>
> *Because sometimes, it might be more sensitive. As I said in Colombo, it is not a big deal for us. However, if you look at a rural factory environment and someone reveals that he or she is a lesbian or gay, and something comes out, it might be a more significant concern. Because I think, given our culture, you cannot be too open about it. We must strike a balance.* (Dilshan- PD)

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The adverse reaction from the rural community is identified as a severe barrier to establishing LGBTIQ+ inclusivity in the factories and outlets outside Colombo. As Ruvini says, at the beginning of formalizing LGBTIQ+ inclusivity, some senior managers in the Pride-H's branches out of Colombo had expressed that it would not be practical. Still, they are reluctant to hire LGBTIQ+ individuals who are open because those managers fear the resistance that could come from the local community. Dilshan also emphasizes the difficulty of promoting LGBTIQ+ inclusivity within rural factory environments. Being homosexual or transgender is still a more significant concern in rural Sri Lanka.

Several senior managers who oversee the Pride-H's branches outside of Colombo are hesitant to hire openly LGBTIQ+ people because they are afraid of facing opposition from the local population. It denotes how challenging it is to advocate for LGBTIQ+ inclusivity in rural factory settings because it is still a more significant issue in rural Sri Lanka to be homosexual or transgender. The organization has a minimal ability to change the behaviors of mass society. However, the organization can modify the behaviors of internal parties. Heterosexual individuals who accept and support gays and lesbians, known as "allies," can contribute to a far more inclusive workplace (Martinez & Hebl, 2010). Thus, organizations can promote alley groups within the organization to provide much more social and emotional support to LGBTIQ+ employees.

Closeted LGBTIQ+ Individuals

Even though the company welcomes LGBTIQ+ individuals, formalizes inclusivity via a policy, and fosters LGBTIQ+ inclusivity in the workplace, the tendency of LGBTIQ+ individuals to come out at work is still low. Again, there is limited control over the organization in this factor. Coming out at work is up to the LGBTIQ+ individual. However, the decision of LGBTIQ+ individuals to be in the closet might be inspired by the different social conditions rather than the company's environment. For instance, to conform to society's mandatory heterosexist norms, gay employees behave more masculinely, while lesbian employees behave more femininely (Ozeren, 2014). Some LGBTIQ+ employees do not expose themselves as homosexuals in the workplace (due to fear of stigma and discrimination), but in their private lives, they do. It takes much emotional energy to live a *double life* in the public and private arenas (Clair *et al*., 2005). However, this emotional energy to live a double life ultimately may negatively impact individual and organizational performance.

> *They do not come out openly. So, I am not sure whether somebody is gay or transgender.* (Rashitha- EMP)
>
> *Now, even if we go for international insurance agents' awards nights and all that, we see people who seem to be like (different gender expressions) getting awards. Nevertheless, I have never seen anything like this.* (Meena- SM)

ISBN: 978-624-5553-76-1

As Rashitha and Meena say, LGBTIQ+ employees in the company rarely come out. Compared to their international agents, LGBTIQ+ individuals in Sri Lanka working in Pride-H show a lower tendency to come out.

> *Any minority anywhere in the world should first come forward. Moreover, even within Sri Lanka, many organizations are ready to accept these people. The only thing on their side is that there is a small amount of reluctance to come out. We are ready to treat you equally. However, they must come forward.* (Mahesh- HRM)

According to Mahesh, if any LGBTIQ+ individual needs support at work, they should come forward if the person is suppressed due to their gender identity or sexual orientation.

> *Yeah, because I am pretty sure there might be complaints about female harassment. Because you know that person is a female. Nevertheless, LGBTIQ+ might think ten times before complaining, saying I am LGBTIQ+, because maybe that is the instance where we get to know about the person. So, those are the problems that we are trying to address immediately.* (Meena- SM)

As Meena says, the LGBTIQ+ person's fear of being revealed is due to different reasons. Even when they face harassment, they keep silent because they think that their sexual orientation will be exposed if the person makes a complaint.

> *Even though I started to research, I did not know a single person who was out as LGBTIQ+ at the beginning. But yes, a considerable number of people out there. We must have that inclusivity. However, what is essential from my research is not being silent about it but showing active support for it, which we lack.* (Meena- SM)

Meena conducted research for her MBA investigating the workplace climate for LGBTIQ+ individuals. Starting the research without knowing any single LGBTIQ+ person who is open at work, she realizes there is a considerable number of LGBTIQ+ individuals. However, they still need a strong voice and active support.

There should be a commitment from both employers and LGBTIQ+ individuals to make LGBTIQ+ individuals visible and eliminate the sexual identity conflict. While organizations provide recognition, support, and voice for LGBTIQ+ individuals, they should be confident and trust themselves and the organization.

"Closeted LGBTIQ+ individuals" is another significant issue the organization is trying to tackle. In a nation like Sri Lanka, where same-sex relationships between consenting adults have been criminalized and carry many stigmas, coming out in the workplace can be challenging (Chowdhury, 2021). Both businesses and LGBTIQ+ individuals need to commit to making LGBTIQ+ people visible and eliminating sexual identity conflict. Fear of discrimination is the primary reason why many LGBTIQ+ individuals opt to conceal their sexual orientation at work (Duffy & Visconti, 2014). Gay employees behave more masculinely, whereas lesbian employees behave more femininely to adapt to society's required heterosexist norms (Ozeren, 2014). As a

result, many employees attempt to conceal their sexual orientation or "pass" as one. They are more inclined to use identification procedures that they believe to be "accepted" at work. Maintaining dual existence in public and private spheres requires much emotional stamina (Clair *et al.*, 2005). While organizations give LGBTIQ+ people visibility, voice, and support, they should maintain self-assurance and trust in the organization. "Sexual identity conflict" occurs when an LGBTIQ+ worker admits their sexual orientation in one setting but not another (Ragins, 2008; Ragins, 2004; Ozturk & Tatly, 2016). The most blatant instances of sexual identity conflict occur when there are significant "disclosure disconnects" or when a person has been revealed to everyone else in one domain but no one else in another (Ragins, 2004). These counterfeiting identity management techniques may lead to psychological suffering and disengagement at work (Lipka, 2010). Disclosure disconnects lead to unique diversity management concerns focused on employee well-being because of psychological stress, work conflict, attributional uncertainty, and a need to construct consistent identities across life domains (Ragins, 2008; Sabat *et al.*, 2014). Thus, the sexual identity conflict due to the dual identity of the LGBTIQ+ individuals is challenging Pride-H to reap the real advantage of its LGBTIQ+ inclusive policy and practice.

Microaggressions

Even organizations that reform equality and diversity policies and practices for sexual minorities do not always ensure a working environment that recognizes and supports sexual minorities or prohibits homophobic attitudes and behavior across the board (Colgan *et al.*, 2007). Prevailing "microaggressions" for sexual minorities are one possible reason for such a consequence. Microaggressions denote a subtle form of bias and discrimination, such as slights, snubs, or perceived insults directed toward minorities (Nair *et al.*, 2018). Microaggressions can be broadly divided into three categories: microassaults, microinsults, and microinvalidations (Sue *et al.*, 2007). Microassaults are classified as explicit derogatory acts, mostly verbal or nonverbal, to harm the targeted victim through name-calling, avoidance, or deliberate discrimination (Sue *et al.*, 2007). Microinsults and microinvalidations are typically subtler than microassaults (Resnick & Galupo, 2018). Harsh or insensitive communications denigrating a person's identity are called microinsults (Sue *et al.*, 2007). The recipient views the action as insulting, even if the perpetrator might not be aware of the microaggression (Resnick & Galupo, 2018). Finally, messages that discredit or invalidate the oppressed group's psychological beliefs, emotions, or lived reality are referred to as microinvalidations (Sue *et al.*, 2007).

> *That is our most challenging area when we talk about verbal harassment, language, and the importance of language within the corporate sector. Because of not touching, not squeezing, not hugging, not coming over, and keeping the physical space very clean, and avoiding foul language. It does not mean that you cannot joke*

ISBN: 978-624-5553-76-1

in your office anymore. It means that you must be mindful of who is in your office. That is what it means. It does not mean you cannot joke; perhaps those jokes are unacceptable in an office environment. (Daniel- Community Leader)

The language used by others toward LGBTIQ+ individuals could be a significant source of verbal harassment. Daniel refers to the entire Sri Lankan corporate sector. No participant from Pride-H reported any incidents of discrimination or harassment against sexual minorities at the company. Even though Pride-H has prohibited any verbal or physical harassment of anyone at the workplace, certain jokes or conversations might subtly discriminate against LGBTIQ+ individuals. Sometimes it can be name-calling or avoidance. Pride-H should be deliberate to avoid such kinds of microassaults at work because microaggressions are possible even within LGBTIQ+ inclusive policy and practice adopted by organizations.

I do not think we will be able to do it in one night. It will be a gradual and incremental process. One might recruit one LGBTIQ+ person, then the next month, there would be another. When people are used to it, I am not saying that there will not be any issues. There might be other joking and criticizing. (Sudesh- HRM)

As Sudesh also mentioned, there might be joking and criticizing. Eliminating these subtle forms of discrimination is more difficult than addressing overt discrimination. As Sudesh says, it should be done in a gradual, incremental process over time.

Nevertheless, if you look at resistance (in terms of occupying a transwoman after her transition), the younger people had absolutely no issue. They did not care whether the person was a man or a woman or of a different skin color. They did not care. They worked alongside me without any problem. However, some of the older people had difficulty coming on board, so they sometimes still called her by her previous male name. Furthermore, this led to many issues when she made a mistake in her job, which would always be a point of fact. (Ruvini- PD)

Ruvini exemplifies an incident where microinvalidations could happen. According to Sue *et al.* (2007), micro invalidations imply that they discredit or invalidate the oppressed group's psychological beliefs, emotions, or lived reality. Calling a transwoman by her previous male name invalidates her as female to these older coworkers. They imply that they do not accept her living reality.

The supermarket staff had a query about how to address customers who are transgender, as they were unsure whether to use "Sir" or "Madam," and thus requested training. (Ruvini- PD)

The supermarket staff's unawareness about addressing a transgender customer might unconsciously produce microinvalidations towards such a customer. For instance, if the supermarket staff insensitively called Sir for a male whose gender expression is mainly a woman, it would create a microinvalidation for that person.

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I think it is crucial because if your organization needs to achieve performance, people should be able to reveal their identity. Because otherwise, they are making a lot of effort to pass as an average person. We might be making remarks. Uh, which might be offensive to them, so only they know about it, right? So, because of all that, individual performance will be impacted, especially when working as a team. Team performance might be impacted. (Meena- SM)

As Meena emphasizes, the employees may make negative remarks about LGBTIQ+ people without knowing a colleague who is next to him or her is an LGBTIQ+ person. Then, such a person can feel uncomfortable and will keep the person closeted further.

Even though I could not uncover the explicit discrimination or harassment within Pride-H, there is a risk of microaggressions. Microaggressions, which are brief and routine verbal, behavioral, or environmental slights that convey hostile, disparaging, or adverse slights and insults at marginalized persons, can be a type of discrimination against LGBTIQ+ people (Price and Skolnik, 2017). The microassaults and microinvalidations possibilities were revealed through participants' conversations. Microassaults are classified as explicit derogatory acts, primarily verbal or nonverbal, to harm the targeted victim through name-calling, avoidance, or deliberate discrimination (Sue *et al.*, 2007). Messages that discredit or invalidate the oppressed group's psychological beliefs, emotions, or lived reality are called microinvalidations (Sue *et al.*, 2007). In the case of Pride-H, participants revealed the possibilities of unintentional joking and criticizing toward LGBTIQ+ individuals (microassaults), a situation in which some employees call a transwoman by her previous male name (microinvalidation), and a lack of understanding of supermarket staff on correct pronouns for transgender customers (microinvalidation risks). The organization must overcome specific obstacles to make Pride-H a fully inclusive, zero-discriminatory, and harassment-free environment.

Stereotypes and Unconscious Biases

Addressing long-held prejudices and stereotypes regarding LGBTIQ+ individuals is a challenge for businesses (Cunningham, 2011a; Woods, 2011; Fullerton, 2013). Bryant-Lees and Kite (2019) report that negative attitudes about homosexuality, beliefs about sexual orientation as a choice, and beliefs in traditional gender roles are significant predictors of hiring ratings for homosexual applicants but not for heterosexual applicants. Thus, eradicating prevailing stereotypes about the LGBTIQ+ community and unconscious bias is a significant challenge to Pride-H.

The thing is, when we consider the Sri Lankan culture, I see that this is not fit for the Sri Lankan culture. However, the world is going with this (recognizing LGBTIQ+). Otherwise, we will get cornered in the world. (Sudesh- HRM)

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These thoughts of Sudesh imply his perception that LGBTIQ+ is a Western concept. Sudesh perceives LGBTIQ+ as a taken-for-granted thing to the company rather than an excellent reason to adopt.

> *If someone is LGBTIQ+, for example, the person applies for a job. Moreover, if that person is qualified for the job, I believe we will offer employment regardless of their sexual orientation or gender identity. Nevertheless, there can be, you know, interviewer biases. All those things might come into play, but as a company, our stance is that even if that person is LGBTIQ+, we will give them employment opportunities.* (Meena- SM)

The awareness of the possible biases (e.g., halo effect and horn effect) from the interviewers is vital. Meena is aware of the biases that could be underlying the recruitment. The policy addresses these biases. Prioritization of qualifications other than personal characteristics is emphasized for the organizational members.

> *There is another side called unconscious biases. For example, when conducting recruitment interviews, although we consider all the professional qualifications, sometimes there can be an unconscious bias against that person. Therefore, as a specialized team, we teach them how to control their unconscious biases. We teach them how to put effort into avoiding unconscious biases deliberately.* (Pasindu- EMP)

The company has already initiated a program to address unconscious biases. Being aware of unconscious biases is the best way to prevent them from affecting individuals. Thus, Pride-H raises awareness among relevant parties to help them control and avoid unconscious bias. A specialized internal team educates executives on how to eliminate unconscious bias.

> *So, what I meant by Pride-H supermarkets is doing a traditional commercial. Our commercial would show the lady washing dishes in the kitchen while the husband reads a newspaper. However, I would try to switch those roles, and I would like to see the man washing dishes while the ladies come home. Even if I am using a young girl and a young boy, I prefer not to use them in stereotypical colors of clothing or roles. So now we try to integrate it into what we do.* (Kalani- SM)

According to Kalani, the traditional commercials done by the company reproduce gender stereotypes. As she emphasizes, this should be changed. When she and her group design commercials, they switch the traditional domestic gender roles. They challenge the traditional domestic gender segregation at work. Moreover, they try to challenge traditional gender norms. Addressing long-held prejudices and stereotypes regarding LGBTIQ+ individuals is a challenge for businesses (Cunningham, 2011a; Woods, 2011; Fullerton, 2013). Since unconscious bias and traditional stereotypes are essential barriers to diversity, the organization has tried to eradicate them from organizational members.

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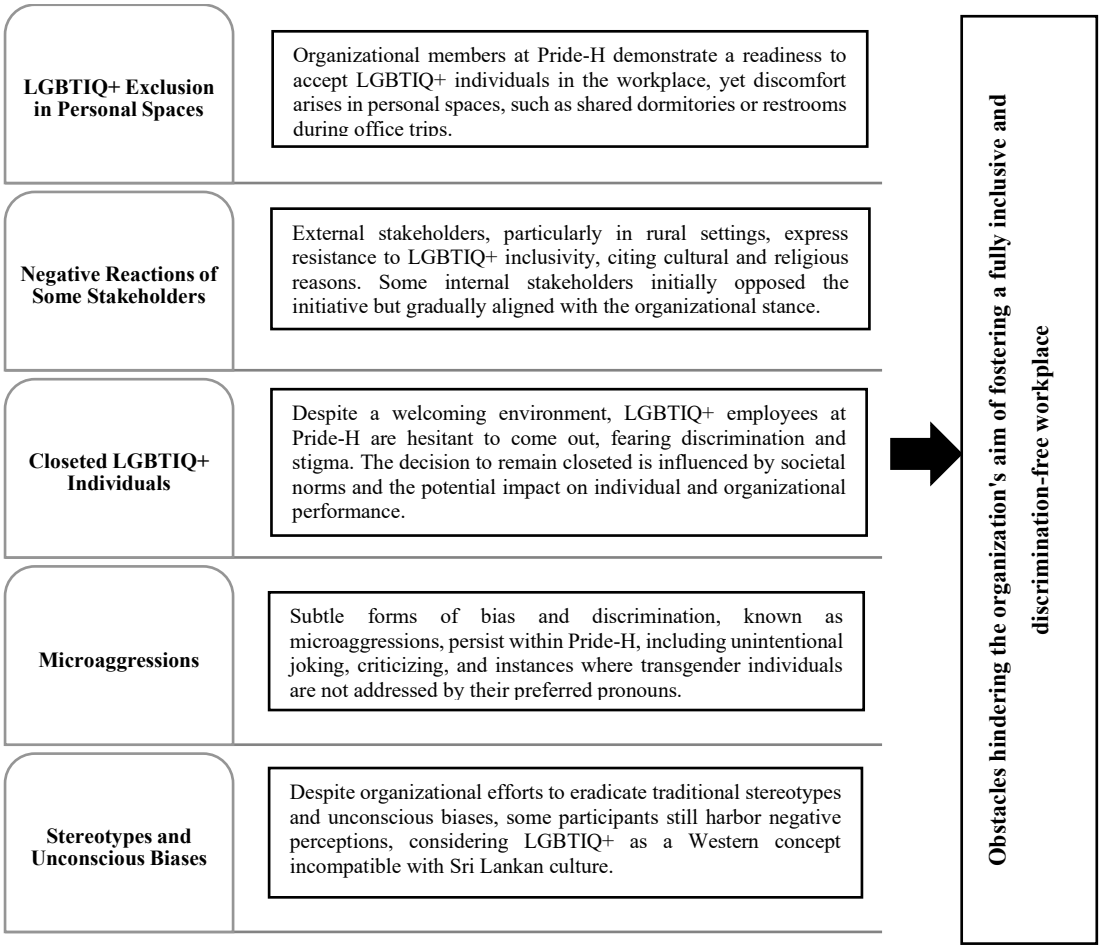

Figure 01: Concept frame based on the findings

Stereotyping forms an incomplete, oversimplified, and frequently unfavorable mental image of a person's interactions with members of another group and, occasionally, of their own (Taylor & Moghaddam, 1994). Even when no individual bias or discrimination exists, heterosexual and cisgender beliefs are reflected in work environments and institutional policies that work against sexual minority groups (Herek *et al.*, 2007). The company has taken significant initiatives to drive out the organizational members' traditional stereotypes and unconscious bias since those are potent obstacles to diversity. Nevertheless, I could still identify some negative signs of some participants regarding LGBTIQ+ inclusivity (e.g., LGBTIQ+ is a Western thing that does not fit with our culture). Figure 1 demonstrates the overall findings of the study summed up into a concept frame.

Conclusion

This study identifies five primary issues that need to be addressed: LGBTIQ+ exclusion in private areas, stakeholder resistance, closeted LGBTIQ+ people, dangers of microaggression, and risks of stereotype and unconscious biases. The organization has taken significant steps to eliminate traditional stereotypes and unconscious bias among organizational members. However, negative attitudes toward LGBTIQ+ inclusion still pertain subtly (e.g., LGBTIQ+ is a Western thing that does not fit with our culture). Closeted LGB employees are another significant workplace challenge because it could lead to lower productivity when they are in a "double life." Moreover, the organizational members still show anxiety towards transgender individuals in terms of sharing dormitories, restrooms, and washrooms other than the office spaces. LGBTIQ+ inclusivity in rural factory settings is still a more significant issue in rural Sri Lanka, whether homosexual or transgender. The potential risk of microaggressions is another significant challenge. In the case of Pride-H, participants revealed the possibilities of microassaults and microinvalidation risks. Pride-H needs to go beyond a few challenges to turn Pride-H into a fully inclusive, harassment-free, and zero-discriminatory environment.

Pride-H can implement strategies to address the issues raised and move the organization closer to becoming a truly inclusive and discrimination-free workplace in light of the thorough results of this study. The organization needs to step up its efforts to debunk myths about LGBTIQ+ inclusion and emphasize that diversity and inclusion are universal principles that cut across cultural barriers to counteract the subtly pervasive negative sentiments toward it. Given the possible effects on well-being and productivity, the issue of closeted LGB personnel requires special consideration. Establishing a secure environment for candid communication and avenues for assistance can help promote a work environment in which people are not driven to live "double lives."

