



University of Sri Jayewardenepura

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ஸ்ரீ ஜயவர்த்தனபுர பல்கலைக்கழகம்

OTMURS 2024

**PROCEEDINGS OF THE
OPERATIONS AND
TECHNOLOGY
MANAGEMENT
UNDERGRADUATE
RESEARCH
SYMPOSIUM**

29th February, 2024



Research Center for Innovation, Operations, and Quality
Management

Department of Decision Sciences
Faculty of Management Studies and Commerce
University of Sri Jayewardenepura
Gangodawila, Nugegoda, Sri Lanka

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TECHNOLOGY MANAGEMENT UNDERGRADUATE
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EXTENDED ABSTRACTS

**Research Center for Innovations, Operations and Quality
Management**

**Department of Decision Sciences
Faculty of Management Studies and Commerce
University of Sri Jayewardenepura
Nugegoda, Sri Lanka**

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Operations and Technology Management Undergraduate Research Symposium 2024

*Research Center for Innovation, Operations and Quality Management
Department of Decision Sciences
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University of Sri Jayewardenepura*

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BANKERS' AWARENESS OF MODERN INDUSTRIAL TECHNOLOGIES: A COMPARATIVE STUDY IN WESTERN PROVINCE OF SRI LANKA

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INTRODUCTION

In today's world, the widespread usage of technology in numerous industries has transformed human activities by simplifying and enhancing their lives in various aspects. Technology has become a crucial tool for both people in their work and also businesses in their daily operations. Technologies such as Artificial Intelligence, Blockchain, Biometrics, Big Data Analytics, and Industry 5.0 etc. are popular modern technologies that most scholars have studied for their research (Dewasiri et al., 2023; Normalini & Ramayah, 2012; Wamba & Queiroz, 2022).

In the context of the Sri Lankan banking sector, this research is being conducted to address the lack of banking efficiency by investigating the awareness level of modern industrial technologies such as; Artificial Intelligence (AI), Biometrics Technology, Blockchain Technology and Big Data Analytics (BDA) in both private and public banks. Wong and Deng (2016) studied on Association of Southeast Asian Nations (ASEAN) region bank's efficiency and its findings showed that the overall average efficiency of the banks in Indonesia, Malaysia, the Philippines, and Thailand is 0.898, 0.838, 0.749, and 0.891 respectively. According to Liyanagamage (2017, p. 80), the efficiency of the Sri Lankan banking sector accessed is 0.51. Therefore, compared to other countries Sri Lankan banking efficiency is at a moderate level.

Most of the previous studies that are mostly accessed and considered the technology awareness level of banking customers rather than that of employees, so the present study may focus on assessing the modern industrial technology awareness level of employees who work at private and public banks in the Western province of Sri Lanka.

RESEARCH QUESTIONS

Therefore, this study is framed to examine the following three questions such as:

Research Questions 01: Are the awareness levels of employees in the banking sector different for AI, BDA, Blockchain and Biometric technologies?

Research Questions 02: Do the employees of the State or Private banking sectors have different levels of awareness of modern industrial

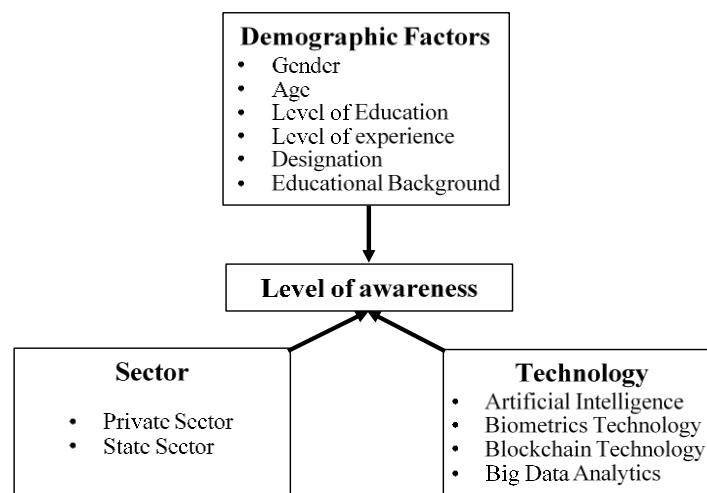
technologies?
Research Questions 03: Does the awareness level vary according to the demographic factors of the employee?

OBJECTIVES

The main objectives of this research study are to examine the awareness levels of employees in the banking industry for four technologies such as; AI, Biometrics Technology, Blockchain Technology and BDA, to compare the level of awareness regarding selected modern industrial technologies among employees in the private and public banks of Sri Lanka and to compare the technology awareness level among demographic characteristics such as two gender groups, age categories, level of education, level of experience, designation, and educational background of the employees.

METHODOLOGY

This research study can be considered as a cross-sectional descriptive study which is based on quantifiable observations. The data was collected through a well-developed questionnaire with a seven-point Likert scale. This research was conducted for the employees who work in selected two State banks and two Private banks in the Western province of Sri Lanka. The sample size was chosen based on the Morgan table and the sample was selected based on quota and convenient sampling methods. The rate of response in this research was more than 65.1%. The questionnaire has been distributed and shared via both physical (As hard copies) and online (As a Google form link) methods for the employees who are working in selected State banks and Private Banks respectively and collected data were analyzed using the SPSS version 25.



Source: Author

Figure 1 - Conceptual Framework

RESULTS/ FINDINGS

As per the study results in Table 1, the average awareness levels of employees in the banking sector regarding the underlying technologies are not equal from each other such as AI, Biometrics Technology, and Blockchain Technology except BDA.

H₁: The awareness levels of employees in the banking sector regarding four technologies might be different to each other.

Table 1: Results of Welch and Brown-Forsythe ANOVA test

Average technology awareness level for all four technologies	
	Sig.
Welch	.000
Brown-Forsythe	.000

a. Asymptotically F distributed.

*. The mean difference is significant at the 0.05 level.

Source: Survey data, 2023, N = 236

According to the results in Table 2, the awareness level of employees in banks regarding blockchain technology is less than the awareness level of AI and Biometric technologies. The results show that there is no significant difference in the awareness level of BDA compared to the other three technologies.

Table 2: Results of the Mean Comparison Tests

(I) Modern Industrial Technology	(J) Modern Industrial Technology	Mean Difference (I-J)	Std. Error	Sig.
Blockchain technology	AI technology	-.621*	.132	.000
	Biometric technology	-.511*	.132	.001
	Big Data Analytics	-.338	.143	.085
AI technology	Biometric technology	.110	.131	.835
	Big Data Analytics	.283	.142	.191
Biometric technology	Big Data Analytics	.173	.142	.615

*. The mean difference is significant at the 0.05 level.

Source: Survey data, 2023. N=236

According to the study results displayed in Table 3, the technological awareness level of employees in banks does not vary based on the banking sector and their demographic factors such as designation, age, and level of experience except gender, educational background, and level of education. The study results illustrate that male employees who are working in the banking industry have a greater level of awareness regarding modern industrial technologies compared to female employees. Further, the study results show that the technology awareness level varies with the educational background of the respondents.

HYPOTHESES

Table 3: Results of the Hypotheses testing

Hypotheses	P-value	Statistical Test	Mean Difference
H_2 : The level of awareness on modern industrial technologies among employees in private banks might be different from that of employees in public banks	0.138	Two Independent Sample T-test	No Significant Difference
H_{3a} : The technology awareness levels of employees in the banking sector might be different based on their gender	0.000	Two Independent Sample T-test	0.7239
H_{3b} : The technology awareness levels of employees in the banking sector might be different based on their age groups	0.765	One-Way ANOVA test	No Significant Difference
H_{3d} : The technology awareness levels of employees in the banking sector might be different based on their level of experience in the banking sector.	0.562	One-Way ANOVA test	No Significant Difference
H_{3e} : The technology awareness levels of employees in the banking sector might be different based on their designation within the bank	0.168	One-Way ANOVA test	No Significant Difference
H_{3f} : The technology awareness levels of employees in the banking sector might be different based on their educational background	0.012	Kruskal-Wallis test	The median values of the 04 populations are not equal

Source: Survey data, 2023, N = 236

The study results in Table 4 showed that the technological awareness level of employees in banks varies based on their level of education.

Table 4: Results of the ANOVA F-test

H_{3c} : The technology awareness levels of employees in the banking sector might be different based on their level of education.

Average technology awareness level of all 04 technologies			
	Sum of Squares	Mean Square	Sig.
Between Groups	15.885	5.295	.033
Within Groups	414.377	1.786	
Total	430.261		

*. The mean difference is significant at the 0.05 level.

Source: Survey data, 2023, N = 236

The results of this study discovered that the technology awareness level of banking employees who have bachelor's or master's degrees is greater than those who have High School, Professional Qualifications, or a Diploma. The results are illustrated in Table 5.

Table 5: Results of the Mean Comparison Tests

Dependent Variable: Average technology awareness level of all 04 technologies

	(I) Highest education level of the respondents	(J) Highest education level of the respondents	Mean Difference (I-J)	Std. Error	Sig.
LSD	High School & Professional Qualification (CIMA/ CFA/ CMA/ CA/ etc.)	Diploma	-.04665	.28893	.872
		Bachelor's Degree (BA/ BSc)	-.54779*	.25935	.036
		Master's Degree (MSc/ MBA/ Postgraduate)	-.57911*	.26421	.029
	Diploma	Bachelor's Degree (BA/ BSc)	-.50115*	.24787	.044
		Master's Degree (MSc/ MBA/ Postgraduate)	-.53246*	.25295	.036
	Bachelor's Degree (BA/ BSc)	Master's Degree (MSc/ MBA/ Postgraduate)	-.03131	.21855	.886

*. The mean difference is significant at the 0.05 level.

Source: Survey data, 2023, N = 236

DISCUSSION

According to Olatunde et al. (2022), survey results showed that the respondents of the study area had a higher level of awareness regarding AI technology, and a lower level of awareness regarding Blockchain technology which supports the survey results of the current study, but even though it emphasized the awareness regarding BDA is at a lower level, the current study results showed that the awareness level on BDA of employees in banking industry is not have much difference with the awareness level on other three technologies. As to the current study results, respondents have a greater level of awareness of Biometric technology and this result is also consistent with Furnell and Evangelatos (2007).

The results of this research study, show that there is no significant difference between the awareness level of bank employees who work in the public sector and private sector regarding selected modern industrial technologies. This result is also consistent with the study results obtained by Bhatnagar (2015) and supports the findings of the current study. Even though the current study suggests male employees are more aware than female employees and technology awareness level does not vary with the age of the respondents, those results are inconsistent with the results obtained by Chugh et al. (2016). As per the findings of Ejidike et al.(2022) and Ohajinwa et al. (2017), technology awareness differs with the experience level and the designation of the respondents respectively. However, those findings are inconsistent with the present study results. According to the study results of Boora and Jangra (2019) technology awareness levels differ with the educational level and the educational background of the respondents. The current study results are consistent with the results of those previous studies.

IMPLICATIONS OF RESEARCH

This research has been conducted as a comparative analysis between the private and public banking sectors. So, this will help to identify to what extent employees' technology awareness in private banks is different from that of public banks. So, it will help with the benchmarking and communication of best practices to enhance their level of awareness across the banking industry in Sri Lanka.

The findings of this research will support policymakers in banks when developing strategies to enhance the efficiency and capabilities of their employees. Consequently, it will enhance the efficiency level of the Sri Lankan banking sector as well. This study also will help decision-makers in the banking industry to make decisions related to resource allocation, strategic planning, and investments in technology adoption of banking employees.