Furthermore, the fear associated with transgender people calls for a thorough education effort that dispels myths and prejudices while fostering acceptance and understanding. Particularly in rural factory settings, where acceptance and tolerance are harder to come by, specific programs need to be put in place to help close the gap. Finally, preventing the dangers of microaggressions necessitates taking preventative measures, such as awareness campaigns and training initiatives that promote a respectful and sensitive culture. By taking proactive measures to address these problems, Pride-H may become a completely harassment-free, zero-discriminatory workplace that sets the standard for other organizations supporting equality and diversity.

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ICME 2025 "Entrepreneurial Bricolage: Steering Volatile Markets through Improvised Strategies and Innovative Thinking"
Proceedings of 14th International Conference on Management and Economics

Leading with Heart: The Role of Empathetic Leadership in Boosting Staff Motivation in Healthcare in Galle District

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Abstract

In the heart of healthcare, where compassion meets crisis, a leader's ability to truly connect with their team would support the staff's motivation. Despite the potential of empathetic leadership to foster motivation, engagement, and commitment among employees, its application and role within the health sector have not been widely studied. Therefore, this research looks into the role of empathetic leadership in fostering motivation among healthcare professionals in the Galle District. Recognizing the pivotal role of leadership on employee engagement, this study looks into the extent to which understanding and responding to the feelings and needs of healthcare staff influences their drive and commitment. This study has been conducted through positivist research philosophy and collected data through a quantitative survey, with a sample of 132 employees from ABC Hospital's total population of 200. The data analysis was conducted through descriptive statistics, Pearson correlation, and chi-square tests, revealing a significant positive relationship between empathetic leadership indicators – recognizing feelings, active listening, awareness of needs, taking a view, and flexibility – and staff motivation. The findings underscore the vital role of emotional intelligence in leadership for cultivating a motivated healthcare workforce. Recommendations emphasize fostering emotional intelligence training, one-on-one conversations, shadowing staff members, and showing flexibility by empowering employees to create a supportive work culture and enhance employee motivation in healthcare settings.

Keywords: Empathetic Leadership, Flexibility, Healthcare Professionals, Staff Motivation

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ISBN: 978-624-5553-76-1

Introduction

In the dynamic and often high-pressure environment of healthcare, the effectiveness of leadership plays a pivotal role in shaping organizational outcomes, particularly staff motivation. Motivated healthcare professionals are crucial for delivering high-quality patient care, fostering positive work environments, and ensuring the overall success of healthcare institutions. Recognizing the significance of leadership in driving employee engagement, this research focuses on a specific leadership attribute – empathy – and its potential to enhance staff motivation within the healthcare sector of the Galle District. The fundamental human need for empathy transcends contexts, and as Edmondson and Lei (2014) argue, the workplace is no exception; individuals thrive when they feel understood and supported. Given the demanding nature of healthcare work and the potential for burnout and decreased motivation, understanding the impact of empathetic leadership on staff motivation in this sector is crucial. The aim of this research is to identify the role of Empathetic Leadership in Boosting Staff Motivation in Healthcare which the study conducted in Galle district in the Galle District, Sri Lanka.

Research Problem

Economic instability, severe resource shortages, and the long-lasting effects of the COVID-19 pandemic are among the reasons contributing to this pressure (Abeynayake et al., 2022; Pathirajage et al., 2022). As evidenced by alarming trends like high burnout rates, low job satisfaction, and a growing trend of healthcare worker migration, these systemic problems produce a difficult work environment that negatively affects the motivation of healthcare employees (Pathirajage et al., 2022). As the foundation of the healthcare workforce, nurses are especially at risk. They frequently struggle with long workdays, severe understaffing, and the significant emotional toll that comes from dealing with demanding patients on a daily basis. Although it is widely acknowledged that strong leadership is essential to creating a motivated workforce (Qalati et al., 2023), a lack of empathy from leaders can further reduce motivation and engagement in a situation where systemic issues may cause personnel to feel underappreciated, unsupported, and emotionally exhausted (Wanninayake et al., 2021). Therefore, it is required to study the need to understand and address the emotional states of the health care staff which directly influences the staff motivation and that further affects the quality of the patient care. Focusing on the aforementioned facts this study addressed, what is the role of Empathetic Leadership in Boosting Staff Motivation in Healthcare which the study conducted in Galle district?

Literature Review

According to Zivkovic (2022), empathetic leadership has the ability to understand the

emotions of own followers and to support them in controlling their emotions whereas according to Leavy (2023), this characteristic of the leader also connects with emotional intelligence that helps the leader to connect with the subordinates and build trust between them. Similarly, Bradbury-Jones et al. (2021), recognizing the feelings of others accurately is one of the fundamental characteristics of empathy. Moreover, Lamberton (2020), has stated that empathetic leaders do not merely hear the words but engage in active listening to understand the full message and the concerns of others. As stated by Puni & Annin (2023), empathetic leaders are not only concerned with the feelings of others but also have an awareness of the needs of others which assists the leader be proactive and helping subordinates accordingly. It is necessary to take the viewpoint of others and this is also a characteristic of the empathetic leader as explained by Leavy (2023), that empathetic leader has the ability to step into another shoes to understand their viewpoint which leads to support even better the staff. It is noted by Lamberton (2020) that, the empathetic leader is a more flexible assistant to adapt the strategies best for each staff in supporting them to control their emotional turmoil. Furthermore, the empathetic leadership characteristics are included in the leadership styles of transformational, servant, and even situational.

Recognizing the feelings of others

Empathetic leaders are very good at identifying other people's feelings, which improves communication and creates a positive atmosphere. Moore et al., (2020), noted that leaders with empathy can create an environment where different groups feel included, motivated, and free to contribute completely. According to Bertrand (2019), effective leaders are also those who are more aware of their inner discourse. A leader's caring attitude is essential to increasing subordinates' mental and emotional well-being. When leaders demonstrate real care and empathy for their staff, a supportive environment develops, promoting trust and a sense of belonging. This care can help reduce stress, boost job satisfaction, and promote emotional stability in employees. Employees are more likely to feel appreciated and motivated, which may lead to increased productivity and general mental wellness. Essentially, a leader's capacity to care for their team is closely related to the health and performance of the people they manage. Further, Kock et al., (2018) implied by expressing empathy, the leader shows that they appreciate and value the needs of their followers at work and will take steps to ensure that they receive a just reward for their efforts. In addition, Jit et al., (2017), by establishing a sense of unity and cooperation, an empathetic leader encourages followers to act more generously.

Ha 1: There is a relationship between leaders Recognizing the feelings of others and staff motivation in the health sector.

ISBN: 978-624-5553-76-1

Engaging in active listening

In empathetic leadership, active listening is crucial because it enables leaders to better understand the viewpoints of their team members. Further Yu et al., (2018), also noted that workers view their connection with their bosses as a social exchange rather than an economic one when they are treated with respect. Goswami and Agarwal (2022), mentioned that literature has characterized ethical leaders as “moral people” and “moral managers”. Leaders embracing the perspective of a moral person show that they value integrity, honesty, trustworthiness and fair decision-making. Ethical behaviour. Moreover, Ellis and Abbot (2018), stated that relationships with others can benefit greatly from active listening. Furthermore, Ray et al., (2019) that when someone expresses a desire for assistance, particularly in an emotionally challenging situation, that person could be able to provide it. While not everyone provides assistance to those in need, people present a variety of explanations for why they do not desire such assistance. As mentioned by Nemec et al,. (2017), a listener is more likely to display visible behaviour that indicates effective listening to the speaker if they are paying attention, understanding, and intending to listen. One way to demonstrate good listening is to adapt.

Ha 2: There is a relationship between leaders Engaging in active listening and staff motivation in the health sector

Awareness of the needs of others

In order to promote a healthy work environment, empathetic leaders are aware of the unique requirements of their staff and work to meet those needs.

The research finding shows the relationship between empathy leaders and staff motivation. As Fuller (2023), stated empathy is too good leadership. Effective leaders can connect with and understand the emotions of their team members, which helps them communicate in a way that inspires and motivates them, which benefits the business and its workforce alike. Furthermore, Kock et al., (2018), that a leadership approach that prioritizes knowing the emotional states of others and shows willingness to show concern and take action to meet their needs is termed empathetic leadership. Moreover, the author Kock et al., (2018), stated that People require emotional support and understanding in every area of their life. A leader could effectively provide this kind of assistance at work by showing empathy for a follower. Castelli (2016) explained that the reflective leadership theory states that followers are more motivated and perform better when leaders listen and know the feelings of subordinates with empathy.

Ha 3: There is a relationship between a leader's Awareness of the needs of others and staff motivation in the health sector

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Taking a view

Leaders who want to promote emotional stability among their team members must take a position or develop a caring attitude. Jian (2021), mentioned that a caring attitude of the leader is essential in improving the mental and emotional well-being of the ones cared for. This creates a supportive environment that boosts mental and emotional wellness. Moreover, Jian (2021), noted empathetic leadership involves acknowledging the different abilities and needs of followers, which improves their effectiveness. Apart from this Linuesa-Langreo et al., (2016), distinguish that there are two empowerment conditions. Psychological empowerment refers to increasing employee engagement and commitment through intrinsic job motivation, whereas group empowerment aims to decentralize power and authority, making businesses more competitive and responsive. Empowered followers are more motivated and satisfied with autonomy, competence, and relatedness, leading to improved performance at both individual and organizational levels. Empathetic leaders serve as role models for improving emotional intelligence. The view of leaders looking at others is different highly empathetic leaders know about their subordinates as explained by Reno, & Heuett (2018), Leaders with greater empathy are also better able to comprehend and address the needs of their followers in a way that improves performance. A leader can choose a management strategy that can boost strong performance or improve subpar performance by having a better understanding of and anticipation of their followers.

Ha 4: There is a relationship between leader Taking a view and staff motivation in the health sector

Flexibility

According to the explanation by Kljajić-Dervić and Dervić (2017), to influence the knowledge of the subordinates and work with them to achieve the goals, the leader must have a thorough understanding of both himself and others. Coworker counselling, education, evaluation, and development are also taken into account within the leadership framework. When doing this, we must be mindful of the organization's work, culture, relationships, excitement, and knowledge. Moreover, Bran and Udrea (2016), successful businesses use more or less planned flexible techniques to get the required performance and often reap the benefits of appropriate economic success. Apart from this Bran and Udrea (2016), stated although flexibility focused on the corporation can primarily be linked to economic growth through improved business performance, flexibility focused on the employees has been linked to strengthening society. By enhancing the performing job and personal obligations during various phases of life. Without adaptability, a business could undermine its success by maintaining the same set of incentives for its workers. According to Bal & de Lange (2014), when employers or organizations are better aware of the demands of young working people in terms of workplace

flexibility, their organizational performance is likely to improve significantly.

Ha 5: There is a relationship between a leader's Flexibility and staff motivation in the health sector

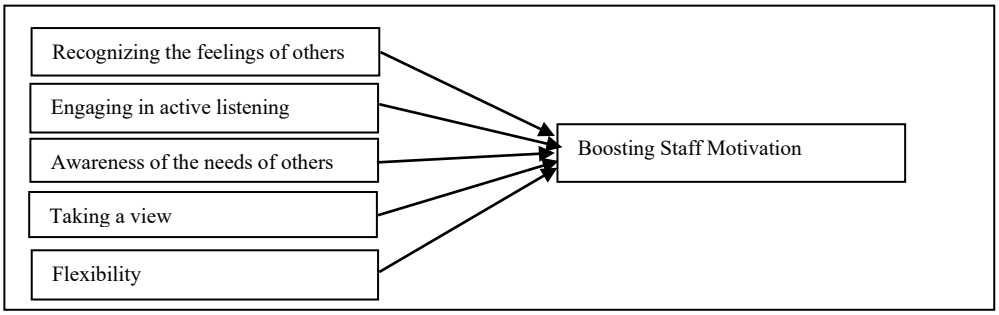

Figure 1: Conceptual Framework

Methodology

This study adopted a positivist research philosophy, emphasizing the objective measurement of social reality and the testing of pre-determined theories. Following a deductive approach, the research commenced with existing theoretical frameworks, from which specific hypotheses regarding the relationships between variables were developed. A mono-method quantitative research design was employed to collect numerical data suitable for statistical analysis. Specifically, a survey questionnaire was chosen as the primary data collection instrument to gather information from the participants. The study focused on the entire population of the ABC hospital, which consisted of 200 employees. Although the total population was considered, a sample size of 132 was determined based on the Mogan table. The collected data were analyzed using descriptive statistics to summarize the characteristics of the sample and the distribution of variables. To examine the direction and intensity of correlations between variables, Pearson correlation was utilized. Additionally, the chi-square test was to assess the statistical significance of associations between independent and dependent variables.

Data Analysis

Reliability Test Results

Table 1: Reliability Test Results

Reliability Statistics	
Cronbach's Alpha	N of Items
.981	26

Source: Author developed 2025

The reliability analysis using Cronbach's Alpha resulted in a coefficient of 0.981 for 26 items, indicating an exceptionally high level of internal consistency. This suggests that the items in

ISBN: 978-624-5553-76-1

the scale are highly correlated and measure the same underlying construction with great reliability. Typically, a Cronbach's Alpha value above 0.70 is considered acceptable, while values above 0.90 indicate excellent reliability.

Table 2: Descriptive Statistical Analysis

	Recognizing the feelings of others	Engaging in active listening	Awareness of the needs of others	Taking a view	Flexibility
Mean	4.44	4.51	4.49	4.52	4.58
Mode	5	5	5	5	5
Std. Deviation	0.954	0.757	0.860	0.643	0.678

Source: Author developed 2025

The descriptive statistical analysis for the study on "Leading with Heart: The Role of Empathetic Leadership in Boosting Staff Motivation in Healthcare in Galle District" reveals consistently high mean scores across all variables, indicating that respondents generally perceive empathetic leadership as strongly present in their workplace. Flexibility received the highest mean (4.58), followed closely by Taking a View (4.52) and Engaging in Active Listening (4.51), suggesting that adaptability and perspective-taking are key traits of empathetic leaders in healthcare. Awareness of the Needs of Others (4.49) and Recognizing the Feelings of Others (4.44) also scored highly, reinforcing the importance of emotional intelligence in leadership. The model for all variables is 5, showing that the most common response was the highest rating, signifying strong agreement among participants. Standard deviations range from 0.678 to 0.954, with Flexibility having the lowest variability (0.678), indicating a more consistent perception of this trait among respondents. Meanwhile, Recognizing the Feelings of Others has the highest variability (0.954), suggesting some differences in how leaders demonstrate this quality. Overall, these results highlight that empathetic leadership is highly valued and consistently practised in the healthcare sector of the Galle District, contributing positively to staff motivation.

Table 3: Inferential statistical analysis

	Value	Asymp. Sig. (2-sided)	Pearson Correlation
Recognizing the feelings of others	291.236a	0.000	.508**
Engaging in active listening	337.922a	0.000	.506**
Awareness of the needs of others	308.626a	0.000	.505**
Taking a view	397.050a	0.000	.521**
Flexibility	311.671a	0.000	.479**

Source: Author developed 2025

The inferential statistical analysis confirms a strong and positive correlation between empathetic leadership and staff motivation in the healthcare sector of the Galle District. The findings align with Bommel (2021), who emphasized that empathetic leadership is a highly effective crisis response method, and Seijts and Milani (2021), who stated that creating a diverse and inclusive workplace requires leaders to demonstrate empathy.

The first variable, recognizing the feelings of others, yielded a high mean value of 4.44, indicating that most respondents agreed or strongly agreed with the statement. The standard deviation of 0.954 suggests some variability in responses but generally confirms that leaders who acknowledge and respond to employees' emotions foster motivation and gratitude within the workforce (Kock et al., 2018). This supports the argument that empathetic leaders ensure employees feel valued and fairly rewarded for their efforts.

The second variable, engaging in active listening, received a mean score of 4.51, reflecting a high level of agreement among respondents. The low standard deviation of 0.757 suggests a strong consensus on the importance of leaders actively listening to employees' concerns. This supports Ellis and Abbot (2018), who argued that active listening strengthens workplace relationships and enhances employee engagement. The empirical evidence highlights that leaders who attentively listen to their staff foster stronger and more productive professional relationships.

The third variable, awareness of the needs of others, was also highly rated, with a mean of 4.49 and a standard deviation of 0.860, indicating widespread agreement among respondents. This finding aligns with Kock et al. (2018), who asserted that leaders demonstrating an awareness of employees' emotional and professional needs contribute to a more supportive and motivating work environment. The results further reinforce that employees value leaders who acknowledge and address their needs, as this fosters trust and engagement in the workplace.

The fourth and fifth variables, taking view and flexibility, also showed significant positive correlations with staff motivation. The mean values of 4.52 and 4.58, respectively, indicate that respondents placed high importance on these aspects of empathetic leadership. The moderate standard deviation of 0.805 for taking a view reflects consistent agreement, while the lower standard deviation of 0.678 for flexibility suggests a strong consensus among respondents. These findings align with Reno and Heuett (2018), who stated that empathetic leaders are better equipped to understand and address employees' needs, leading to improved performance. Moreover, Bal and de Lange (2014) emphasized that workplace flexibility enhances organizational performance, particularly when leaders understand and respond to employees' evolving needs.

Conclusion

Overall, the results provide empirical support for the hypothesis that empathetic leadership significantly influences staff motivation in Galle's healthcare sector. All five indicators—recognizing feelings, active listening, awareness of needs, taking a view, and flexibility—demonstrated strong positive correlations with staff motivation, reinforcing existing literature on the subject. The study successfully establishes that empathy in leadership is a critical driver of staff motivation, ensuring that employees feel valued, heard, and supported. Consequently, these findings validate the initial research objective and confirm that emotional intelligence in leadership plays a pivotal role in fostering motivation among healthcare employees in private hospitals in Galle. The research underscores the critical role of empathetic leadership in enhancing staff motivation, emphasizing key traits such as recognizing others' feelings, active listening, and awareness of employees' needs. Recommendations include emotional intelligence training, informal check-ins, and open communication, healthcare leaders can develop empathetic leadership, which will increase employee motivation by focusing on identifying and actively listening to staff members' feelings and concerns. Through one-on-one conversations and well-being surveys, one can become aware of the holistic needs of others. One can also practice perspective-taking by shadowing staff members and participating in scenario-based discussions to gain a true understanding of their everyday lives. Lastly, leaders need to show flexibility by empowering employees, modifying policies, and encouraging work-life balance. These initiatives, which are backed by a top-down commitment and incorporated into HR procedures, create a culture where employees feel appreciated, understood, and inspired.

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ISBN: 978-624-5553-76-1

ICME 2025 "Entrepreneurial Bricolage: Steering Volatile Markets through Improvised Strategies and Innovative Thinking"
Proceedings of 14th International Conference on Management and Economics

Personal Attributes from Military Life Influencing Entrepreneurial Intentions in Sri Lanka

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Abstract

The study explores the coverage of personal attributes groomed in the military that affect the entrepreneurial intention of the ex-military personnel in Sri Lanka to serve the nation in a better way, which is less covered in both national and international literature. Although the amount of interest in veteran entrepreneurship has increased over the years around the world, little has been done to study how the inculcated discipline, leadership, and flexibility of military life influence the success of entrepreneurship in developing nations, such as Sri Lanka, where the future of post-service career transition remains doubtful. Based on this gap, the study adopts a qualitative research design whereby semi-structured interviews will be conducted with successful Sri Lankan military veterans-turned-entrepreneurs. The findings demonstrate that self-confidence, leadership, adaptability, risk-taking propensity, and determination, which are the characteristics that are enhanced in the military service, have a substantial impact on the intention of the ex-military personnel to begin a business. These qualities increase the entrepreneurial motive and recoverability, particularly in volatile socio-economic situations. The study offers practical implications to policymakers, veteran organisations, and entrepreneurship development programs, revealing the necessity of specific support mechanisms to capitalise on the entrepreneurial potential of the ex-military population. It adds to the theoretical knowledge of the entrepreneurial intention among non-traditional populations. Subsequent studies might develop this question further with quantitative methods or investigate how gender, rank, or kind of military service acts as a moderating variable.

Keywords: *Entrepreneurial Intention, entrepreneurship, military veterans, personal attribute, post-service career, Sri Lanka*

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ISBN: 978-624-5553-76-1

Introduction

Entrepreneurial Intention (EI), an individual's inclination to become an entrepreneur, is shaped by various factors, including personality traits, life experiences, and contextual influences (Krueger et al., 2000). Military contexts marked by high-pressure environments, discipline, and structured training help cultivate skills relevant to entrepreneurship, such as leadership, adaptability, risk-taking, and effective decision-making (Bullough et al., 2014; Renko et al., 2021).. These skills and experiences gained through military service often translate into practical advantages in entrepreneurial settings (Wang et al., 2023).

Despite a sizable military veteran population in Sri Lanka, there remains a lack of empirical research exploring how military-acquired characteristics influence veterans' entrepreneurial intentions. Although Sri Lankan military institutions recognise the entrepreneurial potential of their former personnel (Sarvananthan, 2011), this acknowledgement has not been matched by scholarly attention. Existing literature in other countries highlights the viability of entrepreneurship as a post-service career path, particularly for those who retire early or face limited civilian employment opportunities (Renko et al., 2021). In Sri Lanka, where military service is voluntary and the economic landscape poses unique challenges for reintegration into civilian life, entrepreneurship may offer an alternative and empowering career route.

This study addresses a critical gap by investigating the influence of military experiences on the development of entrepreneurial intention among Sri Lankan veterans. The absence of localised empirical research on this topic limits academic understanding and the development of targeted policy interventions. A qualitative inquiry is particularly suitable for this research, as it provides a deeper understanding of the personal, contextual, and emotional dimensions of the transition from military service to entrepreneurship. These elements cannot be fully captured through quantitative analysis.

Accordingly, this study aims to explore how military experiences contribute to the development of entrepreneurial characteristics among Sri Lankan veterans, understand the motivations behind their decisions to pursue entrepreneurship post-service, and identify the challenges and barriers they face in establishing and sustaining their ventures (Iddagoda et al., 2024; Kerrick et al., 2014). To achieve these aims, the research will address the following questions: How do Sri Lankan military veterans describe the influence of their service on their entrepreneurial intentions? What specific military-acquired skills and experiences do veterans perceive as beneficial for entrepreneurship? What challenges do they encounter in transitioning from military life to running a business? Performing this research is important for scholars and policymakers to recognise that new avenues for a second career for veterans are being observed in research, policy, and practice.

ISBN: 978-624-5553-76-1

Literature Review

Entrepreneurial Intention has been explored widely in multiple contexts as a psychological predictor of entrepreneurship. According to Zhang and Cain (2017), EI is defined as the aspirational behaviour of creating and dominating one's enterprise, which is also the foundation towards entrepreneurship and venture creation (Krueger, 2007; Shook et al., 2003). Several theoretical frameworks contributed to the emergence of EI. The Theory of Planned Behaviour stands out as a core model that states that one's behaviour is reflected by the intention, influenced by attitude toward entrepreneurship, social norms, and perceived behavioural control, and remains a foundational framework for understanding EI (Ajzen, 1991).

Moreover, EI is shaped by numerous environmental, cognitive, and social influences (Krueger, 2007; Shook et al., 2003). Among them, personal attributes have become the core predictors of EI, which consist of any characteristic, quality, or feature that stimulates one's entrepreneurial behaviour or attitude (Onumah et al., 2022). A broad assortment of individual qualities has been empirically acknowledged in different settings. An undergraduate-level study reported that self-confidence contributes to EI by increasing education and relationship support (Gelaidan & Abdullateef, 2017). It was also found that self-confidence increases entrepreneurial self-efficacy (Maczulskij & Viinikainen, 2023). The literature has also singled out leadership skills as crucial in the development of entrepreneurial competencies. The findings of Junça-Silva et al. (2024) showcase that risk-taking is highly productive in the creativity and identification of opportunities, creating EI (Barati, 2024).

Though EI has been widely studied in general contexts, limited research focuses on the military context, though ex-military personnel often pursue entrepreneurship as a second career (Kerrick et al., 2014; Ojo, 2023; Kolvereid & Iermolenko, 2020). However, some personal attributes that are generally validated are also emphasised in the military segment. Leadership and leadership competency development were highlighted in military research. Cakiroglu et al. (2020) observed shared leadership where the tasks were led based on one's traits. Military leadership enhances motivation by building competencies related to task orientation, social competencies, and work background, such as fruitful relationships, empathy, positive attitude, supervision, etc. (Larsson et al., 2016; Meerits & Kivipõld, 2020; Egan et al., 2024). A study from the Swedish military revealed low self-confidence when observing their leadership behaviour (Larsson et al., 2016). Furthermore, supported by various empirical evidence, risk-taking is another trait reinforced through the military (Maczulskij & Viinikainen, 2023).

Finally, in the Sri Lankan context, empirical evidence was deduced that the military training nourishes individuals with skills that support high performance in post-service entrepreneurial careers. (Iddagoda et al., 2024). A robust study on retired military personnel in Sri Lanka proved that training (technical/vocational education) can boost the factors that affect EI.

Nevertheless, the following section outlines the robust research methodology to expand this inadequate military EI context.

Methods

Research Approach

From an interpretivist philosophy, this research is framed within Saunders' research 'onion' model, which recognises the subjectivity involved in exploring ex-military officers' entrepreneurial intentions. (Saunders et al., 2023). The study adopts an inductive, qualitative approach grounded in the lived experiences of respondents. Data were collected through 15 semi-structured interviews (Dana & Dumez, 2015), each lasting 30 to 90 minutes and conducted digitally. Open-ended questions were utilised throughout the interviews to obtain in-depth insights and encourage exploratory engagement. Respondents were ex-military entrepreneurs from the tri-forces, selected through snowball sampling. Officers were prioritised due to their leadership experience in 'high stakes' environments (Noy, 2008). A pilot interview was conducted to refine the interview guide, and data saturation was achieved after the twelfth interview.

Ethical approval was obtained before data collection, and informed consent assured confidentiality and anonymity for all respondents. Interviews conducted in Sinhala were translated and transcribed carefully to maintain contextual accuracy. Reliability and validity were supported through the triangulation of data sources using multiple data sources, such as interviews and literature reviews. Additionally, both factors were considered in finalising themes, with the panel brainstorming together to ensure comprehensive and accurate interpretation.

Table 01: Respondents' Details

Respondent	Industry	Tri forces	Years in military experience	Gender	Prefered language
R1	Retail Sector	Army	10	Male	Sinhala
R2	Automobile	Air force	12	Male	Sinhala
R3	Catering	Air force	22	Female	Sinhala
R4	Security Services	Army	30	Male	English
R5	Agriculture	Navy	8	Male	Sinhala
R6	Security Services	Army	35	Male	Sinhala
R7	Security Services	Army	20	Male	English
R8	Hr Training/Support Services	Army	26	Male	English
R9	Cultivation	Army	22	Male	Sinhala
R10	IT (Software)	Army	26	Male	English
R11	Security Services	Army	21	Male	Sinhala
R12	Incense Sticks	Army	12	Male	Sinhala
R13	Security Services	Army	23	Male	Sinhala
R14	Fitness (gym)	Army	12	Male	Sinhala
R15	Security Firm	Army	26	Male	Sinhala

ISBN: 978-624-5553-76-1

Data Analysis

The study uses thematic analysis to investigate the impact of individual characteristics on entrepreneurial performance (Braun & Clarke, 2006). This qualitative approach uses data from semi-structured interviews, which were analysed, identifying themes related to the attributes that define success in business. Unlike rigid methods tied to specific paradigms, thematic analysis enables researchers to identify, analyse, and report data patterns, providing a rich and detailed account that captures explicit and implicit meanings (Özden, 2024). This adaptability makes thematic analysis suitable for a wide range of qualitative data, such as interviews, focus groups, and textual documents (Clarke & Braun, 2013). Data integrity, minimising bias, and rigour were achieved through manual coding with repeated checks and cross-referencing by the researcher to confirm that consistent patterns and codes were identified and accurate (Di Pietro et al., 2018).

Thematic analysis is a structured method with several stages. In the first stage, the researcher immerses themselves in the data and becomes familiar with it over multiple readings. Secondly, initial codes are generated by organising key information into meaningful categories. Thirdly, these codes are organised into meaningful themes and are reviewed to ensure they fit together and that none are alike. Fourthly, each theme receives a definition and name, followed by a thematic map showing how your themes relate to others. Finally, the analysis process is concluded by writing a report that outlines the themes and draws a relationship back to the research questions based on examples from the data.

Findings and Discussion

EI is built from different factors, including character, environment, and learned abilities (Ajzen, 1991; Krueger et al., 2000). The experience and training of Sri Lanka's ex-military members give them the tools that improve their chances of being entrepreneurs. It studies the information obtained from veterans in every service branch and finds out how their rank, gender, and background in Sri Lanka impact their businesses. This study focuses on how these factors interact and support veterans' entrepreneurial behaviour, based on the three parts of the Theory of Planned Behaviour (TPB): attitude, what society believes about the behaviour, and control.

Self-confidence

The distinction between an ordinary entrepreneur and a veteran entrepreneur is reflected in their personalities. Veteran entrepreneurs are incredibly determined and do not easily abandon their goals. They demonstrate incredible courage and confidence in every situation, regardless of their challenges.

ISBN: 978-624-5553-76-1

In one case, an officer explained the organised way of dealing with tasks when things become hectic. "*… I have faced many obstacles and always prepared for what is ahead. I approach tasks with neatness, thoroughness, and confidence, which helps me stay composed under pressure…*" (R9). Majors in the Army were more self-assured in their abilities to do their job, demonstrating how the perception of doing things well depends on the level of authority. Among lower functions, success in using entrepreneurial skills depends more on favours from peers, as greater rank seems to make people more able to trust in their authority and personal abilities.

This is related to what Liñán & Chen (2009) observed about self-confidence being an essential factor in becoming an entrepreneur and confirms Krueger et al.'s (2000) belief that confidence in unpredictable situations helps an entrepreneur stay persistent in a volatile environment. Self-confidence aligns with the Ajzen (1991) TPB by reflecting an individual's perceived behavioural control that demonstrates their ability to carry out entrepreneurial actions. The entrepreneurial intention of former military personnel advances through their skilled confidence and experienced self-assurance.

Leadership Skills

Leadership skills gained in the military help a person succeed in business. Respondents from the military stressed the importance of managing people and making decisions, as proven by their remarks. "*…I observed how they handled different ranks at the military, which became a foundation for my approach to leadership. Throughout my career, I maintained this people-centred command style …*" (R10). In comparison with normal civilians, ex-servicemen usually show clear, effective personalities. They encounter difficulties straight away and generally take on leadership positions without hesitation. Self-confidence and self-reliance push many to launch their businesses instead of being employed by others. They set high personal standards and want to be treated with respect, which shows their strong sense of independent leadership. However, since former soldiers might not always agree with common public attitudes, they use their army links for business purposes. Therefore, many of these companies' leaders and board members are ex-military officers, helping to build a consistent culture and trust among them.

Research by Gupta et al. (2004) supports the findings about entrepreneurial intention being closely linked to leadership competence through responsible emotional decision making. Military leadership experiences tend to bridge into business fields because they develop better decision processes, strategic solutions, and problem-solving systems (Zhao et al., 2010). According to TPB, leadership skills influence entrepreneurial attitude towards behaviour, as individuals who perceive leadership as an asset in business are more likely to develop positive attitudes toward entrepreneurship.

ISBN: 978-624-5553-76-1

Adaptability

Adaptability, developed through the unpredictable nature of military operations, equips veterans to navigate the dynamic demands of the business world effectively. The respondents stated about adjusting to changes in the battlefield using their tactics and gaining a long-term strategy by doing their daily jobs. It is pronounced as they adapt from leading troops to leading businesses. "*...I can handle tasks without delay. The challenges were mainly dealing with others who lacked discipline and punctuality. But now, I have adapted to tolerate those...*" (R07). It looks pretty challenging to deal with the normal people in society who lack punctuality, discipline, and ethics, which are strong assets of military personnel. Although these irritate them, adaptability is important when transferring to civilian work environments. It helps veterans fit their values with the norms found in most companies. Being adaptable, veterans learn to adjust their personal views to the expectations of everyday civilians and the important military values they have, such as diligence and discipline (Cope, 2005; Bonner & Ellender, 2022).

Risk-taking Propensity

Ex-military personnel can be more tolerant of risks that are part of business because of what they faced on the battlefield. One respondent emphasised, "...Even though I did not have much money, I took a risk to develop the business..." (R1). Nevertheless, this interest depicts the risk-taking propensity of entering the corporate world and facing socio-economic challenges. Having a background in the military enables veterans to handle economic difficulties carefully, along with the reputation gained in the military. These findings relate to what Lumpkin and Dess (1996) and Stewart and Roth (2001) say about risk tolerance and how it ties to an entrepreneur's orientation and achievements. Perceived behavioural control within TPB gains strength from risk-taking ability because it builds entrepreneurs' ability to handle unpredictable situations when making key business choices.

Determination

Starting a business successfully depends a lot on being determined and persistent. Many veterans talked about developing resilience because of their many experiences in the military, as shown by R1. "*...I will go on my journey no matter what obstacle comes...*" (R1). The ex-military entrepreneurs displayed commitment to success in a manner that research by Duckworth et al. (2007) links with entrepreneurial achievement. Markman et al. (2005) found similar results: persistence plays a vital role in business challenges, yet ex-military entrepreneurs support this finding. As a result, TPB makes individuals more positive about entrepreneurship, which makes them more determined during tough times.

In Sri Lanka, the socio-cultural and economic context influences attitudes towards emperorship. In rural areas, military service is highly respected, and veteran status affords veterans social status and trust as civilians. This social capital creates positive subjective norms contributing to entrepreneurship (Tatarko & Schmidt, 2016). In rural areas, relatively few formal jobs are available, increasing veterans' self-employment intentions as they seek financial independence. Their potential approach is not only a preferred option but also a necessary option in a limited job market. Finally, socio-cultural expectations related to gender and rank create potential challenges. Female and lower-ranked veterans may have social and institutional barriers affecting their efforts as entrepreneurs. Therefore, additional support mechanisms could be better tailored to address additional socio-cultural and economic barriers.

Thematic Integration

In particular, these themes combine into an organised system that helps explain EI in ex-military personnel (see Figure I). Having self-confidence and being a leader increases a person's attitude to entrepreneurship; adaptability and society's norms affect someone's subjective norms; greater risk-taking and competencies improve a person's feelings of control in entrepreneurship. All these elements build a sound environment that helps veterans run their businesses in Sri Lanka. The framework below emphasises that military training in Sri Lanka helps veterans become outstanding among other entrepreneurs with personal attributes amidst the country's tri-force culture, economic situation, and gender roles.

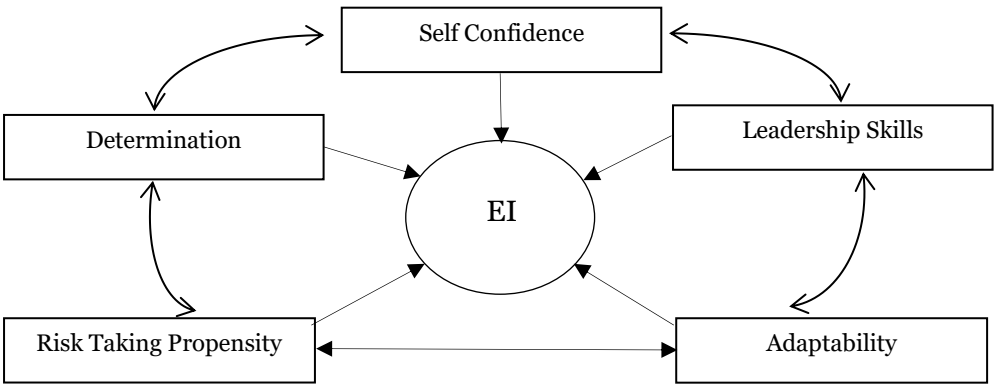

Figure 01: 1- Interconnected themes contributing to entrepreneurial intention among Sri Lankan ex-military personnel

Conclusion

The study concludes that the specific personal attributes were developed during the military service, and a set of such competencies positively impacts the entrepreneurial intentions of ex-military personnel in Sri Lanka. These characteristics can be explained by the (TPB Ajzen,

1991), along with skills contributing to the increased perceived behaviour control, leadership, and determination, which fall under the influence of the attitudes, and the ability to adapt belongs to the subjective norms' impact on the behaviour. The military is, thus, a shaping environment that nurtures the prospects of entrepreneurship, especially where there is socio-economic uncertainty.

This research fills a significant gap since little literature focuses on how attributes achieved in the military are transferred to entrepreneurial behaviour in a developing country context. In such a way, it makes a theoretical and practical contribution to the entrepreneurship discourse. With this study, the process model formally describes how individual qualities formed during military service trigger entrepreneurial intention and enable venture creation. This may be a new way of studying the entrepreneurial identity formation process in veterans.

In practical terms, the results support the significance of personalised support systems. To realise the untapped potential of the ex-military personnel, policymakers, veteran associations, and entrepreneurship development programs should consider transitioning ex-military personnel into a specialised entrepreneurial track, enabled by mentorship, networking, and finance. Consideration should also be given to underrepresented groups, including women veterans and lower-rank veterans, as they can have socio-cultural and institutional obstacles.

Being qualitative research, the generalisation of findings might be limited. Future studies may be based on mixed-method or longitudinal designs to extend the confirmation of the model and determine how gender, rank, or even the type of military service affects the quality and direction of entrepreneurial intention. Also, assessing the importance of entrepreneurship education and ecosystem incorporation can provide practical recommendations to reinforce the veteran-led business establishment in Sri Lanka and other related environments.

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ISBN: 978-624-5553-76-1

ICME 2025 "Entrepreneurial Bricolage: Steering Volatile Markets through Improvised Strategies and Innovative Thinking"
Proceedings of 14th International Conference on Management and Economics

Psychological Safety and Human Capital Management in Higher Education: The Mediating Influence of Employee Engagement

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Abstract

The study aims to examine the impact of psychological safety and human capital management (HCM) practices on employee engagement in higher education, with a focus on the mediating role of employee engagement. Adopting both social and organizational perspectives in exploring the effect of having a supportive work environment on staff engagement. The study used quantitative research methods to gather information from 396 faculty members. The data was subsequently analyzed through SEM. The results reveal that psychological safety fosters significantly more engagement among employees. Leadership techniques, workforce optimization, knowledge accessibility, and learning capacity have been found to assist employee engagement. Additionally, employee engagement serves as a significant mediator between psychological safety and key components of HCM, supporting the position that employee engagement is critical in mediating organizational assets into employee commitment and involvement. The results led to a realization of the strategic priority for developing psychologically safe and resource-rich workplaces to promote sustainable employee engagement. This study makes original contributions by integrating the SET and RBV frameworks in a higher education context, which is essential for enhancing theoretical explanations and practical applications, thereby enabling academic leadership to improve workforce resilience and advance institutional outcomes.

Keywords: *Human Capital Management (HCM), Psychological Safety, Employee Engagement, Higher Education, Faculty Performance*

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Faculty of Management and Finance, University of Ruhuna, Sri Lanka. July – 2025
ISBN: 978-624-5553-76-1

Introduction

Psychological aspects have been a crucial topic in contemporary university settings. In 1981, Schultz (1961) expanded on the idea of human capital by stating that all human capacities need to be either natural or acquired through learning. Investing in human capital can enhance its valuable attributes. Human Capital Management (HCM) is a strategic approach that develops a workforce through training, development, and psychological factors to improve productivity and sustainability. Effective HCM procedures ensure that workers are prepared and motivated to support company objectives, which in turn boosts productivity and efficiency (Edmonson, 1999). Currently, employee psychological constructs have become vital, as research shows the new generation who are getting ready to enter the job field, specifically Gen Z, are battling with depression. The human elements of a setting are often considered to be those that can learn, change, and innovate themselves and others, which is vital to the organization's long-term sustainability. At the corporate level, human capital management (HCM) focuses on collecting and sharing information that enables informed decisions about managing people in ways that add value to the organization (Hossain & Roy, 2016). A high-performing organisation is one where people are accountable and innovative, and also align their objectives with those of the organization. A culture like this enhances efficiency, which in turn augments income streams and improves customer satisfaction (Kahn, 1990).