Keywords: *Employee Technology awareness, Artificial Intelligence, Biometrics Technology, Blockchain Technology, Big Data Analytics, The private and public banking sector*

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FACTORS AFFECTING THE BEHAVIORAL INTENTIONS OF THE USERS IN ADOPTING ARTIFICIAL INTELLIGENCE (AI) TECHNOLOGIES IN HIGHER EDUCATION

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INTRODUCTION

Artificial Intelligence (AI) is a groundbreaking field of computer science that has captivated the imagination of scientists, researchers, and the public for decades. It represents the culmination of human efforts to create technologies that can mimic human intelligence, perform tasks that typically require human intelligence, and in some cases, even surpass human capabilities. The development of AI has had a profound impact on various aspects of our lives, from healthcare and transportation to entertainment and education. Artificial intelligence is the simulation of human intelligence processes by machines, especially computer systems. Specific applications of AI include expert systems, natural language processing, speech recognition and machine vision (Burns, Laskowski and Tucci, 2018). The demand for artificial intelligence (AI) in education is being driven by factors like the growing investments made in EdTech¹ and AI by both public and private sectors, as well as the growing popularity of edutainment². Furthermore, the global need for AI in education is being fueled by technological advancements. Worldwide, the COVID-19 pandemic had a catastrophic effect on industries. Nonetheless, during the pandemic, the market saw a significant increase in demand for cutting-edge AI-based educational solutions.

In the Sri Lankan context, while universities have not yet widely incorporated AI technologies into their teaching approaches, undergraduates are actively embracing various AI technologies to enhance their effectiveness in completing assignments and projects. Sri Lanka's education ministry plans to introduce artificial intelligence (AI) to the school curriculum in 2024 with an emphasis on robotics, machine learning, data mining, computer vision and related technologies (Andrew, 2023).

Despite the fact that AI adoption is becoming more common among university students, there is a notable lack of study that specifically examines the specific dynamics of AI acceptance and usage within the Sri Lankan context. Moreover, many studies carried out on this subject have demonstrated the Technology Acceptance Model (TAM) as a suitable model for comprehending the adoption of preceding technologies. However, it has been amended and developed throughout the years. Venkatesh and Davis (2000) extended the model by adding social influence processes

¹ Education and Technology

² Education with the goal of making learning enjoyable.

(subjective norm, voluntariness, and image) and cognitive instrumental processes (job relevance, output quality, result demonstrability, and perceived ease of use) resulting in the TAM 2. Venkatesh and Bala (2008) even presented TAM 3 integrating a collection of pre-and post-implementation interventions which affect the determinants of technology adoption. Other research in the user acceptance literature has brought up a variety of different models which have been comprehensively examined and compared yielding in a unified model which is called the Unified Theory of Acceptance and Use of Technology (UTAUT).

In brief, this study emphasizes identifying the factors influencing the adoption of AI technologies in higher education using UTAUT. Accordingly, the following research questions have been formulated.

- Research Question 01:* What attributes of AI technologies affect undergraduates' behavioral intention in Sri Lanka?
- Research Question 02:* How do those attributes of AI technologies affect undergraduates' behavioral intentions?
- Research Question 03:* What is the impact of attitude on the relationship between those attributes and undergraduates' behavioral intention?

OBJECTIVES

This study aims to determine whether Sri Lankan undergraduates perceive AI technologies favorably.

- Research Objectives 01:* To identify the attributes of AI technologies, affecting undergraduates' behavioral intention in Sri Lanka.
- Research Objectives 02:* To identify the impact of the attributes of AI technologies, affecting undergraduates' behavioral intention.
- Research Objectives 03:* To identify the impact of attitude on the relationship between those attributes and undergraduates' behavioral intention.

LITERATURE REVIEW

The study of technology adoption has long been explored, particularly since Rogers' (2003) introduction of the innovation adoption curve, which categorizes adopters based on their characteristics and the time taken to adopt new ideas. The Unified Theory of Acceptance and Use of Technology (UTAUT) offers a comprehensive framework to understand technology acceptance, evolving from the foundational Technology Acceptance Model (TAM) by Davis et al. (1989). TAM suggests that perceived usefulness and perceived ease of use are primary determinants of technology adoption. Over time, extensions such as TAM2 and TAM3 have incorporated additional factors like social influence and cognitive instrumental processes. Venkatesh et al. (2003) have highlighted that perceived risk can significantly impact users' behavioral intentions and actual use of technology. The higher the perceived risk, the less likely individuals are to adopt the technology. Performance Expectancy (PE) in UTAUT reflects the

belief that technology enhances job performance, similar to concepts in TAM and other models, and is identified as a critical determinant of behavioral intention (Venkatesh *et al.*, 2003, as cited in Dwivedi *et al.*, 2017). Effort Expectancy (EE), defined as the ease of system use, also plays a crucial role in technology adoption, with users weighing the effort against the perceived benefits (Venkatesh *et al.* (2003). Facilitating Conditions (FC) pertain to the organizational and technical support available, impacting both behavioral intention and actual use (Venkatesh *et al.* (2003).

Attitudes (ATT) towards technology, as described by Ajzen and Fishbein (1975), influence behavioral intention, acting as a mediating variable in predicting technology usage. Finally, Behavioral Intention (BI) itself is a strong predictor of actual technology use, encapsulating individuals' intentions to engage in specific behaviors. This review synthesizes various models and determinants, providing a holistic understanding of technology adoption.

METHODOLOGY

As the study relies on hypotheses to determine the links between the independent variables and the dependent variable, the study employed a deductive approach with a cross-sectional design. The population of this study is the undergraduates of Sri Lanka. The sample consisted of the undergraduates of the University of Sri Jayewardenepura, which was selected using the convenience sampling method. An online questionnaire consisting of 23 statements was circulated among the undergraduates. The seven-point Likert scale ranging from 1: “Strongly Disagree” to 7: “Strongly Agree” was used to measure the constructs. 163 responses were collected from the respondents and 3 responses were eliminated as they were not properly filled. The number of responses considered for analysis is 160. The processing of this sample was carried out using the IBM SPSS statistical software. The data analysis was conducted in two phases. The first phase consisted of testing the reliability and validity of the constructs. The second phase of data processing consisted of hypotheses testing using multiple linear regression while the mediating impact was tested using the Sobel test.