Psychological safety can provide a comfort zone that will ease the personal demons of any employee. Psychological safety can significantly impact HCM, as it refers to the environment where one will not be judged, reprimanded, or humiliated for speaking up, sharing ideas, or thinking outside the box. When psychological safety is given top priority, workers are more inclined to communicate honestly and provide creative solutions without worrying about the repercussions (Tannenbaum & Cerasoli, 2013). Additionally, traditional human resource management has undergone a significant paradigm shift toward human capital management. In this paradigm, engaged employees are considered more productive and are dedicated to continuous autodidacticism. HCM must create an atmosphere that encourages participation through fulfilling work, growth opportunities, and recognition of accomplishments if it is to be successful (Albrecht et al., 2015). HCM has gained traction in the western region of the world since 2016. A university, as a social system, is often considered to have two dimensions: economic and social aspects; again, the primary preference is for human factors. The foundation of any organization is its workforce (Kucharčíková, Tokarčíková & Blašková, 2015). Psychological safety can lead to increased employee engagement. Employee engagement is higher when they feel free to express themselves without worrying about consequences (May, Gilson & Harter, 2004). In Bangladesh, particularly in universities, HRM is still predominant in its role over HCM, which is also not very structured. A university propels forward with the help of its faculty and other employees. Faculty members work diligently to achieve the

ISBN: 978-624-5553-76-1

university's goals and spend most of their days at their workplaces (Kucharčíková, Tokarčíková, & Blašková, 2015). The faculty environment is highly innovative, research-oriented, and characterized by knowledge sharing. Implementing successful HCM practices that encourage psychological safety can raise faculty involvement levels. This can enhance teaching outcomes, boost research productivity, and create a more vibrant academic environment (Li, J., & Herd, 2017).

The environment of Bangladesh's universities is distinguished by its dynamic character. Large organizations typically utilize formal human capital management systems, whereas small businesses often avoid implementing such systems professionally (Frazier et al., 2017). Research into human capital management warrants further investigation, as current academic studies have only scratched the surface regarding its connection to psychological safety and employee engagement. The literature review revealed that most studies were conducted in corporate environments in the Western part of the world. Still, they have yet to be assimilated into the academic environment in a developing country like Bangladesh. In addition, psychological safety has been said to achieve various organizational outcomes directly, but research is needed to understand how a mediator like employee engagement facilitates the achievement of these outcomes in an academic setting. Comprehending the process by which human capital management translates into concrete results is essential for formulating successful plans for long-term expansion (Alam et al., 2024). Academics have paid little attention to the study of psychological safety and employee engagement, which has primarily focused on industries such as manufacturing and healthcare. Sector-specific studies are necessary because universities have quite different organizational structures, employment functions, and performance criteria compared to other industries. Existing research on the adoption of HCM is mainly based on conventional constructs, which are quite empirical. To gain a deeper understanding of the intricate dynamics within Bangladeshi higher education institutions, we must address the aforementioned research gap. Therefore, the study aims to investigate how employee engagement and psychological safety impact the performance and human capital management of academic institutions.

Literature Review

Theoretical Framework and Hypothesis Development

The study applies social exchange theory (Blau, 1960) to examine how psychological safety affects human capital management and how employee engagement influences this connection. Eisenberger, Fasolo, and Davis-LaMastro (1990) found that the reciprocity rule applies to organizations. SET is grounded in the reciprocal aspects of relationships, where if one party bestows benefits on the other, the other party reciprocates (Liu et al., 2023). It can be said that when the organisation provides a psychological safety climate, then employees will be more

ISBN: 978-624-5553-76-1

engaged and satisfy the dimensions of Human capital management. Ultimately, an employee will behave precisely as the organization treats them (Mearns et al., 2010). Dejoy and others (2010) discovered that when management is committed to workplace safety, it influences social exchange dynamics. Employees tend to react positively when they feel that their organization supports workplace safety. The literature provides evidence that when an employee perceives psychological safety, they are more productive, innovative, and enthusiastic (Ni, 2007). These results are consistent with the fundamental ideas of SET, which hold that workers who receive support and respect reciprocate by being loyal, thereby improving organizational success. According to Barney (1986, 1991, & 1995), firms can harness a competitive advantage by focusing on resources that are rare and inimitable for competitors, which later gave rise to the resource-based view theory (Becker & Gerhart, 1996). Additionally, the Resource-Based View of Firms (RBV) emphasized the need for complementarity in both value generation and value capture. Complementary approaches are more difficult to replicate than best practices, even if they align with a generic business strategy (Gerhart & Feng, 2021). RBV claims that human capital is the most valuable resource that any organization can possess. Human capital falls under the VRIN criterion (Gerhart & Feng, 2021); Valuable, Rare, Inimitable, Non-substitutable. Promoting psychological safety transforms workers from passive resources into active contributors, thereby increasing the organization's capacity to create value, which is why this study aligns with the RBV paradigm (Barney, 1991). The topic of strategic human resource management is based on the RBV theory (Kaufman, 2015). According to this study, psychological safety enhances employee engagement, which in turn augments employee skills and competencies, aligning them with the VRIN criterion (Gerhart & Feng, 2021). RBV research suggests that engaged employees reduce turnover costs and preserve institutional knowledge, both of which are crucial for maintaining a strategic advantage (Barney, 2000). Therefore, the SET theory and the RVB theory align perfectly with the investigation of this research and will serve as a solid foundation.

Psychological Safety

The work of Schein and Bennis (1965) on organizational transformation provides the foundation for the concept of psychological safety. They underlined that psychological safety is crucial for any organizational transformation. According to Schein and Bennis (1965), it is the extent to which people feel secure and confident about their ability to adapt to change. The idea that team members or workers of an organization may freely express their feelings and opinions without worrying about embarrassment or mockery of any kind is known as psychological safety. Schein and Bennis first proposed the idea, and Edmondson then expanded on it (Kahn, 1990). Now, a quarter of a century later, the idea was revitalized by Kahn's groundbreaking work. The concept of psychological safety refers to an individual's

ability to express themselves freely without fear of harm to their self-image, reputation, or job security. According to Kahn (1990), establishing trustworthy interpersonal ties with coworkers might improve psychological safety.

This state of safety enables employees to make better decisions, promote innovation, and be engaged in their work, as there are no repercussions for mistakes or unintentional failures (Edmondson, 1999). In recent times, Newman, Donohue, and Eva have conducted thorough research on psychological safety as a construct. They have provided a nomological network of variables related to the construct of psychological safety (Newman, Donohue, & Eva, 2017). They have demonstrated a strong correlation between psychological safety and supportive leadership, a key dimension of Human Capital Management. They have also found a strong relationship between psychological safety and knowledge sharing. Engagement, innovation, performance, and others (Newman, Donohue, & Eva, 2017). There were more, but these constructs form the foundation of Human Capital Management.

Psychological safety enhances team performance as they become less fearful of the repercussions and more engaged with performance and goal attainment. Research suggests that psychological safety enhances performance by fostering openness, innovation, and supportive leadership, as well as optimizing the workforce (Schein & Bennis, 1965). Psychological safety appears to predict learning and performance outcomes at all levels (Newman, Donohue, & Eva, 2017). Building psychological safety in the workplace requires supportive leadership practices. The role of a leader in building mutual respect and engagement is paramount (Edmondson, 2018). Psychological safety entails making choices to mitigate negative outcomes in response to perceived vulnerability (Edmondson, Kramer & Cook, 2004). Workers may be less inclined to express themselves or take risks if they believe that doing so will have unfavorable consequences, or even if it could make them feel embarrassed (Detert & Burris, 2007).

Improved psychological safety can lead to enhanced work engagement (Lyu, 2016), as it fosters the perception that individuals can engage without fear of negative repercussions (Edmondson, 1999; Eggers, 2011; Roussin & Webber, 2011). To lead effectively, authentic leaders utilize both their self-awareness and that of their followers (Avolio & Gardner, 2005). Leaders help subordinates build leadership abilities by promoting self-awareness of emotions, behaviours, and thoughts (Eggers, 2011). This links directly to Human Capital Management, which can be achieved through psychological safety, as supported by this research. Psychological safety, along with leadership inclusiveness, promotes team engagement in quality improvement (Nembhard & Edmondson, 2006). These facts highlight how psychological safety can enhance employee engagement. Engagement for improvements in unit teams may occur when a climate of psychological safety is created (Nembhard & Edmondson, 2006).

As noted by Schneider, Macey, Barbera, and Young (2010) alongside Kahn (1990), work engagement is characterized as a precarious endeavor that can render employees vulnerable to negative consequences; consequently, this leads them to become concerned about their workplace safety (Basit, 2021). It can again be assumed that psychological safety can mitigate these effects. Additional studies have highlighted that psychological safety enhances team collaboration, team performance, and knowledge sharing, all of which are linked to employee engagement. It enhances the connection between employees and the organization's goals, which can significantly boost employee engagement (Patil et al., 2023). Psychological safety promotes inclusivity, openness, and collaboration, which fosters inclusive leadership practices. This has a link to Human capital management that needs to be investigated further (Kim, Lee & Connerton, 2020).

Psychological safety fosters high-quality relationships that promote shared goals, knowledge, and mutual respect (Carmeli & Gittell, 2009). This also indicates a relationship between psychological safety and Human capital management. Psychological safety eradicates silence-driven fears and enables employees to work to their full capacity (Carmeli, Reiter-Palmon & Ziv, 2010). This may, in turn, improve work optimization in some capacity. Psychological safety, which includes supportive supervisors, clear roles, freedom of self-expression, proper rewards, recognition, and workplace challenges, motivates employees to give their best at work (Brown & Leigh, 1996). Psychological safety promotes open communication and fear-free idea generation, which enhances knowledge accessibility (Yin et. al, 2020). This accessibility also enhances Human capital management.

Employees in an environment where there is high psychological safety tend to expand their learning horizons because they are not afraid of reprimands (Obrenovic et al., 2020). Although this study focused on work-family conflicts, it can be adapted to an organisational setting. Experiences, including both successes and failures, can serve as valuable learning stimuli (Nonaka & Takeuchi, 2007). Psychological safety promotes faults as a valuable learning experience, which relates to Human Capital Management as a dimension. Edmondson (1996, 1999) asserts that psychological safety is necessary for successful learning. The effect of psychological safety on employee engagement was previously covered in detail in the review. One of the most important aspects of human resource management is employee engagement (Quansah, Zhu, & Guo, 2023).

Psychological safety has been suggested as a means to improve human capital management and employee engagement in earlier studies (Newman, Donohue, & Eva, 2017; Maximo, Stander, & Coxen, 2019; Liu & Ge, 2020; Agarwal & Farndale, 2017). So, we can propose the hypothesis:

H1A: Psychological Safety does improve Leadership Practices

H2A: Psychological Safety does improve Workforce Optimization

H3A: Psychological Safety does improve Knowledge Accessibility

H4A: Psychological Safety does improve Learning Capacity

H5A: Psychological Safety does improve Employee Engagement

H6A: Psychological Safety does enhance Employee Engagement

Employee Engagement

The literature does not provide a uniform definition of employee engagement. Kahn (1990) refers to it as "the harnessing of organisation members' selves to their work roles; in engagement, people employ themselves physically and emotionally during role performances." Employee engagement refers to an employee's emotional and personal commitment to the organisation (Baumruk, 2004; Richman, 2006; Shaw, 2005), as well as their discretionary efforts (Frank, Finnegan & Taylor, 2004). According to Kahn (1990), employee engagement refers to an individual's love and excitement for their profession. William Kahn (1990) was the pioneer in proposing definition and emphasized three fundamental distinctions: meaningfulness, safety, and availability. While Kahn established the groundwork for this concept, Truss et al. (2007) later expanded upon it, asserting that employee engagement is fundamentally a fervor for one's work.

Accordingly, engagement was described by Robinson et al. (2004) as "one step up from commitment." Khan (1990) discovered that employees were more engaged in their work when they found it psychologically meaningful, and, of course, when they were psychologically available. This aligns with Robinson et al. 's (2004) definition of engagement as a two-way connection between the employer and the employee. Based on this, it can be assumed that highly engaged employees may affect leadership practices. As a return for the resources they receive from their organization, employees feel obligated to engross themselves more fully in their role performances, according to Kahn's (1990) definition of engagement. This means the organisation will be more collaborative, and its learning capacity will also increase.

A global survey has discovered that only by getting employees involved can an organization truly unleash its full potential (ISR, 2004). This may have a link to Human capital management as sound practices of HCM can lead to the full potential of organisations. Employees with high levels of engagement have the chance to develop, learn, and reach their full potential. The organization creates these opportunities, which can be tied to Human Capital Management (Kular et al., 2008). When firms invest in their employees, the employees return to the company (Kular et al., 2008). Engagement is viewed as the antithesis of burnout. Engagement levels are enhanced by elements such as encouraging leadership, fulfilling employment, fair compensation, and strong social ties (Rich, Lepine, & Crawford, 2010). The study revealed that leaders in workplaces with high employee engagement do not foster a culture of fear that prevents employees from taking initiative. Instead, they create a trusting and demanding atmosphere where everyone is motivated to share their ideas and grow, helping the

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organization move forward (Kular et al., 2008). Ultimately, this could lead to improved Human Capital Management.

Employee engagement is linked to access to information, growth opportunities, challenges, and autonomy (Kular et al., 2008). Additionally, engaged workers are more likely to have a strong relationship with their company, which in turn leads to more positive attitudes and behaviours (Saks, 2006). Employee engagement itself is a dimension of Human Capital Management (Jamal & Saif, 2011). Human capital management is a set of practices and initiatives that affect an employee's skills and knowledge. HCM aims to help business units achieve their objectives by integrating human capital strategies aligned with business policies, in addition to acquiring people and skills (Witasari & Gustomo, 2020). Employee engagement is pivotal for driving Human Capital Management. Engaged leaders, by empowering, inspiring, and praising employees, create a sense of belonging and autonomy, which satisfies a key dimension of Human capital management (Schaufeli, 2020).

Employee engagement plays a crucial part in enhancing leadership practices and boosting organizational performance (Witasari & Gustomo, 2020). Again, engaged employees are more aligned with the organisational goals, which promotes workforce optimization (Ruslaini et al., 2022). This also satisfies a dimension of Human capital management (Jamal & Saif, 2011). When effective employee engagement strategies are implemented, organizations exhibit higher levels of HCM (Andrew & Sofian, 2012; Saks, 2019). Engaged individuals are more collaborative in the organization's knowledge accessibility initiatives as employees will participate more in cross-functional collaboration, knowledge sharing, and idea generation (Kim & Park, 2017). Employee engagement and human capital management are strongly positively correlated (Harsasi & Muzamil, 2017). Theoretical data suggests that effective employee engagement in a company leads to successful human capital management (Isah & Hoole, 2024). Engaged employees are inclined towards skill development and knowledge acquisition, thus increasing the learning capacity of organizations (Gyensare et al., 2019). Employee engagement is a crucial strategy for effective human resource management. Engaged workers operate with passion and enthusiasm, leading to high-performance organisations and successful human capital management (Isah & Hoole, 2024). The human capital theory proposes that employee engagement may demonstrate a link between HCM and other things. The role of employee engagement as a mediator has also been studied in previous literature (Isah & Hoole, 2024). Malik and Garg (2020) stated that effective employee engagement is a key component of human capital management. Previous literature also supports the direct relationship between employee engagement and human capital management (Kular et al., 2008; Saks, 2006; Isah & Hoole, 2024; Jamal & Saif, 2011).

H6A: Psychological Safety positively and significantly influences Employee Engagement

H7A: Employee Engagement positively and significantly influences Leadership Practices

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H8A: Employee Engagement positively and significantly influences Workforce Optimization
H9A: Employee Engagement positively and significantly influences Knowledge Accessibility
H10A: Employee Engagement positively and significantly influences Learning Capacity
H11A: Employee Engagement positively and significantly influences Perceived Employee Engagement

Human Capital Management

In the modern era, the corporate world is shifting away from conventional methods of Human Resource Management towards a soft approach of Human Capital Management (Waetherly, 2003). According to Bontis, Koew, and Richardson (2000), a company that only hires the most intelligent person is not sufficient. They argued that organizations should focus on nurturing their employees' skills and knowledge by enhancing their learning capabilities and creating opportunities for engagement, which can help them gain a competitive advantage (Jamal & Saif, 2011). Bassi & McMurrer (2007) defined human capital management as five dimensions: leadership behaviours, knowledge accessibility, learning capacity, workforce optimization, and employee engagement. This definition is at the heart of this investigation into how Human Capital Management is perceived. The key ingredients are

Leadership practices encompass communication, performance evaluations, supervisory abilities, effort, and the capacity to inspire confidence, all of which are exhibited by managers and leaders.

Workforce Optimization: The organization has improved staff performance through effective processes, a positive working environment, accountability, and hiring decisions.

Knowledge Accessibility: The degree of the company's "collaborativeness" and its ability to make ideas and expertise freely accessible to staff members.

Learning Capacity: The ability of the organisation to continually learn, adapt, innovate, and improve.

Perceived Employee Engagement: The effectiveness of job design, employee time management, and employee dedication all affect an organization's ability to engage, retain, and maximize the value of its workforce (Bassi & McMurrer, 2007; Jamal & Saif, 2011).

Human capital refers to the invisible value that an employee brings to an organization. It is most commonly skills and expertise. Hossain and Roy (2016) define human capital as an organization's unique blend of brains, skills, and expertise. When employees are onboarding, they bring human capital with them, which is later developed and refined through Human capital management. People bring human capital to their work in the form of their intrinsic abilities, behaviours, and personal energy, according to Davenport (1999). In a comprehensive view, it can be asserted that human capital pertains to the collective knowledge and skills of the workforce (Hossain & Roy, 2016). Employees contribute to revenue generation by creating products and services through their expertise, abilities, and competencies (Issac, 2009).

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Human capital management represents a viewpoint in which employees are regarded as the most valuable asset of an organization, a value that can be quantified at present (Hossain & Roy, 2016).

Methods

Conceptual Framework

Figure 1 illustrates the proposed conceptual framework, which features the theoretical elements of this study, including psychological safety, employee engagement, and human capital management.

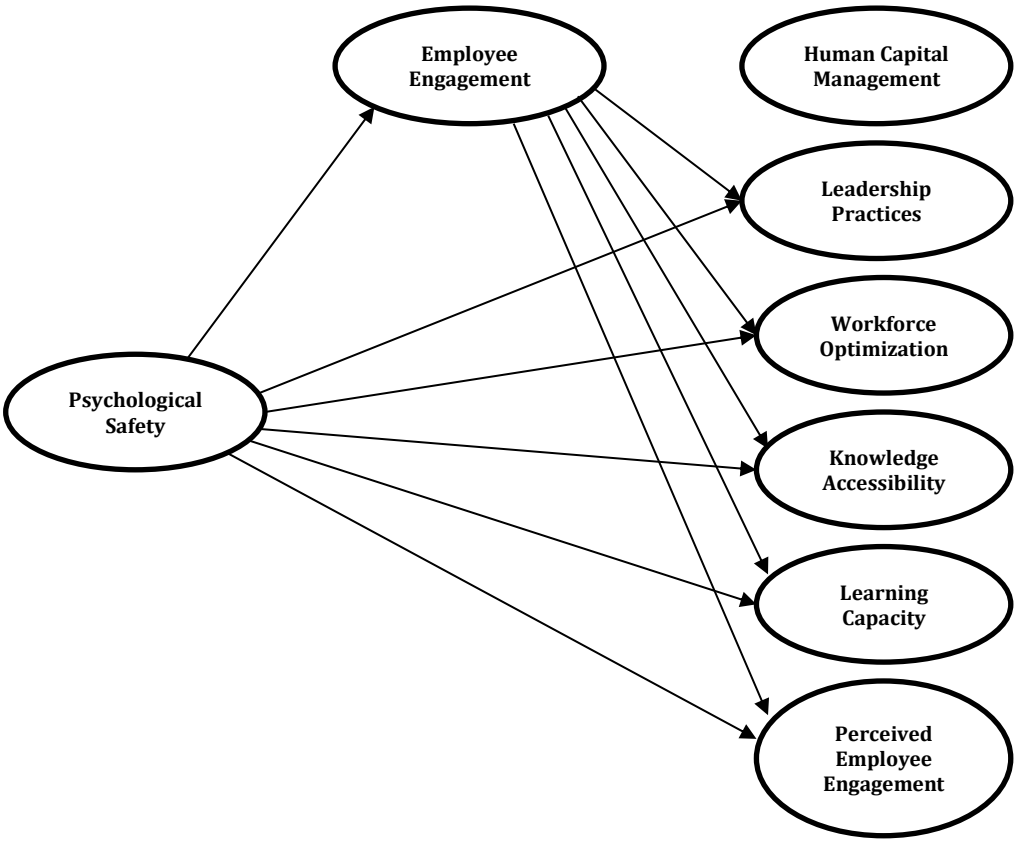

Figure 01: Conceptual Framework

Research Design

This quantitative study investigates the relationship among psychological safety, employee engagement, and human capital management. The practice of quantitatively expressing and analyzing data to characterize and understand the processes they reflect is known as quantitative research (Sukamolson, 2007). The inquiry will be conducted through primary research. This study's quantitative research strategy aims to uncover previously unexplored

regions. This study aims to enhance our understanding of human capital management by systematically assessing and measuring key factors, correlations, and trends. In social science, exploratory research can take many forms, but at its foundation is the quest for novel insights. Because it is difficult to predict whether something creative will emerge from the process, conducting this type of research is inherently risky by definition (Swedberg, 2020).

Population of the Study

Universities were selected in this research. Every participant deemed necessary for the study is known as the 'population' (Saunders & Lewis, 2017). This was used for sampling purposes and was consistent with the study's objective. This sample was selected for its heterogeneity in influencing organizational success. The safety of knowledge in practice is also enshrined in the heart of this occupation. Faculty at universities operate in complex, interdisciplinary environments that are predicated on their ability to work together professionally. A university is an institution of higher education and research that offers degrees in various subjects and promotes leading-edge research and the serving of society (Altbach, 2007). The target audience is then the academics employed in the various disciplines within a university, who are an important and often overlooked group in university development and sustainability. Public universities with government funding may have different orientations towards psychological safety compared to private universities. These variances may impact the wider range of human capital management, as they may alter how psychological safety is perceived and affect employee engagement (Saifuddin, Chhina, & Zaman, 2022). The Bangladesh Bureau of Educational Information and Statistics (BANBEIS) has analyzed the data and found that in 2023, there were a total of 32,917 faculty members (Bangladesh Education Statistics, 2023). Now, the goal of this study is to delve into the intricacies of how psychological safety, employee engagement, and human capital management are interconnected, making this population quite an interesting one. In this academic setting, a faculty member is essentially the superhero responsible for teaching and serving in a higher education institution (O'Meara, Terosky, & Neumann, 2008). This number is like the magic key that unlocks the door to figuring out how to gather a representative sample that genuinely reflects the colorful diversity of this professional crew.

Sample Size and Sampling Procedure

A population of 32,917, a 95% confidence level, and p = 0.05 are recommended by Yamane (1973) in order to obtain an accuracy level with a 5% allowable error. Therefore, in this instance, the sample size would be 395.198 or 396. Additional samples may be collected to enhance statistical results.

ISBN: 978-624-5553-76-1

Yamne's calculation:

$$n = \frac{N}{1 + N(e)^2}$$

$$n = \frac{32{,}917}{1 + [32{,}917 \times (0.05)^2}$$

$$n = \frac{32{,}917}{83.2925}$$

n = 395. 197647 or 396

For this survey, the sample size is 396.

The convenience sampling procedure was employed. According to Zikmund (2003), convenience sampling is a strategy for selecting the most conveniently accessible units. Convenience sampling selects participants based on their availability and accessibility, which may not provide a reliable representation of the entire population (Bernard, 2013). Faculty members are the unit of analysis. Convenience sampling is frequently employed in pilot projects, experimental research, and situations requiring quick responses (Babbie, 2010). Although convenience sampling may not generalize to the full population, it might provide invaluable data for preliminary research (Bell & Waters, 2018). Considering the various aspects of the study, convenience sampling has been selected as the non-probability sampling method to employ.

Instruments Used

Below are the tools utilized in this investigation:

Table 01: Instruments used

Instrument	Items	Source
Psychological Safety	7	(Edmondson,1999)
Employee Engagement	12	(Shuck, Adelson & Reio Jr, 2017)
Human Capital Management	23	(Bassi & McMurrer, 2007)

The trustworthiness and dependability claims from previous studies influenced the decision to utilize these tools. A solid reliability is shown by a Cronbach's alpha score of 0.80 or higher (Cronbach, 1951). Once again, the KMO sample adequacy test yielded a high value (>.6), and the test of sphericity (Bartlett test) revealed substantial significance (Rauf, Jabar, & Mansor, 2020). These scales were selected after a thorough literature study.

Data Analysis Approach

Structural equation modelling, or SEM, is the most effective technique for exposing the complex relationships between the selected variables. SEM evaluates both measurement and structural models simultaneously by combining aspects of factor analysis and path analysis (Kline, 2023). The quantitative data will be analyzed using SmartPLS. Inferential statistics will be used to find evidence that supports the study's hypotheses. SEM is an extension of analysis to ANOVA or regression modelling, offering a more nuanced approach. SEM evaluates two models: the measurement model and the route model (Lei & Wu, 2007). Smart PLS will be used to analyze research assumptions using partial least squares structural equation modeling (PLS-SEM), which has been developed for application in marketing, strategic management, and other business domains (Hair, Ringle, & Sarstedt, 2013). PLS-SEM is a prominent approach for estimating complicated route models with latent variables. PLS-SEM is effective at identifying complex connections between variables. This study includes several components. PLS-SEM provides 19 testable parameters that enhance the explained variance (R^2 values) of the dependent constructs, rather than attempting to clarify the co-variation among all variables. This shows that the method is appropriate for prediction-focused objectives (like forecasting the target constructs in the structural model) (Hair, Ringle & Sarstedt, 2013). Due to its flexibility (meaning there are almost no strict requirements for model specifications and data), PLS-SEM can also be utilized for confirmatory theory testing. The PLS technique is generally acceptable for SEM applications that aim to approximate, such as in studies that focus on classifying critical success factors (Hair, Ringle, & Sarstedt, 2013).

Results and Discussion

Demographic Characteristics of the Respondents

Table 02: Demographic Profile of the Respondents

Demographic Variable	Category	Frequency (n)	Percentage (%)
Gender	Male	238	60.1%
	Female	158	39.9%
Age Group	Below 30 years	64	16.2%
	30–39 years	174	43.9%
	40–49 years	108	27.3%
	50 years and above	50	12.6%
Type of University	Public	218	55.1%
	Private	178	44.9%
Designation	Lecturer/Assistant Professor	186	47.0%
	Associate Professor	130	32.8%
	Professor	80	20.2%
Years of Experience	Less than 5 years	56	14.1%
	5–10 years	144	36.4%
	11–15 years	116	29.3%
	More than 15 years	80	20.2%
Department/Discipline	Business/Management	150	37.9%

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	Science/Engineering	108	27.3%
	Social Sciences	78	19.7%
	Arts/Humanities	36	9.1%
	Other	24	6.0%
Employment Status	Full-time	368	92.9%
	Part-time/Adjunct	28	7.1%

Demographic information of the 396 brave university professors who participated in these exciting studies. A slight majority of respondents are males (60.1%) compared to females (39.9%), which is typical in an academic setting in Bangladesh. The most represented age category (43.9%) is that of individuals aged 30-39, indicating that many are just entering an academic career. These are followed by faculty members between 40 and 49 years of age (27.3%), then those under 30 years (16.2%), and those 50 years and above (12.6%). Regarding the institution type, 55.1% of the respondents belong to public universities, and 44.9% to private universities, providing a balanced view across institutional types. In terms of academic positions, nearly half (47%) are lecturers or assistant professors, followed by associate professors (32.8%) and professors (20.2%). The faculty group has a varied range of work experience, with 36.4% having 5-10 years of experience and 29.3% having 11-15 years of experience. The academic fields Business/Management dominate with 37.9 percent of researchers, followed by Science/Engineering at 27.3 percent and Social Sciences at 19.7 percent. The majority of respondents, 92.9 percent, maintain full-time employment, while the remaining 7.1 percent work as adjunct faculty or part-time employees. The survey includes respondents from urban universities at 66.2 percent, from semi-urban institutions at 23.2 percent, and from rural institutions at 10.6 percent, thus providing diverse perspectives from different locations and institutions.

Collinearity Statistics

Table 03: Collinearity Statistics (VIF)

	VIF
EE1	4.032
EE10	4.951
EE11	4.148
EE12	2.810
EE2	4.222
EE3	3.634
EE4	4.075
EE5	4.504
EE6	4.012
EE7	3.879
EE8	4.559
EE9	3.307
EEO1	3.588
EEO2	4.264
EEO3	3.729

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EEO4	4.046
KA1	4.412
KA2	3.319
KA3	3.457
KA4	3.061
LC1	3.715
LC2	3.066
LC3	3.647
LC4	3.808
LC5	3.608
LP1	4.187
LP2	3.604
LP3	3.616
LP4	4.381
LP5	3.605
PS1	4.858
PS2	4.491
PS3	4.397
PS4	4.485
PS5	3.603
PS6	4.698
PS7	4.030
WO1	3.131
WO2	3.237
WO3	3.423
WO4	4.055
WO5	3.289

The Variance Inflation Factor (VIF) values shown here provide insight into the level of multicollinearity among the indicators used in the model. Essentially, VIF values help us determine how much the variance of the estimated regression coefficients increases due to collinearity with other predictors in the model. Typically, if a VIF value exceeds 10, it indicates a significant amount of multicollinearity. This means the predictors are closely related and could make model estimation complicated (Hair et al., 2010). In this case, the highest VIF value we see is 4.951 for EE10, which is well below the critical threshold of 10. This suggests that multicollinearity is not a significant concern for the variables in this model. Most of the VIF values are in a reasonable range, generally between 3 and 5. This indicates that, although the predictors reveal some moderate collinearity, it should not pose any significant issues for estimating the model (Kline, 2016). For instance, EE10, EE1, and EE5 have VIF values above 4, but none approach that critical 10 mark. This suggests that, although there is some collinearity, it is not strong enough to undermine the results (Mansour & Anwar, 2020).

4.3 Measurement Model

ISBN: 978-624-5553-76-1

Reliability and Validity

Table 04: Construct Reliability and Validity

Construct	Cronbach's Alpha	rho_A	Composite Reliability (rho_C)	AVE
EE (Employee Engagement)	0.972	0.972	0.975	0.762
HCM_EEO (Employee Empowerment & Opportunities)	0.942	0.943	0.958	0.851
HCM_KA (Knowledge Accessibility)	0.933	0.933	0.952	0.833
HCM_LC (Leadership Commitment)	0.941	0.941	0.955	0.809
HCM_LP (Learning Practices)	0.946	0.948	0.958	0.822
HCM_WO (Work Organization)	0.938	0.939	0.953	0.801
PS (Psychological Safety)	0.964	0.964	0.970	0.822

All of the constructs exhibit excellent internal reliability, as evidenced by Cronbach's alpha coefficients, which range from 0.933 to 0.972, all comfortably above the absolute minimum cut-off of 0.70 (Nunnally & Bernstein, 1994). The composite reliability results, assessed by both rho_A and rho_C, were also well above the 0.70 cut-off (Hair et al., 2019), providing further confidence in the internal reliability of all the constructs. Finally, all constructs scored AVE values exceeding the recommended cut-off of 0.50, ranging from 0.762-0.851. These AVE values indicate that a substantial proportion of the variance in the corresponding observed variables is explained by the latent constructs (Fornell & Larcker, 1981). Overall, this evidence strongly confirms the convergent validity, implying that the measurement indicators reliably and validly measure their intended constructs (Hair et al., 2019).

Divergent or Discriminant Validity

Table 05: Discriminant Validity (HTMT)

	EE	HCM_EEO	HCM_KA	HCM_LC	HCM_LP	HCM_WO	PS
EE							
HCM_EEO	0.725						
HCM_KA	0.704	0.678					
HCM_LC	0.701	0.709	0.708				
HCM_LP	0.694	0.646	0.609	0.622			
HCM_WO	0.682	0.648	0.636	0.738	0.579		
PS	0.707	0.664	0.676	0.663	0.620	0.627	

We calculated the Heterotrait-Monotrait Ratio (HTMT) of correlations to assess whether the measured concepts exhibited discriminant validity. According to the widely accepted cutoff value established by Henseler, Ringle, and Sarstedt (2015), "HTMT below 0.85 indicates that

discriminant validity has been sufficiently established" (p. 121). The constructs used in our study are distinct, and the HTMT values ranged from 0.579 to 0.738, which are significantly lower than the conservative cutoff of 0.085. In variance-based SEM, such as PLS-SEM, HTMT is acknowledged to be more appropriate for assessing discriminant validity than traditional approaches, like the Fornell-Larcker criterion (Hair, Anderson, Babin, & Black, 2019). The low HTMT scores provide evidence that supports the proposition that the constructs in the study are empirically distinct (i.e., they do not converge) and that the constructed concepts are agreeably distinct.

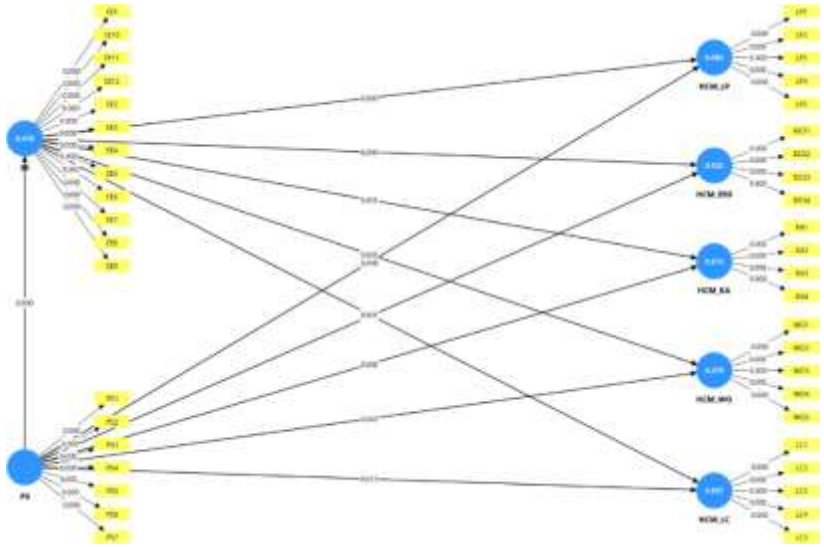

Figure 02: Measurement Model (P Values Graphical Output)

Model Fit

Table 06: Model Fit Indices

	Saturated model	Estimated model
SRMR	0.043	0.066
d_ULS	1.687	3.892
d_G	2.035	2.149
Chi-square	973.382	1016.549
NFI	0.817	0.809

Some of the fit indices help to know the suitability of the suggested structural model. Considering the saturated (0.043) and estimated (0.066) models, both are reasonable fitting models exhibiting SRMR values less than 0.08 (Hu & Bentler, 1999). The value of the statistic d_ULS that compares observed covariance and model covariance matrices increased from 1.687 for the saturated model to 3.892 for the estimated one, indicating a more prominent

departure for the latter. The value of d_G also increased from 2.035 to 2.149, implying a slight increase in the residuals or lack of fit of the calculated model. The chi-square statistics for the estimated model stands at 1016.549, greater than that of the saturated model at 973.382. This suggests a degree of misfit, though it is essential to note that such results can be affected by the complexity of the model and the size of the sample. The NFI, a metric that assesses the enhancement in fit relative to a baseline model, reveals a minor decline from 0.817 for the saturated model to 0.809 for the estimated model. The values both fall within the boundaries identified by Bentler and Bonett as acceptable in their 1980 publication. The model continues to represent the data adequately according to the results, but some fit indices reveal decreased fit quality. These discoveries are in cahoots with the current literature, which hilariously points out that checking model fit with a bunch of indices is crucial, because relying on just one statistic is like trying to fit a square peg in a round hole – it just will not do the trick (Kline, 2016; Marsh et al., 2004).

Structural Model

Path Coefficient Analysis and Hypotheses Testing of the Structural Model

Table 07: Hypothesis Testing Result

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values	Remarks
EE -> HCM_EEO	0.496	0.493	0.136	3.660	0.000	Accepted
EE -> HCM_KA	0.439	0.437	0.131	3.347	0.001	Accepted
EE -> HCM_LC	0.452	0.453	0.132	3.416	0.001	Accepted
EE -> HCM_LP	0.493	0.496	0.124	3.986	0.000	Accepted
EE -> HCM_WO	0.460	0.457	0.146	3.142	0.002	Accepted
PS -> EE	0.685	0.688	0.074	9.231	0.000	Accepted
PS -> HCM_EEO	0.293	0.298	0.132	2.230	0.026	Accepted
PS -> HCM_KA	0.340	0.344	0.124	2.744	0.006	Accepted
PS -> HCM_LC	0.321	0.323	0.129	2.491	0.013	Accepted
PS -> HCM_LP	0.257	0.255	0.130	1.975	0.048	Accepted
PS -> HCM_WO	0.283	0.290	0.140	2.023	0.043	Accepted

ISBN: 978-624-5553-76-1

The Partial Least Squares (PLS) method is well-established as a promising approach for use in complicated structural relations and exploratory models. The study's hypotheses were tested using Partial Least Squares Structural Equation Modelling (PLS-SEM) (Hair et al., 2019; Sarstedt et al., 2014).

The analysis supported a strong hypothesis for every predicted relationship, with all p-values being statistically significant. Engagement (EE) had a statistically meaningful effect on all five aspects of Human Capital Management (HCM) as reported here: Work Organisation (HCM_WO) ($\beta = 0.460$, $t = 3.142$, $p = 0.001$), Leadership Commitment (HCM_LC) ($\beta = 0.452$, $t = 3.416$, $p = 0.001$), Enabling Environment for Operations (HCM_EEO) ($\beta = 0.496$, $t = 3.660$, $p < 0.001$), Knowledge Accessibility (HCM_KA) ($\beta = 0.439$, $t = 3.347$, $p = 0.001$), Learning Pathways (HCM_LP) ($\beta = 0.493$, $t = 3.986$, $p = 0.001$), and Work Organisation (HCM_WO) ($\beta = 0.460$, $t = 3.141$, $p = 0.002$).

Interestingly, psychological safety (PS) also has a statistically meaningful positive influence on EE ($\beta = 0.685$, $t = 9.231$, $p < 0.001$), establishing that psychological safety is a key driver of engagement (Kahn, 1990; Edmondson, 1999) - which is a good find. Other than work organisation, PS has a statistically significance on all aspects of HCM here, HCM_EEO ($\beta = 0.293$, $t = 2.230$, $p = 0.026$), HCM_KA ($\beta = 0.340$, $t = 2.744$, $p = 0.006$), HCM_LC ($\beta = 0.321$, $t = 2.491$, $p = 0.013$), HCM_LP ($\beta = 0.257$, $t = 1.975$, $p = 0.048$), and HCM_WO ($\beta = 0.283$, $t = 2.023$, $p = 0.043$). According to Hair et al. (2014), observations with a t-value greater than 1.96 (two-tailed) and a p-value less than 0.05 (at a 95% confidence interval) are considered statistically significant. This is also applicable to the significance tests of this study.

These findings align directly with Social Exchange Theory (Blau, 1964), which suggests that trust and psychological safety among workers facilitate a collaborative work environment and encourage engagement, ultimately leading to improved performance. The findings of this study also support previous studies, indicating that psychological safety empowers individuals to engage in their roles fully (Kahn, 1990; Carmeli et al., 2009). Employees are more likely to engage in activities that enhance the organization's overall skills and performance when they work in a supportive and collaborative environment (Bakker & Demerouti, 2008; Saks, 2006).

Table 08: Total Effect

	EE	HCM_EEO	HCM_KA	HCM_LC	HCM_LP	HCM_WO	PS
EE		0.496	0.439	0.452	0.493	0.460	
HCM_EEO							
HCM_KA							
HCM_LC							
HCM_LP							
HCM_WO							
PS	0.685	0.633	0.641	0.631	0.595	0.598	

ISBN: 978-624-5553-76-1

In structural equation modelling, the total effects show the combined impact of all direct and indirect paths. Hair et al. (2014) and Sarstedt et al. (2014) argue that this provides a comprehensive understanding of how the model's components are interconnected. The total effect analysis of this study reveals that Psychological Safety (PS) has the most significant impact on Employee Engagement (EE) (β = 0.685). It appears that making the workplace safer for mental health leads to workers being much more interested, which is in line with findings from other studies (Edmondson, 1999; Kahn, 1990).