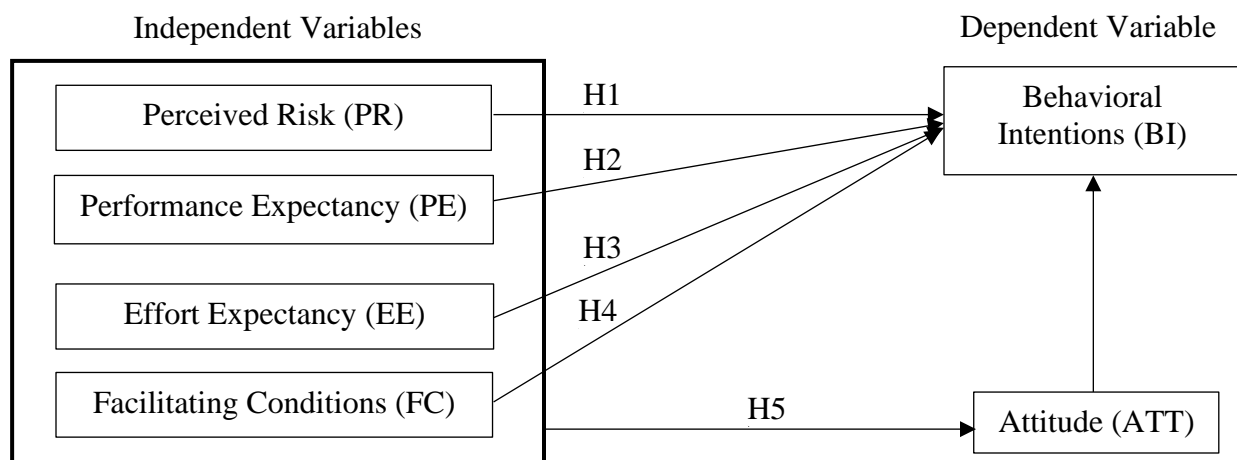


Figure 1: Conceptual Framework

Source: Author

H1: Perceived Risk (PR) has an impact on the behavioral Intention (BI) of the users in adopting AI in higher education.

H2: Performance Expectancy (PE) has an impact on the behavioral Intention (BI) of the users in adopting AI in higher education.

H3: Effort Expectancy (EE) has an impact on the behavioral Intention (BI) of the users in adopting AI in higher education.

H4: Facilitating Conditions (FC) have an impact on the behavioral Intention (BI) of the users in adopting AI in higher education.

H5: Attitudes (ATT) of individuals have an impact on the relationship between the attributes and the behavioral intention (BI) of the users in adopting AI in higher education.

FINDINGS

Kaiser-Meyer-Olkin (KMO) and Cronbach's Alpha were used to measure the validity and reliability of the data. All the variables have high reliability, with Cronbach's Alpha values ranging from 0.731 to 0.903. All KMO values are higher than 0.5 indicating better sampling adequacy for factor analysis.

Table 1: Results of the Hypotheses Testing

Hypothesis	Coefficient	P-value	Result
H1: Perceived Risk (PR) has an impact on the behavioral Intention (BI) of the users in adopting AI in higher education.	-0.68	0.198	Rejected
H2: Performance Expectancy (PE) has an impact on the behavioral Intention (BI) of the users in adopting AI in higher education.	0.651	0.000	Accepted
H3: Effort Expectancy (EE) has an impact on the behavioral Intention (BI) of the users in adopting AI in higher education.	0.60	0.249	Rejected
H4: Facilitating Conditions (FC) have an impact on the behavioral Intention (BI) of the users in adopting AI in higher education.	0.90	0.66	Rejected
H5: Attitude (ATT) has a mediating impact on the relationship between the attributes and the behavioral intention of the users in adopting AI in higher education.	-	0.211	Partially Mediated

Source: Survey Data

DISCUSSION

The study investigated several hypotheses related to the adoption of AI in Higher Education, shedding light on key factors influencing users' behavioral intentions. Contrary to prior research that emphasized the negative impact of Perceived Risk (PR) on BI, the current study found no significant impact of PR on undergraduates' BI toward AI adoption (**H1**). This could be because

the undergraduates view AI adoption as less risky due to their familiarity or they disregard the risk to get the work done. This result contrasts with the existing literature (Dwivedi *et al.*, 2017; Sharma and Sharma, 2019; Tamilmani *et al.*, 2019) and suggests that, in the context of higher education, users may perceive AI adoption as less risky than anticipated. According to the findings, Performance Expectancy (PE) has a positive impact on undergraduates' BI (**H2**) that aligns with the assertion that users are more likely to embrace AI in higher education if they perceive it as beneficial in terms of performance (Venkatesh *et al.*, 2003). Contrary to the anticipated relationship between Effort Expectancy (EE) and BI (**H3**), the study found no significant impact. This result is inconsistent with established models (Venkatesh *et al.*, 2003; Davis, Bagozzi, & Warshaw, 1989) and suggests that ease of use may not be a decisive factor in shaping users' BI toward AI adoption in higher education. Further, the study found that Facilitating Conditions (FC) have no impact on BI (**H4**). Since most of the AI applications can be used from mobile phones undergraduates might not be paying much attention to the FC. This finding contradicts with the idea that a supportive organizational and technical infrastructure enhances users' intention to adopt AI and contributes to the perceived ease of use. Moreover, in numerous past studies, FC has been identified as a factor that influences the BI of users in adopting a technology (Dwivedi *et al.*, 2017; Venkatesh *et al.*, 2016). Lastly, the study found that the undergraduates' attitudes partially mediate the relationship between the attributes and the BI as the beta value of ATT demonstrates a positive influence while Its p-value of 0.211 is greater than the 0.05 level (**H5**), which somewhat aligns with established theories (Ajzen and Fishbein, 1975; Davis, Bagozzi, & Warshaw, 1989).

IMPLICATIONS ON RESEARCH

This study addresses a notable gap in the literature by focusing on AI technologies in the Sri Lankan context. The relevance of the UTAUT model components was examined for the adoption of technologies in the year 2023. Accordingly, it was identified that only the performance expectancy has a significant impact on the undergraduates' behavioral intention toward adopting AI.

Many companies are introducing different AI technologies. Companies who already have released an AI technology will likely release a newer, updated edition once the first one has become outdated, but also to keep up in the game. The new technologies will be amended. As a consequence of this study, the manufacturing companies of AI technologies will know what factors potential users perceive relevant and valuable in the usage of AI technologies or what features they miss which hold them back from properly adopting the technology.

When it comes to the higher education sector in Sri Lanka, given the study's findings undergraduates may mainly need to reevaluate the PR associated with adopting AI technologies. Further, institutions can develop targeted strategies and initiatives to foster a culture of innovation and digital transformation in higher education, while taking ethical considerations into account.

Keywords: Artificial Intelligence, UTAUT, Higher Education, Technology Acceptance

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IMPLEMENTATION OF LEAN PRACTICES TO OPTIMIZE MILK POWDER USAGE IN KITCHEN OPERATIONS: A CASE STUDY OF TWO HOSPITALS IN COLOMBO, SRI LANKA

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INTRODUCTION

As a leading player in the healthcare industry, CL Group of Hospitals is committed to delivering quality patient care and has earned a reputation for clinical excellence. The CL group comprises two hospitals located in Colombo 1 (CL1) & Colombo 5 (CL2). In line with its Lean management culture and commitment to minimizing waste, the group has identified a need to address the increasing kitchen costs impacting the per meal cost at both hospitals. Despite numerous cost-saving studies conducted across various sections of the hospitals, the kitchen operations remained untouched. The study aims to identify and mitigate the kitchen costs, particularly focusing on milk powder, as a high-cost item. The goal is to eliminate wastages in milk powder processes using lean tools and techniques without compromising on quality. Internal reports indicate that lean practices are not being implemented within kitchen operations to address costs and improve efficiency (Kumarasinghe, 2023).

The originality of this study lies in its focus on an often-overlooked area of hospital operations the kitchen. By applying Lean management principles to this area, the project not only aims to achieve cost savings but also to establish a pattern of Lean thinking that can lead to innovative cost-saving ideas in other areas. In this study, we meticulously analyzed the overall kitchen costs, scrutinizing each item for efficiency. The findings revealed that milk powder stands out as one of the top 10 costliest items. Specifically, in CL1 Hospitals, where approximately 500 kilograms are used monthly, the cost exceeds 1.1 million per month. Similarly, in CL2 Hospitals, with a monthly usage of around 600 kilograms, the cost surpasses 1.3 million per month. Furthermore, our investigation identified tea wastage during meetings as a common occurrence, prompting us to delve deeper into various stages of the process to uncover potential areas for improvement. The value of this study is twofold: it has the potential to significantly reduce overall kitchen costs, positively impacting the financial health of the group of hospitals, and it contributes to the broader field of Lean management in healthcare settings. According to (MELTON, 2005) Lean management a valuable approach for organizations seeking to optimize their operations, enhance customer satisfaction, and achieve sustainable success

OBJECTIVES

- Research Objective 01:* Identify wastage occurrence stages and quantify wastages of milk powder within the kitchen operational processes
- Research Objective 02:* Establish a Lean Thinking Pattern by proposing and implementing effective solutions to eliminate the identified wastages in the milk powder.
- Research Objective 03:* Optimize Milk Powder-Related Processes to achieve excellence in efficiency, quality, and resource utilization.
- Research Objective 04:* Positively Impact the Group's Financial Position by implementing that result in substantial savings in kitchen costs at both hospitals.

METHODOLOGY

The methodology for this study comprises two main sub-methodologies: data collection and data analysis. It employs a combination of quantitative and qualitative approaches to gather comprehensive data. There are many lean methods can be used to implement best lean practices such as Kanban, JIT, Continuous Flow, Pull system as production flow, DEMAIC, Gemba walk, PDCA, Kaizen as continues improvement and 5S, visual management as work organization management (Lima,, Carvalho, Souza, Vieira, & Gonçalves, 2019)

Data Collection Tools

The data collection methodology involved a comprehensive exploration of various sources within the hospital settings. Firstly, insights were obtained from the Chief Executive Chef, who provided data on monthly usage, frequency of usage, and initial wastages observed in both hospitals. Secondly, the hospital's Internal Inventory Management System facilitated access to kitchen stores issues and consumption reports. Thirdly, financial data pertaining to kitchen costs were extracted from Internal Supply Chain Analysis Reports. Fourthly, manufacturer's standards were utilized as a benchmark for comparison. Fifthly, group profitability was evaluated through the analysis of Annual Reports. Sixthly, initial observations within the kitchen were conducted via Gemba Walk Studies. Seventhly, brainstorming sessions were convened with key stakeholders such as diet clerks, F&B supervisors, and captains. Eighthly, knowledge dissemination occurred through consultation and awareness improvement sessions. Lastly, insights were gathered from interactions with top-level management.

Data Analysis Tools

Brainstorming sessions served a dual purpose in the collection and analysis of data, facilitating the generation, evaluation, description, and illustration of initial ideas and data. The outcomes of these sessions were further scrutinized in the discussions, with the findings. Fishbone diagrams, also known as Ishikawa or cause-and-effect diagrams, were employed to systematically examine causes and effects. Similarly, the Pareto chart and principle were utilized to pinpoint the most probable causes based on their impact and controllability. Business Process Mapping aided in the

identification of non-value-adding activities or wastages in processes, particularly in stages prone to milk powder consumption. Hypothetical data analysis was conducted to mitigate potential misuse cases involving confidential data. Additionally, the Causes Validation Matrix was employed for qualitative testing, revealing that the increased meetings cause was invalid due to operational requirements. Root-Cause Analysis or 5 Why analysis was performed to identify precise causes, while PDCA Cycles were utilized for the implementation and evaluation of solutions.