Human Capital Management (HCM) is also significantly impacted by PS. HCM_EEO (β = 0.633), HCM_KA (^{2} = 0.641), HCM_LC (^{2} = 0.631), HCM_LP (^{2} = 0.595), and HCM_WO (^{2} = 0.598). It appears that PS has both direct and indirect effects on HCM outcomes, with the primary effect being on the level of engagement among workers. Blau's Social Exchange Theory (SET) suggests that people are more engaged when they feel psychologically safe, which enables them to react more effectively to human capital (Carmeli et al., 2009; Saks, 2006). All five parts of HCM are also affected by Employee Engagement (EE). These are called HCM_EEO (β = 0.496), HCM_KA (β = 0.439), HCM_LC (β = 0.452), HCM_LP (β = 0.493), and HCM_WO (β = 0.460). These results appear to support the notion that employee involvement and performance are crucial components of an organization's strengths (Bakker & Demerouti, 2008; Macey & Schneider, 2008).

Table 09: Indirect Effects (Mediation Effect)

	EE	HCM_EEO	HCM_KA	HCM_LC	HCM_LP	HCM_WO	PS
EE							
HCM_EEO							
HCM_KA							
HCM_LC							
HCM_LP							
HCM_WO							
PS		0.340	0.301	0.310	0.338	0.315	

Hair et al. (2017) state that In structural equation modelling, total effects exhibit all the direct and indirect links between latent components. Psychological Safety (PS) has the most potent effect on Employee Engagement (EE) (β = 0.685), according to the findings. In other words, when people feel safe at work, they tend to be more proactive and productive. This aligns with Edmondson's (1999) notion that psychological safety facilitates improved performance within the workplace tasks domain and Kahn's (1990) idea that people need to feel secure in order to be engaged participants. Managing human capital (HCM) is also affected by PS across five dimensions: (β = 0.633) for HCM_EEO, (β = 0.641) for HCM_KA, (β = 0.631) for HCM_LC, (β = 0.595) for HCM_LP, and (β = 0.598) for HCM_WO. Based on these figures, it seems that psychological safety shares both types of effects (direct and indirect) on HCM. According to the findings, PS enhances the engagement level and, in turn, influences human capital

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management through EE, which is supported by the Social Exchange Theory (Blau, 1964). SET postulates that if employees feel safe, they are more likely to contribute effectively to the company's strategic goals (Saks, 2006; Carmeli et al., 2009). Employee engagement (EE) shares a significant impact on all five dimensions of human capital management: HCM_EEO (β = 0.496), HCM_KA (β = 0.439), HCM_LC (β = 0.452), HCM_LP (β = 0.493), and HCM_WO (β = 0.460). (Macey & Schneider, 2008) and (Bakker & Demerouti, 2008) highlighted that engaged workers contribute to building human capital by becoming more loyal, proactive, and involved in their work.

Table 10: Mediation Hypotheses Testing

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values	Remarks
PS -> HCM_EEO	0.340	0.337	0.096	3.527	0.000	Accepted
PS -> HCM_KA	0.301	0.299	0.093	3.218	0.001	Accepted
PS -> HCM_LC	0.310	0.310	0.095	3.264	0.001	Accepted
PS -> HCM_LP	0.338	0.341	0.095	3.573	0.000	Accepted
PS -> HCM_WO	0.315	0.312	0.103	3.050	0.002	Accepted

Mediation analysis explains whether the assessment of the effect of an independent variable (PS) on a dependent variable (HCM) could be explained significantly through a mediator (EE). Mediation provides additional insight into the processes involved in how these relationships function (Baron & Kenny, 1986; Preacher & Hayes, 2008). The mediating analysis provided meaningful insights into the indirect effects of psychological safety (PS) on various dimensions of human capital management (HCM), through employee engagement (EE). The results show that PS has a significant indirect effect on all five dimensions of HCM: HCM_EEO (β = 0.340), HCM_KA (β = 0.301), HCM_LC (β = 0.310), HCM_LP (β = 0.338), and HCM_WO (β = 0.315), with p-values all below 0.05, indicating strong mediation effects.

The research suggests that psychological safety has an indirect impact on human capital management through its effects on employee engagement. The idea that psychological safety in the workplace motivates employees to engage in behaviors that enhance human capital management dimensions is supported by the findings. A secure psychological work environment leads employees to engage in behaviors that enhance human capital management practices, according to the study findings. The study results indicate that psychological safety enhances employee engagement, which in turn leads to the better implementation of Equal Employment Opportunities (EEO) practices, as evidenced by the significant effect on

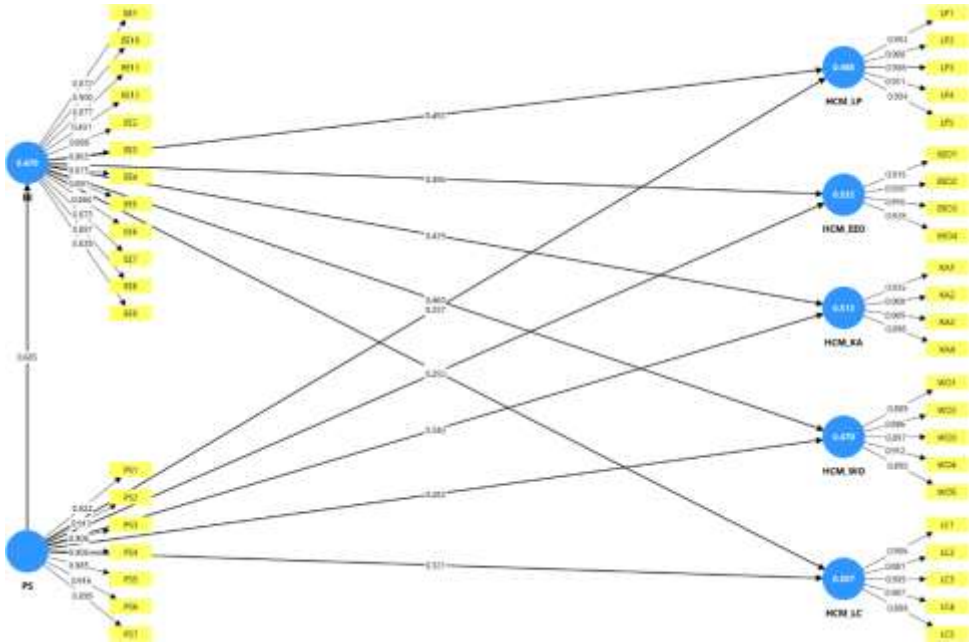

Figure 3: Structural Model (Path Coefficient and Outer Loadings Graphical Output)

HCM_EEO (β = 0.340, p < 0.000). The study demonstrates that psychological safety fosters employee engagement, which in turn leads to improved knowledge acquisition and learning culture practices through its effects on HCM_KA (β = 0.301, p = 0.001) and HCM_LC (β = 0.310, p = 0.001). According to Social Exchange Theory, positive work environments create conditions for employees to exhibit positive behaviors in return (Blau, 1964). The results show that psychological safety strengthens leadership practices and work outcomes due to its effects on HCM_LP (β = 0.338, p < 0.001) and HCM_WO (β = 0.315, p = 0.002) through employee engagement. Engaged employees, fostered by a psychologically safe environment, contribute more effectively to leadership initiatives and organizational work practices, thereby enhancing overall organizational performance.

Table 10: Variance Extracted (R-Squared)

	R-square	R-square adjusted
EE	0.470	0.464
HCM_EEO	0.532	0.522
HCM_KA	0.513	0.503
HCM_LC	0.507	0.497
HCM_LP	0.483	0.472
HCM_WO	0.470	0.459

ISBN: 978-624-5553-76-1

The values for R-squared indicate the amount of variance that each predictor model accounts for each dependent variable. The variable HCM_EEO showed the most significant explained variance of 0.532. Equal employment opportunities experienced over half of their variance explained by employee engagement (EE) together with psychological safety (PS). HCM_KA (0.513), HCM_LC (0.507), and HCM_LP (0.483) exhibit similar explanatory power, explaining variance between 47% and 51%. The adjusted R-squared values of the model range from 0.459 to 0.522, indicating that, despite the presence of multiple predictors in the equation, the model explains a significant amount of variance. These findings support previous work on the influence of employee engagement and psychological safety on organizational outcomes, as outlined in both engagement and workplace and organizational behavior models (Carmeli, 2009; Kahn, 1990).

Formative Model Measurement

In assessing formative measurement models, Hair et al. (2011) suggest a two-step investigation process involving a test of collinearity and measuring the significance and relevance of outer weights. Later, a test of convergent validity was introduced to strengthen the measurement of the formative model (Hair et al., 2017; Sarstedt et al., 2019). This research will follow the latter approach in validating the reflective-formative model.

Convergent Validity

Under the two-stage disjoint approach suggested by Sarstedt et al. (2019), the convergent validity of the HOC was assessed by employing a global item to validate the development of the second-order construct. Global item involved the essence of human capital management practices in general. A strong relationship between the global item and the HOC was identified ($\beta = 0.816$, $R^2 = 0.509$), which is above the recommended threshold of ($\beta = 0.80$ & $R^2 = 0.50$), establishing convergent validity for the indicators (Hair et al., 2017).

Indicator's Collinearity

To assess the presence of collinearity, a measure of multicollinearity, the Variance Inflation Factor (VIF), was employed. The test results implied that no collinearity exists within the formative construct. All the indicators' VIF scores are well below the recommended level of 3.3 (Hair et al., 2017). The maximum VIF score was recorded on Learning Capacity, which also falls below the threshold. As no collinearity was found within the data, we proceeded to the next step of testing the significance of outer weights (Sarstedt et al., 2019).

Significance and Relevance of Indicator Weights

As recommended by Chin (2010), Bootstrapping was incorporated (at 5000 samples) using Smart-PLS 4.0 to measure the significance and relevance of the outer weights. Lohmöller (1989) recommended a threshold value of 0.10 to keep an indicator in the formative model.

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Hair et al. (2017) suggested that to keep an indicator for the formative construct, the outer weights must be significant. Reportedly, the outer weight of all indicators of the formative construct, HCM_EEO (p-value = 0.007; t-value = 2.465), HCM_KA (p-value = 0.005; t-value = 2.550), HCM_LP (p-value = 0.006; t-value = 2.543), HCM_WO (p-value = 0.023; t-value = 1.992), achieved significance except for HCM_LC (p-value = 0.059; t-value = 1.562). Sarstedt et al. (2019) recommended examining outer loadings to assess significance and provide an indicator when weight is not significant. Thus, outer loading reports were investigated for further evaluation. The findings suggest that all indicators of the formative construct are significant and exceed the threshold value of 0.50. Similarly, HCM_LC was also significant (P = 0.000) with a loading of 0.81. Thus, upon meeting all the criteria, we choose to keep the indicator as it is found essential in constructing HCM (Sarstedt et al., 2019).

Table 11: Validity of the 2nd-Stage Formative Measurement Model

HOC	LOCs	VIF	Outer Weights	T-Statistics	P-Values (Outer Weights)	Outer Loadings	P-Values (Outer Loadings)
Human Capital Management	HCM_EEO	2.307	0.276	2.465	0.007	0.857	0.000
	HCM_KA	2.160	0.274	2.550	0.005	0.842	0.000
	HCM_LC	2.660	0.159	1.562	0.059 (n.s)	0.837	0.000
	HCM_LP	1.861	0.283	2.543	0.006	0.816	0.000
	HCM_WO	2.186	0.209	1.992	0.023	0.806	0.000

Table 12: Test of Significance under the Reflective-Formative Measurement Model

Relationships	Path (β)	T-Statistics	P-Values	Decision	R-squared (R^2)
PS > EE	2.160	9.299	0.000	Hypotheses Accepted	0.471
EE > HCM	2.307	3.848	0.000	Hypotheses Accepted	
PS > HCM	2.660	2.524	0.006	Hypotheses Accepted	0.717
PS > EE > HCM	0.387	3.619	0.000	Hypotheses Accepted	

We also examined the significance of the interactions stated under the reflective-formative model to determine if PS and EE can predict HCM in the same way when all HCM's dimensions are included in the formative variable. According to the report, all paths hypothesized under the reflective-formative model were again significant (at a 95% confidence interval) with high R^2 values. Thus, it is concluded that Psychological Safety (PS) and Employee Engagement (EE)

both positively and significantly influence Human Capital Management Practices in the workplace settings.

Discussion

This research investigated the impact of psychological safety on improving leadership behavior, workforce optimization, knowledge accessibility, learning capacity, and employee engagement among university faculty in Bangladesh. The findings validated all eleven hypotheses, affirming the substantial effect of psychological safety on human capital management (HCM). Psychological safety has a positive impact on leadership behaviours according to the first finding (H1A). When faculty members feel psychologically safe in hierarchical academic institutions, they are more likely to share their thoughts and worries. This means that leadership styles are more open and participatory (Edmondson, 1999; Agarwal & Farndale, 2017). An inclusive and participatory workplace environment fosters a culture of mutual respect and collaboration, encouraging employees to value one another and generate new ideas. This study backs up the idea that psychological safety is WE (H2A). This means that pleased employees are more likely to contribute to a company's innovation, productivity, and efficiency. Previous research also supports the notion that psychological safety is a significant predictor of workforce productivity and organizational success (Frazier et al., 2017; Carmeli & Gittell, 2009). As psychological safety reduces self-criticism and enhances accountability, faculty members are expected to work more effectively in a safe and collaborative work setting (Newman, Donohue, & Eva, 2017).

The study also supports the idea that PS has a significant influence on the accessibility of information (H3A). In a safe and collaborative work environment, employees are more likely to share their knowledge, ask for feedback, and collaborate across domains (Isah & Hoole, 202). Detert and Burris (2007) found that companies learn more effectively when there is an open line of communication and continuous learning opportunities. Edmondson's (1999) idea is that psychological safety enhances learning effectiveness and mitigates interpersonal risks. Lastly, findings suggest that PS makes it easier to learn in the workplace (H4A). This illustrates the importance of having a safe place to grow and learn. Senge (2006) and Argyris (1977) argue that a culture of continuous learning and creativity flourishes when teachers feel confident in addressing knowledge gaps and trying innovative ideas. Research by Obrenovic et al. (2020) and Weick and Sutcliffe (2007) shows that psychological safety augments experiential learning and institutional resilience during transitions. The study indicated that psychological safety leads to higher employee engagement (H5A). According to Kahn (1990) and Saks (2006), faculty involvement increases when they feel heard, valued, and empowered to shape their professional duties. Work engagement receives long-term support through proper time management and autonomy, along with transparent discussions of workload (Maslach & Leiter, 2008; Patil et al., 2023). The findings from these observations align well with Google's

Project Aristotle, which determined psychological safety stands as the primary element affecting team effectiveness and engagement (Rozovsky, 2015). Psychological safety (H6A) is cultivated when faculty feel valued and have the assurance to contribute with engagement (Edmondson, 1999). Leadership (H7A) that is empathetic, inclusive, and supportive heightens engagement by aligning institutional interests with personal motivation (Kahn, 1990; Albrecht et al., 2015). Workforce optimization (H8A), through workload equity and clarity of roles, presents an opportunity to maximize faculty engagement by providing the freedom to focus on their job (Bakker & Demerouti, 2008). Knowledge access (H9A) is a key that unlocks a world of informed decision-making and collaboration, while fostering a culture of vulnerability and trust (Lansing et al., 2023). Learning capacity (H10A) supports learning and development. It also offers flexibility, serving as the main driver for ongoing growth, creativity, and engagement. This, in turn, provides a unique source of intrinsic motivation (Marsick & Watkins, 2003). Lastly, H11A indicates that engagement is self-reinforcing. Engagement involves motivating individuals to participate while encouraging others to become involved. The start of the process should create a positive "momentum" which draws people together and elevates "energy" and enthusiasm, resulting in more participation that strengthens the institutional culture (Saks, 2006). The combined elements demonstrate how engagement functions as a relational system that operates within higher education institutions.

Conclusion

The study investigated employee engagement as a factor that connects psychological safety to human capital management practices that enhance educational institutions' engagement. The research findings indicate that psychological safety yields substantial improvements in staff trust and openness, ultimately leading to enhanced academic engagement. At the same time, some key HCM factors include learning capacity, workforce optimization, leadership behaviors, and having legitimate access to knowledge, which were found to be significant predictors of employee engagement, thus indicating that these factors are significant for an organization’s growth. The research evidence shows that engagement behaviour not only exists as an outcome of a supportive workplace climate and managerial practices that involve psychological safety, but it also creates momentum for accelerating individual and organizational performance. Engagement in particular forms of involvement from employees is key to sustainable governance in higher education because it promotes a culture of safety for learning amongst employees at all levels of an organization. The combination of psychological safety with a commitment to capital strategies may allow leaders to create the conditions under which academic professionals feel motivated, empowered, and aligned with strategic priorities. The study offers valuable insights, demonstrating that a psychologically safe and well-managed workforce is essential for fostering innovation, resilience, and excellence in academia. Future

research could investigate cultural differences or apply the model in various institutional settings to further expand the applicability of these results.

Theoretical Implications

The research provides new insights into Social Exchange Theory (SET) and the Resource-Based View (RBV). The study explains how psychological safety is connected to employee engagement through its impact on human capital management (HCM) practices. The research utilizes SET to demonstrate that organizations that foster strong, supportive relationships with their employees will achieve better HCM outcomes and higher employee engagement. The findings show that organizations that establish psychological safety enable employees to feel protected and valued, leading to increased dedication to work and active participation in HCM activities, such as knowledge acquisition, leadership contributions, and workforce optimization. The RBV theory allows organizations to understand human capital as a strategic asset beyond standard operational resources. The research establishes that psychological safety and engagement among employees transform them into VRIN assets, which possess value, rarity, uniqueness, and non-substitutability. Such elements become crucial for establishing and maintaining lasting market dominance. By shining a light on how these engaged and secure employees boost skill development and stick around longer, the study aligns perfectly with the RBV's mission of utilizing internal resources for long-term performance gains. This research links SET's focus on individual behavior with RBV's focus on strategy. It illustrates that examining individual psychological and relational variables can potentially provide a clear picture of how competitive organizations operate and their strategic management of human resources. Finally, this research challenges future organization scholars to consider how these two theories and perspectives can interact to explain behaviors and the resulting outcomes of the workforce.

Practical Implications

This research provides valuable findings for business leaders, alongside human resource practitioners and policy makers who want to enhance human capital management (HCM) approaches. The findings demonstrate that organizations need to establish psychological safety conditions that enable employees to express concerns without fear of negative consequences. Organizations should prioritize open communication, along with inclusive leadership and supportive team dynamics, because these elements play significant roles in establishing trust and creating a psychologically safe environment. Management should direct their investments toward employee engagement strategies, which include recognition programs, career development opportunities, and participatory decision-making processes to establish psychological safety and successful HCM. Engaged personnel contribute significantly to knowledge acquisition, leadership, and organisational productivity. For HR practitioners, this study highlights the importance of aligning human capital strategies with both individual well-

being and organizational objectives. Integrating psychological safety initiatives into performance management, training, and leadership development can enhance employee retention, reduce burnout, and build a workforce that is resilient, innovative, and committed. Businesses can also apply these insights to gain a competitive advantage by treating human capital as a key resource. Conditions could be developed that met the VRIN criteria, not only improving the pool of talent for the organization but also reducing turnover and preserving institutional knowledge. These conditions would contribute to long-term success.