RESULTS / FINDINGS

The brainstorming sessions revealed several key findings regarding the daily tea-making operations at both hospitals. Firstly, it was noted that the operation is not aligned with the daily headcount, potentially leading to inefficiencies. Additionally, unique tea requests outside of normal tea hours were identified as a factor contributing to operational challenges. Adherence to standards emerged as another concern, particularly concerning the use of imported materials which may increase costs. Furthermore, unidentified milk powder wastage was highlighted as a significant issue requiring attention. The impact of the economic crisis, increased meetings, and unidentified milk powder wastage stages were also identified as areas of concern. Damaged teapots/flasks, staff knowledge gaps, and incidents of misuse were identified as additional challenges affecting the efficiency of the tea-making process.

The Pareto chart and principle were instrumental in pinpointing the most probable causes of issues based on their impact and controllability. Through this analysis, it was revealed that 80% of the impacts were attributed to a select few causes. These causes included unidentified milk powder wastages (I), adherence to standards (II), and tea preparation practices that were not aligned with the actual headcount (III). Additionally, tea wastage during meetings (IV), increased frequency of meetings (V), and control and monitoring gaps (VI) in the issuing process were identified as significant contributors to the problem. Unique tea requests (VII) and concerns related to the misuse of milk powder (VIII) were also highlighted as factors impacting the efficiency of the tea-making process.

Business Process Mapping was employed to discern non-value-adding activities or wastages within the milk powder consumption process across both hospitals. According to (Maldonado, Leusin, Albuquerque Bernardes, & Vaz, 2019) the business process mapping is a most powerful tool to identify non-value-adding activities within a process. In CL1 Hospital, potential wastage stages were identified during the issuing of milk powder to Outer Labs, distribution to internal staff at the cafeteria and certain departments, as well as during servings to patients, events, and meetings. Similarly, in CL2 Hospitals, similar stages were recognized where wastage could occur, aligning with the findings from the business process map conducted. These identified stages serve as focal points for further analysis and targeted interventions to mitigate wastage and enhance efficiency in milk powder utilization.

Hypothetical data analysis was undertaken to investigate potential misuse cases in identified departments, ensuring adherence to ethical considerations. This analysis involved comparing actual consumption patterns with standard usage norms, accounting for typical wastages. Through

this process, several instances of misuse were identified, highlighting areas for further scrutiny and potential corrective action.

A Causes Validation Matrix was utilized for qualitative testing, with the aim of assessing the validity of potential causes. While most causes were deemed valid and accepted, one cause, namely "Increased Meetings (V)," was found to be invalid. This determination was based on operational requirements, indicating that the increased frequency of meetings was a necessary aspect of the organization's operations, rather than a contributing factor to the identified issue.

A Root-Cause Analysis, including the 5 Whys methodology, was conducted to identify the causes highlighted in the Pareto chart. The resulting action points are outlined below.

Table 1:Root-Cause Analysis

Root-Causes	Findings / Action Points
I.	Need to conduct process studies, identify wastage points, monitor and eliminate the wastages
II.	Need to Establish Manufacturer Standard and Monitoring
III.	Need to introduce a method to get daily head count
IV.	Need to establish a Rule or Culture to confirm participation before the meetings
VI.	Need to establish a method and rules to reporting recording data accurately
VII.	Need to establish a tea boiler in the kitchen
VIII.	Need to allocate a responsible person in required areas

The PDCA (Plan-Do-Check-Act) Cycles were employed to implement and evaluate solutions for both hospitals independently. Responsibilities were allocated to various individuals, including the Diet Clerk, Chief Executive Officer, meeting facilitators, Lean team, kitchen stock keepers, and departmental in-charges, to ensure timely completion of each action.

DISCUSSION

The implementation of Lean management principles in the kitchen operations of CL Group of Hospitals has led to significant savings in milk powder consumption. At CL1, there has been a monthly reduction of 100kgs, while at CL2, the savings amount to 90kgs per month. These reductions have a substantial impact on the annual cost of milk powder. With the current savings rate, the hospitals are projected to save more than 5 million annually. The alignment between organizational expectations and managerial performance varies across organizations, including hospital settings, due to differing organizational attributes. Achieving efficiency and effectiveness in implementing management practices and enhancing performance requires a thorough consideration of organizational contexts. (Vanichchinchai, 20221)

This is a significant achievement, considering the high cost of milk powder and its extensive usage in hospital kitchens. The success of this project demonstrates the effectiveness of Lean management principles in reducing wastage and improving efficiency. It also highlights the potential for further cost savings in other areas of hospital operations.

IMPLICATIONS ON RESEARCH/POLICY

- I. Lean Problem Solving Culture - When arising an issue within the kitchen operations the staff should come up with a solution with problem-solving tools (BPM, Root-cause analysis, PDCA)
- II. Each departmental daily present staff count should be reported to the chief executive chef before 9.00 a.m. (SOP)
- III. Daily tea making should be followed the manufacturing standards to reduce variability of milk powder usage
- IV. All the participants need to provide their participation to the particular meeting before even 1 hrs. to start.
- V. Every purchases need to have a collective approach of different criteria to make purchase decisions.

Keywords: *Lean Management, Process Excellence, Quality Improvements Tools, Non-value adding activities, Wastage Identification, Health Care Industry*

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IMPACT OF IN-STORE LOGISTICS PERFORMANCE ON THE STORE IMAGE AND CUSTOMER SATISFACTION: EVIDENCE FROM WESTERN PROVINCE, SRI LANKA

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INTRODUCTION

Sri Lankan economy is heavily dependent on the service industry, which accounts for 60.5% of the country's 2022 GDP (CENTRAL BANK OF SRI LANKA, 2022). The local retail sector, accounts for more than 30% of the national GDP (Prakash, 2022). However, economic growth has slowed down, while the market is saturated alongside costs that continue to rise. Moreover, shorter product life cycles, rapid new product introductions, and customers' expectations and demands have risen significantly and grown less predictable. Logistics has been emerged as a vital tool for retailers seeking sustainable competitive advantages and overall success (Yazdanparast et al., 2010). Particularly for retailers, optimal logistics performance is instrumental in providing customers with products in ideal conditions, enhancing the overall customer experience, ensuring product availability, and efficient delivery and return processes (Ramanathan, 2010; Vasić et al., 2021).