Limitations and Future Research Directions

Although this study offers some valuable insights, it also comes with limitations that we cannot ignore. Firstly, the research is akin to a one-hit wonder, with its cross-sectional design, making it challenging to discern the causal relationships between psychological safety, employee engagement, and the complex realm of human capital management. If we only had longitudinal studies to really understand how these relationships behave over time, that would be beneficial. Additionally, it is essential to acknowledge that this study presents a selfie taken from an unusual angle, where participants self-reported the data, which may lead to self-reporting bias similar to biased cat preferences towards a favorite human. The use of convenience sampling is a substantial limitation of this study. Convenience sampling incurs sampling bias because it selects participants based on their convenience and accessibility, ultimately excluding a larger population (Etikan, Musa, & Alkassim, 2016). Many academics also suggest that convenience sampling does not allow for substantial inferences from the results (Lines et al., 2022). Despite the aforementioned limitations, the rationale for using convenience sampling was not absent. Especially for an exploratory study like this one, which aims to make a first attempt to understand under-researched relationships, convenience sampling can provide practical but limited knowledge (Creswell & Creswell, 2017). Furthermore, some academics would claim that the money and time spent using other probabilistic sampling methods have significant costs relative to those of convenience sampling (Doebel & Frank, 2024). Future research could enhance the findings by incorporating multi-source data, such as supervisor assessments or objective performance measures. This study resembles a local band playing in a coffee shop; it tends to focus on a specific industry or location, which could limit its generalizability. Future studies should aim to generalize the findings by replicating this study in alternative industries, organizational sizes, and cultures, which could help identify contextual variations. This study used the Resource-Based View and Social Exchange Theory. However, future research could consider different theories (i.e., Job Demands-Resources Model and/or Self-Determination Theory) that could allow exploration of different environmental and motivational conditions around worker performance and behaviors. Additionally, broadening the model to include how contextual elements, such as organizational culture, leadership style, and/or digital

transformation, could provide insight into our understanding of how to develop human capital in today's workplaces.

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ISBN: 978-624-5553-76-1

ISBN: 978-624-5553-76-1

The Moderating Role of Power Distance Orientation on the Relationship between Abusive Supervision and Coworker-Directed Knowledge Hiding In the Sri Lankan Information Technology Sector

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Abstract

Knowledge hiding, a deliberate attempt to withhold critical information, becomes a passive form of resistance to perceived mistreatment. In this study, grounded in displaced aggression theory (DAT), we argue that abusive supervision fosters a psychological atmosphere where employees, feeling incapable or reluctant to challenge their supervisors, project their frustration onto their peers by withholding valuable knowledge. Furthermore, we examine power distance orientation, where employees who accept hierarchical authority may be more likely to share knowledge than hide it, aligning with organizational norms. We employed a quantitative research design using a survey methodology. Data were collected using a convenience sampling method from a sample of 215 employees in Sri Lankan IT organizations. Correlation analysis revealed a significant positive relationship between abusive supervision and coworker-directed knowledge hiding ($r = .39$, $p < .01$). The hierarchical regression showed that abusive supervision significantly predicted knowledge hiding ($\beta = .30$, $p < .001$), and moderation analysis demonstrated that power distance orientation significantly moderated the relationship between abusive supervision and knowledge hiding (interaction term $\beta = -.24$, $p < .05$). Employees with low power distance orientation showed a stronger positive relationship ($\beta = .39$, SE = 0.07, $p < .001$). Conversely, the relationship was weaker among those with high power distance orientation ($\beta = .18$, SE = 0.06, $p < .001$). These findings highlight the need for organizations to actively monitor and address abusive supervisory behavior, particularly in culturally diverse settings. This study is limited by its cross-sectional design, which restricts the ability to infer causality. Future research could adopt a longitudinal design to establish causal relationships more firmly.

Keywords: abusive supervision, displaced aggression theory, knowledge hiding, power distance orientation, Sri Lankan IT industry.

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Introduction

Knowledge management plays a critical role in enhancing organizational competitiveness and sustainability (Lopes et al., 2017). Given its significance, extensive research has examined factors that facilitate knowledge sharing (e.g., Wang & Noe, 2010; Shahzad et al., 2021; Migdadi, 2021). However, while the literature on knowledge sharing is robust, there is a notable gap regarding the factors that drive counterproductive knowledge behaviors, specifically knowledge hiding (Connelly et al., 2012; Khalid et al., 2018). Knowledge hiding, which is defined as the intentional withholding of requested information (Connelly et al., 2012), is often mistakenly seen as just the opposite of knowledge sharing (Peng, 2013). However, recent research indicates that these are separate concepts. They operate differently and lead to different results, even if the factors influencing them are similar (Gagné et al., 2019; Devi, 2024).

Past research shows that knowledge hiding is influenced by interpersonal factors (e.g., distrust, poor knowledge-sharing climate; (Farooq & Sultana, 2021; Černe et al., 2014) and knowledge-related factors (e.g., complexity, task relevance, lack of psychological ownership) (Zhang et al., 2022; Fong et al., 2018; Khan et al., 2023). However, little attention has been given to how dysfunctional supervisor behaviors, such as abusive supervision, affect knowledge hiding. This gap is important because supervisors strongly influence employees' decisions, including whether to hide knowledge (Farooq & Sultana, 2021). Thus, this study explores how abusive supervision shapes knowledge hiding and its boundary conditions.

This study investigates the potential connection between dysfunctional supervisory behavior and knowledge hiding. Specifically, it examines abusive supervision as a driver factor of knowledge hiding. Abusive supervision refers to employees' perceptions of their supervisors displaying rude and hostile behaviors (Tepper, 2000). While it is conceptually plausible that abusive supervision would contribute to knowledge hiding, the specific mechanisms and empirical evidence supporting this relationship remain unclear. Therefore, this research seeks to clarify how and to what extent abusive supervision influences knowledge concealment behaviors.

To address the research questions, we utilized the displaced aggression theory (Dollard et al., 1939) as our theoretical framework. We proposed that abusive leadership behaviors, including public ridicule, criticism, and intimidation, would positively correlate with knowledge-hiding behaviors among subordinates. Furthermore, we investigated power distance orientation (the extent to which individuals accept unequal power distribution (Hofstede, 1980) as a moderator of this relationship. In particular, we posited that individuals with a strong power distance orientation would show a lower tendency to withhold knowledge when subjected to abusive supervisory behavior. Consequently, we proposed that power distance orientation would lessen

the adverse influence of abusive supervision on the tendency to withhold knowledge, as depicted in our theoretical model (Figure 1.1).

This study extends the current understanding of abusive supervision, orientation toward power distance, and knowledge management through three distinct contributions. First, to the best of our understanding, this is the first study to investigate the link between abusive supervision and knowledge concealment within the Sri Lankan context. While prior research has examined the relationship between abusive supervision and knowledge sharing (Lee et al., 2018; Kim et al., 2018; Islam et al., 2021), those findings are not directly applicable to knowledge hiding, a unique construct (Connelly et al., 2012). Thus, our research contributes novel insights into both the precursors of knowledge hiding and the effects of abusive supervision. Second, by integrating displaced aggression theory with power distance orientation, we offer a new insight into the boundary conditions that influence the association between abusive supervision and knowledge hiding. Third, Sri Lanka's unique cultural setting is ideal for studying abusive supervision and power distance orientation. As a high-power distance culture, Sri Lanka tends to accept large gaps in power and wealth (Insights, 2024). This environment, where people often respect authority, may affect how individuals perceive abusive supervision. Additionally, Sri Lanka's high-power distance index makes it a strong choice for examining power distance orientation. This cultural context, characterized by deference to authority, may influence individuals' sensitivity to supervisory abuse. Furthermore, with a high-power distance index, Sri Lanka offers a particularly relevant environment for studying power distance orientation.

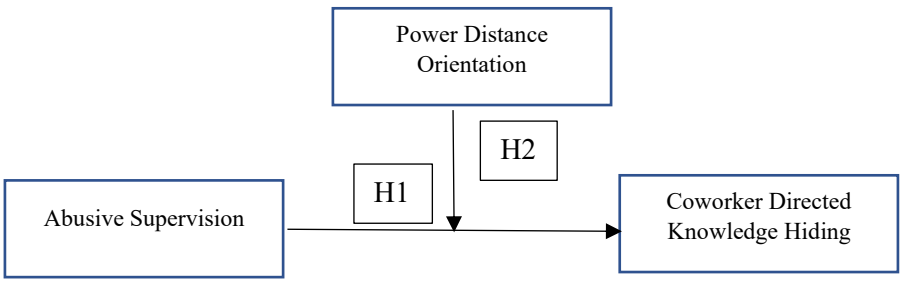

Figure 1.1: Hypothesized research model

Theory and hypotheses development

Abusive supervision and knowledge hiding behaviors

Knowledge hiding occurs when employees deliberately withhold information requested by others (Connelly et al., 2012). This behavior can range from small acts, like ignoring a request, to major ones, such as hiding critical information (Anand et al., 2022). While some employees may justify hiding knowledge, for example, to protect confidentiality (Khalid et al., 2018), it is rarely a calculated response to abusive supervision. Instead, it often emerges as a passive reaction to mistreatment, not as an intentional effort to harm coworkers.

Drawing from displaced aggression theory (Dollard et al., 1939), we argue that abusive supervision leads to knowledge hiding because employees redirect their frustration toward colleagues. Since supervisors control rewards and promotions (Park et al., 2022), employees avoid confronting them directly. Instead, they displace their frustration by withholding knowledge from peers, a safer but still damaging form of retaliation (Wu & Lee, 2016; Feng & Wang, 2019). Thus, abusive supervision fosters a toxic environment where employees resort to passive-aggressive actions like knowledge hiding.

Empirical research supports this connection. Arain et al. (2022) showed that workplace hostility, such as perceived organizational politics, increases knowledge hiding. Similarly, Weng et al. (2020) found that negative hierarchical interactions predict knowledge hiding among coworkers. Most notably, Jahanzeb et al. (2019) confirmed that abusive supervision directly leads to knowledge hiding in Pakistani workplaces.

Thus, based on displaced aggression theory and empirical evidence, we hypothesize that: -

H1: Abusive supervision is positively related to coworker-directed knowledge hiding.

Power Distance Orientation on the Relationship Between Abusive Supervision and Coworker-Directed Knowledge Hiding

This study investigates power distance orientation as a cultural factor moderating the relationship between abusive supervision and coworker-directed knowledge hiding**.** Rooted in Hofstede's (1980) framework, power distance orientation captures an individual's acceptance of hierarchical power disparities within organizations. Recent research has expanded on this foundation, demonstrating how power distance orientation shapes workplace dynamics. Specifically, our analysis delves into its role in altering the impact of abusive supervision on employees' propensity to hide knowledge from peers.

The theoretical framework highlights distinct behavioral patterns tied to power distance orientation. High-power-distance subordinates exhibit greater acceptance of hierarchy and deference to authority (Siddique et al., 2020), viewing themselves as lower-status within organizational power structures (Hussain & Sia, 2017). These employees often normalize supervisory mistreatment and avoid retaliation, including knowledge hiding from supervisors or coworkers, as such actions would violate the hierarchical order they endorse. Conversely, low-power-distance subordinates expect egalitarian treatment and perceive abusive supervision as a severe violation of workplace fairness (Li et al., 2024). Yet, fearing direct retaliation, they frequently redirect frustration laterally via coworker-directed knowledge hiding, aligning with displaced aggression theory (Dollard et al., 1939). This occurs because while they resent unfair treatment, they still recognize the risks of challenging supervisors, making coworkers a safer target for aggressive responses.

Empirical evidence supports the moderating role of power distance orientation. Studies have demonstrated that abusive supervision's negative effects are particularly pronounced among

low-power-distance employees across various organizational contexts (Li et al., 2024; Hon & Lu, 2016). Research in the hotel industry has shown how abusive supervision predicts subordinate abusive behavior, though this relationship is weaker among employees with high power distance orientation (Hon & Lu, 2016). Parallel findings emerge in manufacturing contexts, where power distance value attenuates the link between abusive supervision and turnover intentions (Richard et al., 2020). Furthermore, investigations into workplace aggression patterns confirm that employees who cannot safely retaliate against supervisors frequently displace their aggression toward peers (Mitchell & Ambrose, 2007), a finding that aligns perfectly with the predicted behavior of low-power-distance individuals facing abusive supervision.

Based on this theoretical and empirical foundation, we propose:

H2: The positive relationship between abusive supervision and coworker-directed knowledge hiding will be weaker for subordinates with a low inclination towards power distance compared to those with a strong inclination.

Methodology

This study examines Sri Lanka's IT industry due to its economic significance and relevance to knowledge hiding. The sector contributes $1.5 billion in exports (2022) and employs 175,000 skilled workers (U.S. Commercial Service, 2023), making it a critical driver of national growth. IT firms are knowledge-intensive, with collaboration essential for innovation, yet competitive pressures and intellectual property concerns create conditions where knowledge hiding may thrive (Fong et al., 2018). Additionally, Sri Lanka's high-power distance culture (Hofstede Insights, n.d.) contrasts with the IT sector's globalized workforce, providing an ideal setting to test power distance moderation.

Data was collected from employees across five IT organizations in Colombo, representing diverse functional roles such as software development, network administration, quality assurance, cybersecurity, and database management. After obtaining consent from the human resources departments of each organization, we employed convenience sampling to select participants through in-person interactions in their workplace settings. While convenience sampling limits broad generalization, it was deemed appropriate given the industry's concentration in Colombo and the practical advantages of leveraging professional networks for accessibility (Etikan et al., 2016). A standardized procedure was followed for questionnaire distribution across all locations. Each participant received a package containing a cover letter (detailing the study's purpose), the questionnaire, a confidentiality assurance, and a return envelope. Completed surveys were returned to the respective HR departments, from which we collected the responses.

The survey was administered in English, which served as the primary medium of communication. Although Sinhala and Tamil are Sri Lanka's official languages, English

functions as a widely understood link language, particularly within the IT sector. Given that employees in Sri Lankan IT organizations typically possess strong English proficiency, language barriers were unlikely to affect response accuracy or participation.

Descriptive statistics were computed to summarize the demographic characteristics of the sample and provide an overview of the key study variables. The final sample consisted of 215 employees. Out of the 215 participants, 63% were male and 37% were female. The average age of respondents was 30.6 years (SD = 5.2), and their average organizational tenure was 5.8 years (SD = 3.4). Regarding marital status, 56% of the participants were single, while 44% were in marital unions. Regarding occupational roles, 42% were software developers, 18% were engaged in network administration, 14% worked in quality assurance, 13% were in cybersecurity, and the remaining 13% were involved in database management. These demographic characteristics offer a snapshot of the workforce involved in the study and contextualize the analysis of the main constructs.

Measures

A seven-point Likert scale (1 = 'Strongly Disagree', 7 = 'Strongly Agree') was used for all construct measures unless otherwise specified. Example scale items are provided within each variable's description.

Abusive supervision

Abusive supervision was measured using Tepper's (2000) 15-item scale, which assesses subordinates' perceptions of sustained hostile verbal and non-verbal supervisory behaviors. A sample item includes: "My manager ridicules me." The scale exhibited strong internal reliability ($\alpha = 0.86$).

Power distance orientation

Power distance orientation was measured using Kirkman et al.'s (2009) eight-item scale. Responses were recorded on a five-point Likert-type scale. A sample item from the scale is, "There is nothing wrong in manager/authority making decision without consulting subordinates." The scale demonstrated acceptable reliability ($\alpha = 0.75$).

Knowledge hiding

We measured knowledge hiding using the scale from Connelly et al. (2012). Participants recalled colleague knowledge-sharing requests over a 3-month period and responded to items such as "Agreed to help him/her but never really intended to." The scale exhibited acceptable reliability ($\alpha = 0.84$).

Control variables

To account for potential confounding effects, we controlled for key subordinate demographic characteristics: age (in years), gender (0 = female, 1 = male), organizational tenure (in years), and marital status (0 = unmarried, 1 = married).

Analysis

We employed hierarchical regression analysis to test our hypotheses using SPSS version 26.0. Before hypothesis testing, we assessed the data for assumptions, including normality, linearity, multicollinearity, and homoscedasticity. The assumption of normality was verified by examining skewness and kurtosis values, which ranged from -0.58 to 0.64 and -0.71 to 0.88, respectively well within the acceptable range of ±1.0, as recommended by Kyriazos and Poga (2023). Multicollinearity was evaluated using Variance Inflation Factor (VIF) scores, all of which were below the threshold of 2.0, indicating no serious multicollinearity issues among the independent variables (Hair et al., 2019). To assess linearity and homoscedasticity, we used scatterplots of standardized residuals against predicted values. The scatterplots showed a random and evenly distributed pattern, meeting the assumptions (Tabachnick & Fidell, 2013). We also checked the reliability of all measurement scales. The Cronbach's alpha values were above 0.70, which is the recommended cut-off. This confirmed acceptable internal consistency (Nunnally & Bernstein, 1994).

Table 1: Correlation Matrix of Study Variables

Variables		Model 1 (Main Effects)	Model 2 (Interaction term)
Abusive Supervision		1	
Co-worker Knowledge Hiding	Directed	.39***	1

SPSS output

The correlation analysis revealed a significant positive relationship between abusive supervision and coworker-directed knowledge hiding (r = .39, p < .01). This finding supports H1, indicating that employees who experience higher levels of abusive supervision are more likely to engage in knowledge hiding behaviors directed at their coworkers.

Table 2: Moderation Analysis – The Role of Power Distance Orientation

Variables	Model 1 (Main Effects)	Model 2 (Interaction term)
Abusive Supervision	.30***	.41***
Power Distance Orientation	.06	.19**
Abusive Supervision × PDO		-0.24**

SPSS output

The moderation analysis examined whether Power Distance Orientation (PDO) influences the strength of the relationship between Abusive Supervision and Coworker-Directed Knowledge Hiding. In Model 1, the results indicated that abusive supervision was a significant positive predictor of knowledge hiding ($\beta = .30$, $p < .001$), suggesting that employees who experience higher levels of supervisory abuse are more likely to withhold knowledge from their coworkers. In contrast, power distance orientation was not a significant predictor on its own ($\beta = .06$, ns), implying that it does not independently influence knowledge hiding behavior. However, Model 2 revealed a significant and negative interaction effect between abusive supervision and power distance orientation ($\beta = -.24$, $p < .05$), indicating a moderating relationship. Specifically, the positive link between abusive supervision and knowledge hiding was weaker among employees with higher power distance orientation. This suggests that individuals who are more accepting of hierarchical authority are less likely to respond to abusive supervision by engaging in coworker-directed knowledge hiding, whereas those with lower power distance orientation exhibit a stronger retaliatory response through such behavior.

Table 3: Conditional Effects of Abusive Supervision on Knowledge Hiding at Different Levels of Power Distance Orientation.

Level of Power Distance Orientation	Effect of Abusive Supervision (β)	SE	*p*-value	Significance
Low (−1 SD)	.39	0.07	< .001	Significant
Mean (0 SD)	.30	0.06	< .001	Significant
High (+1 SD)	.18	0.06	< .001	Significant

This result showed that the effect of abusive supervision on knowledge concealment was strongest at low levels of power distance orientation (−1 SD; $\beta = .39$, SE = 0.07, $p < .001$), indicating that employees with low tolerance for hierarchical authority were more likely to respond to supervisory abuse by withholding knowledge from their colleagues. At high levels of power distance orientation (+1 SD), the relationship was still significant but significantly weaker ($\beta = .18$, SE = 0.06, $p < .001$), indicating that employees who were more accepting of power and hierarchy were less reactive to abusive supervision and less likely to engage in knowledge concealment.

Discussions

This study examined how abusive supervision affects knowledge hiding among coworkers. We focused on why employees react differently to abusive leadership by hiding knowledge. Using displaced aggression theory, we found that power distance orientation plays a key moderating role. The results show that abusive supervision leads to more knowledge hiding toward coworkers. When employees face mistreatment, such as insults, yelling, or disrespect, they

often retaliate by withholding knowledge from peers (Zhao et al., 2016). According to displaced aggression theory (Dollard et al., 1939), employees avoid confronting abusive supervisors directly due to power differences. Instead, they redirect their frustration towards coworkers, who are seen as safer targets. This is especially true in high power distance cultures, where challenging authority is risky. The moderating effect of power distance orientation supports this idea, as employees in such settings are more likely to retaliate horizontally (against peers) rather than vertically (against supervisors).

However, power distance orientation also weakens the link between abusive supervision and knowledge hiding. While past research treats abusive supervision as always harmful (Aquino & Thau, 2009), our findings show that employees with high power distance orientation hide less knowledge when mistreated. This matches Tepper's (2000) argument that such employees see hierarchy as normal and may view abuse as less unfair. As a result, they feel less need to retaliate against coworkers. In short, power distance orientation acts as a buffer, reducing knowledge hiding in response to abusive supervision.

Practical implications

The findings of this research highlight important considerations for managerial practices. Chief among them is the recognition that abusive supervisory behaviors harm an organization's financial performance (Tepper, 2000; Zhang & Liao, 2015) and encourage knowledge hiding, which undermines innovation and strategic objectives. Therefore, controlling abusive supervision is essential. Achieving this requires systematically addressing both contextual and dispositional factors that contribute to such behaviors (Breevaart et al., 2022; Khan, 2021).