All studies carried out on this subject have presented an evaluation of the performance measures used in supply chain models. However, the results of these works were different in terms of performance measurement in customer's perception. Further, research related to this field in Sri Lanka remains unexplored. In this context, it is necessary to explore the links between customer perceived logistics performance, store image and consumer behavioral intentions in the Sri Lankan retailing context while considering variants of logistics performance, such as: checkout level, shelf level and product availability.

In brief, the objective of this paper is to determine the effect of logistics performance on store image and consumer behavior. Thus, we formulate the following research question: Accordingly, following research questions have been formulated.

Research Question 01: What is the impact of in-store logistics performance on the customer satisfaction in the retail sector?

Research Question 02: What is the impact of in-store logistics performance on the store image in the retail sector?

Research Question 03: What is the impact of store image on the customer satisfaction in the retail sector?

Research Question 04: What is the effect of store image on the relationship between in-store logistics performance and customer satisfaction in retail sector?

OBJECTIVES

The aim of this was to determine the effect of in-store logistics performance on store image and customer behaviour in Western province, Sri Lanka. This study provides practical evidence from the modern trade retail industry to showcase the logistics performance factors that could influence customer satisfaction. The objectives have been formulated as follows:

- Research Objective 01:* To examine the impact of in-store logistics performance on the customer satisfaction in the retail sector.
- Research Objective 02:* To examine the impact of in-store logistics performance on the store image in the retail sector.
- Research Objective 03:* To examine the impact of store image on the customer satisfaction in the retail sector.
- Research Objective 04:* To identify the mediating impact of store image between in-store logistics performances and customer satisfaction in the retail sector.

METHODOLOGY

In this research study, deductive approach was adopted as this study relied on hypothesis to determine the links between the in-store logistics performance and customer satisfaction (Saunders et al., 2016). The population of this study will be the customers of modern trade market in Western province as they have the most interaction with modern trade compared to the other provinces in Sri Lanka. In order to conduct the current investigation, non-probabilistic sampling approach is considered, due to some limitations such as time constraints and the difficulties in obtaining data within a limited time period (Berndt, 2020). Therefore, convenience sampling was used as the technique of the current investigation. Questionnaire-based study was carried out to fulfil the purpose of the study by distributing it among the sample of the study, which is the customers of modern trade market in Colombo, Gampaha and Kalutara district. The data has been summarized and processed using SPSS statistical software. The data analysis was conducted in two phases. The first phase consisted of testing the reliability and validity of the measurement scales. While the second phase of data processing consisted of testing the research hypotheses on the basis of data collected in the field. Hypothesis testing has been carried out with linear regression analysis and process macro analysis. Moreover, to identify the mediating effect, the Sobel effect has been tested

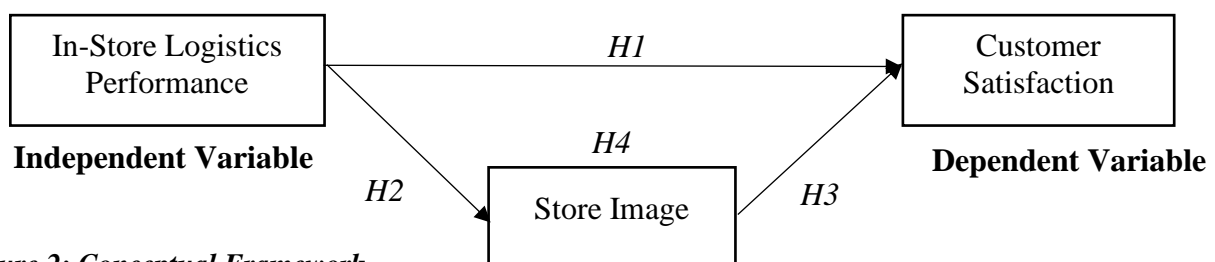


Figure 2: Conceptual Framework
 Source: Author

HYPOTHESES

- H₁:** A positive perception of in-store logistics performance positively and directly affects customer satisfaction.
- H₂:** A positive perception of in-store logistics performance positively affects the store's image.
- H₃:** The store image positively affects the customer satisfaction.
- H₄:** Store image mediates the relationship between in-store logistics and customer satisfaction.

FINDINGS

Table 1: Results of the Validity and Reliability Testing

Variable	AVE	KMO Test Value	Coefficient Value	P-Value	Cronbach's alpha Value	Validity Result	Reliability Result
In-Store Logistics Performance	.1761	.3402	0.603	.0000	.925	Accepted	Accepted
Store Image	.3768	.5588	0.468	.0000	.797	Accepted	Accepted
Customer Satisfaction	.6508	.8249	0.874	.0000	.756	Accepted	Accepted

Source: Survey Data

Table 2: Results of the Hypotheses Testing

Hypothesis	LLCI	ULCI	Coefficient Value	P-Value	Decision
H₁: A positive perception of in-store logistics performance positively affects customer satisfaction	.1761	.3402	0.603	.0000	Accepted
H₂: A positive perception of in-store logistics performance positively affects the store's image.	.3768	.5588	0.468	.0000	Accepted
H₃: The store image positively affects the customer satisfaction	.6508	.8249	0.874	.0000	Accepted
H₄: Store image mediates the relationship between in-store logistics and customer satisfaction.	.2304	.4871		.0000	Partially Mediated