Second, while organizations may struggle to eliminate abusive supervision, particularly when it is perceived to serve strategic purposes (Tepper, 2007), its negative consequences can be mitigated through several approaches. The moderating role of power distance orientation indicates that employees' cultural values shape their responses to abuse. This underscores the need to consider cultural factors in managing supervisor-subordinate relationships. For instance, organizations should actively encourage employees with high power distance orientation to voice concerns, as they rarely report abuse voluntarily. Alongside initiatives to improve supervisory skills, organizations should train subordinates in assertiveness and conflict resolution. Furthermore, fostering a supportive work environment, through moral courage, positive role models, and constructive interactions, can enhance employee well-being. These measures build resilience, boost engagement, and aid recovery (Heaphy & Dutton, 2008), reducing the harm of abusive supervision.

Most importantly, organizations must recognize that knowledge hiding stems from perceived injustice. When employees experience fair treatment, through equitable rewards, just policies, and respect, they naturally reciprocate by sharing knowledge (Tsai, 2018). To

cultivate this, organizations should implement comprehensive reward systems (including monetary and non-monetary incentives) that explicitly recognize knowledge sharing. Such systemic approaches address the root causes of knowledge hiding while promoting open knowledge exchange.

Limitations and Future Directions

Acknowledging the study's limitations is crucial when interpreting its findings. Firstly, the data's origin within the IT sector of Colombo, Sri Lanka, potentially restricts the generalizability of our findings. Future research should aim to broaden the sample to include varied industries and geographical locations. Secondly, while our focus on abusive supervision yielded valuable insights, future studies should investigate the role of alternative leadership styles, such as autocratic, transactional, benevolent, and transformational, in relation to employee knowledge hiding. Thirdly, the cross-sectional design employed precludes the establishment of causality, leaving the possibility of reverse causality. To mitigate this, future research should utilize longitudinal or experimental designs. Finally, we treated knowledge hiding as a single-dimensional construct; prospective research should examine how abusive supervision and power distance orientation influence the separate aspects of knowledge hiding to gain a broader perspective.

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Antecedents toward Brand Hate Behaviour among Generation Z Consumers: With Special Reference to the Telecommunication Industry in Western Province, Sri Lanka

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Abstract

Globalization, competitiveness, and technological advancements have significantly increased consumer engagement in mobile communications, turning the telecommunications industry into a global commercial trend. Companies struggle to build long-term brand loyalty in Sri Lanka, where the telecom sector operates in an oligopolistic market with limited service differentiation. This challenge is especially prominent among Generation Z consumers, who are highly tech-savvy, socially conscious, and quick to react negatively to poor brand experiences. Although "Brand Hate", defined as strong negative emotions toward brands, is becoming more common worldwide, it remains an under-researched area in the Sri Lankan service sector, particularly among Gen Z consumers. This study explores the key antecedents that drive brand hate among this segment by developing a conceptual framework based on the Theory of Hate and the Theory of Consumer-Brand Relationships. The model was tested using primary data collected from 367 Gen Z telecom users in Western Province, Sri Lanka, through a self-administered structured questionnaire, and analyzed using regression analysis in SPSS. The findings revealed five main antecedents of brand hate: Negative Past Experiences, Symbolic Incongruity, Poor Relationship Quality, Ideological Incompatibility, and Rumors. Among these, rumors were identified as the most influential factor ($\beta = 0.450$), indicating that Gen Z consumers are highly affected by unverified information spread through digital platforms. These rumors can rapidly damage brand reputation and trigger intense negative emotions, even without direct personal experience. An overall conclusion can be drawn that rumors, poor relationship quality, and ideological incompatibility significantly influence brand hate behavior. At the same time, negative past experiences and symbolic incongruity do not have a notable impact among Gen Z consumers in the telecommunications industry in the Western Province of Sri Lanka. These insights highlight the need for telecom brands to go beyond functional service delivery and instead focus on managing their brand image, online reputation, and alignment with consumer values to reduce brand hate and build stronger emotional connections with Gen Z consumers in Sri Lanka.

Keywords: *Brand management, Brand hate, Consumer brand relationships, Generation Z, Consumer behavior*

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Faculty of Management and Finance, University of Ruhuna, Sri Lanka. July – 2025
ISBN: 978-624-5553-76-1

Maximizing Project Success through Strategic Communication Management in Remote Working Environments in the IT Industry in Sri Lankan Context

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Abstract

In Sri Lanka's IT sector, this study investigates how strategic communication management might be affected to maximize the success of projects in remote working environments. It focuses on critical areas of knowledge, determines problems with virtual communication, and suggests solutions. Intending to provide valuable suggestions for improved project success, the study addresses the fundamental issue of how strategic communication affects the results of project success. With the rise of remote work due to the COVID-19 pandemic, this study focuses on information clarity, accuracy, and timeliness as critical factors in achieving project success. However, during this shift, research on the specific difficulties of communication in Sri Lanka's remote workplaces, such as reduced information clarity and trustworthiness, delays in message delivery, and limited accessibility, remains remarkably lacking. This study examines how this communication aspects influence project success and offers insights for improvement in project success, emphasizing the unique challenges faced by the IT industry. A quantitative research methodology was conducted using a cross-sectional survey approach. This correlational study is undertaken with minimal researcher interference, using non-contrived settings to reflect real-world remote work environments. According to this study, IT professionals who are adapted to virtual settings in Sri Lanka have been identified as the target population. Out of this whole population, the sample selected using the purposive sampling technique consisted of 116 participants, including project managers, quality assurance engineers, business analysts, and software engineers selected from the Colombo District, Sri Lanka. Also, the study aims to collect data using a structured questionnaire to measure the impact on project success. The main findings from data analysis were conducted using SPSS software. The study used correlation and regression analysis to confirm that clear and accurate communication strategies are critical to achieving successful project outcomes, helping to align project goals with stakeholder expectations. The reliability of variables was validated by internal consistency analysis, with Cronbach's alpha values exceeding 0.70 in research findings, including pilot test results. The study tested hypotheses linking strategic communication (clarity, accuracy, timeliness) to project success. The results indicate that accuracy and clarity play a critical role in enhancing project success, while timeliness does not have a statistically significant effect. Timeliness, although essential, compared to accuracy and clarity, has less influence on project success. It recommends that project managers should prioritize clear and accurate communication to reduce the challenges associated with remote work. These insights provide practical guidance for enhancing communication in Sri Lanka's IT industry.

Keywords: *Project success, Remote Work, Strategic Communication Management, Sri Lanka, Quantitative Analysis*

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Faculty of Management and Finance, University of Ruhuna, Sri Lanka. July – 2025
ISBN: 978-624-5553-76-1

The Contribution of Financial Development in Human Development Index: Empirical Evidence from Sri Lanka

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Abstract

The financial development of a country can be an essential mechanism for enlarging people's preferences in respect of human development, such as a long and healthy life, education, and a decent standard of living. Despite numerous efforts aimed at fostering economic growth and financial inclusion in Sri Lanka, this present study offers a perspective on the relationship between Human Development Index (HDI) and financial development in Sri Lanka over the period 1990-2023, utilizing the Autoregressive Distributed Lag (ARDL) approach. The ARDL approach is appropriate to this study due to its flexibility in handling variables with different orders of integration without requiring all variables to be stationary at the same level. The research explores both short-run and long-run dynamics to understand the role of human capital development in shaping the financial sector. The empirical findings confirm the existence of a long-run equilibrium relationship between HDI and financial development, suggesting that improvements in human development indicators contribute to financial sector growth. Furthermore, the study contributes to the broader discourse on the interplay between human development and financial growth, emphasizing that a well–developed financial sector in turn facilitates further investment in human capital. The findings also suggest that policy measures aimed at enhancing education, healthcare and financial literacy by strengthening regulations can indirectly support financial sector development, creating a more inclusive economic environment to improve the overall quality of life in Sri Lanka.

Keywords: *Human Development Index, Financial Development, ARDL Approach, Economic Growth, Sri Lanka*

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Faculty of Management and Finance, University of Ruhuna, Sri Lanka. July – 2025
ISBN: 978-624-5553-76-1

ICME 2025 "Entrepreneurial Bricolage: Steering Volatile Markets through Improvised Strategies and Innovative Thinking"
Proceedings of 14th International Conference on Management and Economics

The Impact of Talent Management Practices on Executive Level Employee Retention in Kaluthara District Private Banking Sector: The Moderating Role of Perceived Self-Employability

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Abstract

In resource-constrained business environments, organizations have been paying attention to attract, develop and retain employees who can provide direct contributions to achieving competitive advantages and who can guide the actions of other employees. However, with the adverse economic conditions and the search for improved living conditions in developed countries, it has been challenging for organizations to retain talented employees in developing and emerging nations. This study examines the impact of talent management practices on executive-level employee retention in the private banking sector in Kalutara District, Sri Lanka. Building on Human Capital Theory, this research explores whether investment in selective staff recruitment, training, career development, performance management, and competitive compensation affects employee retention. Drawing on Protean Career Theory, this study conceptualised perceived self-employability —a mindset towards self-direction in decision-making in career management —as a moderating variable to examine how it influences the strength and direction of main theoretical relationships. This study adopted a quantitative research approach, sampled 183 executive-level employees in private banks through purposive sampling and used a structured online questionnaire to collect data. The purposive criteria were employees working at the executive level in the private banking sector in the Kalutara district who joined the bank through the management training process. The data were analyzed using multiple regression via SPSS version 25, and the moderating effect was examined using Process Macro version 4.2. The results revealed that training, performance management, and compensation significantly improve employee retention, consistent with previous studies. Also, selective staffing and career development did not significantly affect employee retention. Additionally, perceived self-employability as a moderating variable did not moderate the relationship between talent management practices and retention. This research contributes to the talent management literature by providing empirical evidence from the private banking sector. This area is often overlooked in globally developed countries, yet it is limited in developing nations. The findings offer insights for talent management practitioners and process owners, as investing in the correct blend of talent management practices improves employee retention. Future research should explore the impact of talent management practices on employee retention in other regions of Sri Lanka.

Keywords: *Employee Retention, Perceived Self-Employability, Private Banking Sector, Talent Management*

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Faculty of Management and Finance, University of Ruhuna, Sri Lanka. July – 2025
ISBN: 978-624-5553-76-1

ICME 2025 "Entrepreneurial Bricolage: Steering Volatile Markets through Improvised Strategies and Innovative Thinking"
Proceedings of 14th International Conference on Management and Economics

Assessing the Impact of Sustainable Tourism Practices on Destination Loyalty in Sri Lanka: The Mediating Role of Visitor Satisfaction

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Abstract

Sustainable tourism is a long-term goal for Sri Lanka's tourism industry, aiming to achieve a positive balance between economic, social, and environmental dimensions for both tourists and the local community. Framed by the Stimulus-Organism-Response (S-O-R) model and the Triple Bottom Line (TBL) framework, the research evaluates how economic, environmental, and socio-cultural sustainability contribute to enhanced visitor satisfaction and destination loyalty. The research examined the direct impact of sustainable tourism practices on visitor satisfaction and destination loyalty. Additionally, the impact of sustainable tourism practices on destination loyalty was analyzed through the mediation effect of visitor satisfaction. The population for the study was derived based on tourist arrivals through SLTDA statistics, where tourist arrivals totalled 1,487,303 in the year 2023. A sample of 403 tourists was selected using purposive sampling. The research was conducted as a quantitative study, with data collected primarily through the distribution of questionnaires. The data collected were analyzed using the PLS-SEM method using the SmartPLS tool. All hypotheses were supported, and findings reveal that sustainable tourism practices directly impact both destination loyalty and visitor satisfaction. Moreover, visitor satisfaction was found to be partially mediating the relationship between sustainability practices and destination loyalty. This study emphasizes the importance of sustainable tourism practices to Sri Lanka's tourism industry as it promotes long-term development and fosters economic growth, environmental protection and societal wellbeing. Also, the study provides practical insights for policymakers and tourism stakeholders on promoting sustainable strategies and awareness campaigns in Sri Lanka. Further, research contributes to the literature on sustainable tourism by facilitating pieces of evidence on the role of visitor satisfaction in mediating the connection between sustainable practices and destination loyalty in a developing country context. Future research should extend by using longitudinal research designs, comparative studies, and incorporating the views of tourism stakeholders. The results underscore the importance of strategic investments in sustainable tourism for long-term industry resilience, community well-being, and the promotion of Sri Lanka as a responsible and desirable destination.

Keywords: *Destination Loyalty, Sustainable Tourism Practices, Visitor Satisfaction, Sri Lanka*

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Faculty of Management and Finance, University of Ruhuna, Sri Lanka. July – 2025
ISBN: 978-624-5553-76-1

ICME 2025 "Entrepreneurial Bricolage: Steering Volatile Markets through Improvised Strategies and Innovative Thinking"
Proceedings of 14th International Conference on Management and Economics

The Impact of Human Resource Information System (HRIS) Usage on Employee Job Involvement: The Moderating Role of Digital Literacy

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Abstract

Technological advancements have transformed human resource management (HRM) functions in organizational settings. As a result, Human Resource Information Systems (HRIS) are increasingly important in managing human assets. Although research on HRIS adoption is commonly available, the influence of HRIS usage on employee-level outcomes is under-researched. This study examines the impact of HRIS usage on employee job involvement in selected apparel firms in Sri Lanka. Employees involved in present duties and obligations are considered a significant employee-level outcome in determining the success of organizational goal achievement. Digital literacy was examined as a boundary condition in the main study relationships. Employees' literacy in digital technologies may have a significant influence on HRIS usage at work and involvement in the job. Building on the Technology Acceptance Model (TAM), the study conceptualizes HRIS usage as system quality, information quality, ease of use, and perceived usefulness as independent variables. To investigate the impact of HRIS usage on job involvement, 132 HRIS users in selected apparel sector organizations were chosen using a simple random sampling method. The data was analyzed using multiple regression via Statistical Package for Social Sciences (SPSS) version 27. The moderation effect was assessed using PROCESS MACRO version 4.2. The findings show that system quality positively affects employee job involvement, and digital literacy moderates the relationship between system quality and job involvement. However, the rest of the study relationships, i.e., information quality, ease of use, and perceived usefulness, did not significantly affect job involvement. The results provide insights for future researchers and organizations seeking to enhance employees' job involvement through HRIS usage at work. Organizations can focus on improving the quality of HRIS systems and investing in improving digital skills through continuous training for HRIS users to maximize the value of HRIS for organizational work in the digital world.

Keywords: *Digital Literacy, Employee Involvement, Human Resource Information System (HRIS), Apparel sector*

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Faculty of Management and Finance, University of Ruhuna, Sri Lanka. July – 2025
ISBN: 978-624-5553-76-1

ICME 2025 "Entrepreneurial Bricolage: Steering Volatile Markets through Improvised Strategies and Innovative Thinking"
Proceedings of 14th International Conference on Management and Economics

Factors Affecting Employee Green Behavior: The Mediating Role of Green Intrinsic Motivation in a Selected Sri Lankan FMCG Company

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Abstract

In recent years, there has been growing attention on environmental consciousness and the sustainability of businesses. Promoting green behaviour has been recognized as an initial step in green human resource management to create a transitional change at the employee level. In so doing, employee motivation to adopt voluntary behaviour central to acting green and socially responsible is also paramount. Despite the increasing attention on greening businesses, existing research is scant to fully understand the factors affecting employee green behaviours and the underlying mechanisms of what influences employee green behaviour at work. This study investigates the factors affecting employee green behaviour while focusing on the mediating role of green intrinsic motivation in a selected fast-moving consumer goods (FMCG) manufacturing firm in Sri Lanka. The sample comprised 220 employees working in the chosen firm. The data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) with the SmartPLS Version 4.1.0.9 software and SPSS version 25 for preliminary analyses. The results revealed that environmental orientation, environmental knowledge and awareness, environmental attitude and perceived supervisory support positively influence employee green behaviour through green intrinsic motivation. This study contributes to the green human resource management literature by extensively investigating the factors affecting employee green behaviour and the mediating role of green intrinsic motivation. It offers practical implications for the FMCG manufacturing industry by highlighting the ways to increase the green motivation of employees and significant factors that can elevate green behaviours at work. Future studies can extend the model by linking other employee-level outcomes central to improving sustainable business performance.

Keywords: *Employee Green Behavior, Environmental Attitude, Environmental Knowledge and Awareness, Environmental Orientation, Green Intrinsic Motivation, Perceived Supervisory Support, PLS-SEM*

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Faculty of Management and Finance, University of Ruhuna, Sri Lanka. July – 2025
ISBN: 978-624-5553-76-1

Emerging Sustainable Themes in Wellness Tourism: A Systematic Review

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Abstract

Wellness tourism has witnessed significant growth within the global tourism industry, driven by an increasing interest in physical and mental well-being among travellers. This study investigates the emerging sustainable themes within wellness tourism, with a specific emphasis on spa-based experiences, organic agritourism, and water-related tourism activities. It explores how wellness tourism contributes to destination development by attracting more visitors, thereby boosting local economies, supporting environmental conservation, and enhancing both community engagement and overall community well-being. A systematic literature review was conducted using the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) model, focusing on studies published from 2007 to 2024. Research articles were sourced from reputable academic databases, including Emerald, ResearchGate, Springer, and Frontiers. The findings reveal that wellness tourism not only enhances tourists' quality of life by offering revitalizing and immersive experiences but also strengthens local economies through job creation, increased revenue for small businesses, and infrastructure development. Additionally, it plays a crucial role in biodiversity conservation by promoting sustainable practices and protecting natural resources. Wellness tourism also contributes to community well-being by preserving traditional healing practices, supporting local cultural activities, and encouraging meaningful cultural exchanges between tourists and host communities. Future research is encouraged to apply the 4Es paradigm: Entertainment, Education, Esthetics, and Escapism to understand better wellness tourism experiences and their long-term implications for sustainable development. Longitudinal studies could offer deeper insights into the sustained impacts of wellness tourism on local communities, ecosystems, and tourist loyalty. Furthermore, examining cross-cultural perspectives and the integration of digital wellness innovations could further enrich this growing field of study.

Keywords: *Nature and wellness, Spa tourism, Sustainability, Wellness tourism, Wellness tourism themes*

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Faculty of Management and Finance, University of Ruhuna, Sri Lanka. July – 2025
ISBN: 978-624-5553-76-1

Artificial Intelligence Application in Human Resource Development Practices: Insights from Sri Lankan HR Professionals in the ICT Industry

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Abstract

The rapid integration of Artificial Intelligence (AI) into Human Resource Development (HRD) is reshaping traditional HRD functions, especially within the ICT industry. AI improves strategic decision-making, efficiency, and personalization in HRD functions, allowing firms to support employee growth through data-driven HRD programs. Thus, this study is driven by the increasing necessity for enterprises to update HRD procedures through AI technology to improve workforce development, adaptability, and competitive advantage in a swiftly changing digital environment. The researchers aimed to explore the application of AI in HRD practices in Sri Lanka. A qualitative research approach was employed, utilizing in-depth interviews with fifteen HR professionals. The research examined AI-driven advancements in three main HRD functions through six themes: training and development (personalized learning, AI-driven training process), performance management (AI-based performance appraisal, personalized development plans), and career development (AI mentors and virtual coaching, succession planning and leadership development), identifying both opportunities and barriers to implementation. Through the thematic analysis, findings indicated that the application of AI in HRD practices offers significant benefits in terms of operational efficiency, data-driven decision-making, and personalization of learning and career pathways. In contrast, intelligent learning platforms provide specialized employee training experiences. Similarly, AI-facilitated performance appraisal systems support organizations to move towards fairer and more accurate evaluations. Younger employees are more likely to adapt to AI mentoring programs and skill development advice, while AI helps identify skill gaps in leaders and suggests training programs. Nevertheless, the study also uncovered substantial challenges that impair effective AI integration in HRD. These include limited AI literacy among HRD practitioners, organizational resistance to change, inadequate digital infrastructure, and ethical AI usage. Such challenges reflect broader structural and cultural barriers that must be addressed to realize the full potential of AI in Human Resource Development. To navigate these barriers, the study proposed a multi-dimensional strategy that includes the development of a structured AI adoption framework adapted to the Sri Lankan ICT sector.

Keywords: *Artificial Intelligence, Career Development, Human Resource Development, Performance Management*

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