Source: Survey Data

DISCUSSION

The purpose of our research was to explore the role of logistics performance on customer satisfaction and on the store image in the Sri Lankan context. The literature review provides support for the acceptance of **Hypothesis 1**, confirming that a positive perception of in-store logistics performance significantly and directly influences customer satisfaction (Fernandes et al., 2018; Mentzer et al., 2001). The availability of products, ease of access to shelves, and other logistical factors directly contribute to a positive customer experience, aligning with the study's results that convenience plays a crucial role in shaping customer value (Pihlström & Brush, 2008). Subsequently, the positive influence of in-store logistics performance on store image is supported by a wealth of literature, affirming the acceptance of **Hypothesis 2** (El Moussaoui et al., 2022; Rafiq & Jaafar, 2007). As noted by Bloemer and De Ruyter (1998), store image is a vital factor in satisfaction, reflecting cumulative experiences in these dimensions. The positive correlation between a favorable store image and overall satisfaction is reinforced by the idea that customer evaluations of service elements contribute significantly to satisfaction (Anderson et al., 1997; Bouzaabia et al., 2013) which supports the acceptance of **Hypothesis 3**. The study's findings partially support the acceptance of **Hypothesis 4**, stating that "Store image mediates the relationship between in-store logistics and customer satisfaction." As proposed by Bloemer and De Ruyter (1998) and supported by El Moussaoui, Benbba, and El Andaloussi (2022), a positive store image contributes significantly to customer satisfaction. Therefore, the mediation role of store image in the relationship between in-store logistics and customer satisfaction aligns with the insights from existing literature. However, since both direct and indirect effects are significant in this study, we could say that result is partially supports H4 of the study.

IMPLICATIONS OF RESEARCH

This research has indicated the importance of understanding the role of in-store logistics in retaining customer satisfaction in the context of retail modern trade. Using the findings, retail store managers and designers may place the proper emphasis on in-store logistical operations, reducing any potential negative effects and making them the main contributors to a seamless shopping experience by providing recommendations such as attention to detail, making sure regular replenishment schedules, avoiding sudden stock-outs, and optimizing shelf layouts. This study fills an empirical gap in the existing literature, particularly in the Sri Lankan context, as there is limited research on impact of in-store logistics performance on store image and consumer behavior. Additionally, with the help of this study, retailers may be able to co-create a seamless experience for customers by recognizing the role of store image in the relationship between logistics operations and customer behaviors. Overall, the study's outcomes aligned with previous research, illustrating the interdependent relationship among in-store logistics, store image, and customer satisfaction in the retail context in Sri Lanka.

Keywords: *Logistics Performance, Store Image, Consumer Satisfaction, Quantitative Study*

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AWARENESS AND APPLICABILITY OF CROWDSOURCING FOR SUPERMARKET SECTOR IN SRI LANKA

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INTRODUCTION

Big data analytics (BDA) has become a pivotal topic in the modern digital era, seen as essential. This study explores the Sri Lankan supermarket sector's adoption of crowdsourcing, a shift in collaborative decision-making, and the gap between individual awareness and organizational practices, aiming to bridge the gap in understanding and implementing this innovative approach. However, describing crowdsourcing refers to "The act of a company or institution taking a function once performed by employees and outsourcing it to an undefined (and generally large) network of people in the form of an open call" (Howe, 2006, p. 1, as cited in Lenart-Gansiniec et al., 2022).

Furthermore, this study investigates the comprehension and use of crowdsourcing in the Sri Lankan supermarket sector, with particular emphasis on past customs, modes of decision-making, and the impact of social-cultural elements and leadership styles.

To address this complex landscape, the research aims to answer critical questions such as:

- Research Question 01:* How is the awareness of crowdsourcing among the respective employees in the main supermarket chains in Sri Lanka?
- Research Question 02:* Why are the main Sri Lankan supermarkets using / not using crowdsourcing for their day-to-day operations?
- Research Question 02:* What are the benefits and drawbacks identified by the main supermarkets in Sri Lanka regarding the implementation of crowdsourcing?

This study delves into the application of crowdsourcing concepts within the Sri Lankan supermarket industry, aiming to shed light on how such practices can foster innovation and cultivate a collaborative culture. The research provides valuable suggestions for leveraging crowdsourcing as a tool for promoting creativity and cooperation within the sector. Additionally, the study offers insights into strategic decision-making processes that can be enhanced through the incorporation of crowdsourcing practices. By examining the specific ways in which crowdsourcing is being implemented in the Sri Lankan supermarket context, the research seeks to provide practical guidance for industry players looking to harness the potential of crowdsourcing for their innovation and decision-making endeavors.

OBJECTIVES

Main objective of this research is,

To investigate the landscape of crowdsourcing awareness among respective employees of major supermarket chains in Sri Lanka, analyze the factors influencing their utilization or non-utilization of crowdsourcing in day-to-day operations, and identify the perceived benefits and drawbacks associated with the implementation of crowdsourcing strategies within the Sri Lankan supermarket sector.

METHODOLOGY

The methodology serves as the guiding framework for the systematic exploration of the awareness and applicability of crowdsourcing within the Sri Lankan supermarket sector (Tong et al., 2016). Adopting a phenomenological research design, the goal is to delve into the lived experiences and perceptions of individuals regarding crowdsourcing, ethical considerations are paramount, ensuring participant confidentiality and informed consent. The multiple-case study methodology is employed to comprehensively examine the phenomenon across diverse supermarket chains. Data collection involves semi-structured interviews with purposively selected managers in main selected main supermarkets in Sri Lanka. Through purposive sampling, participants were selected to ensure a diverse representation across various supermarkets. The interview protocol was meticulously designed to test the level of participants' awareness, understanding of crowdsourcing concepts, and perceptions of potential barriers and benefits associated with its adoption.

METHODOLOGY

DATA COLLECTION AND ANALYSIS

Data was collected from logistic companies in Colombo district and a sample of 100 was collected. The descriptive analysis was done on SPSS and to assess validity and test hypotheses, partial least squares structural equation modeling (PLS SEM) in SmartPLS software was utilized, chosen for its ability to work with non-normally distributed data and its lower sample size requirement compared to covariance-based SEM methods (Hair et al., 2011). Additionally, a one-sample t-test assessed the availability of organizational drivers for BDAAC in companies.

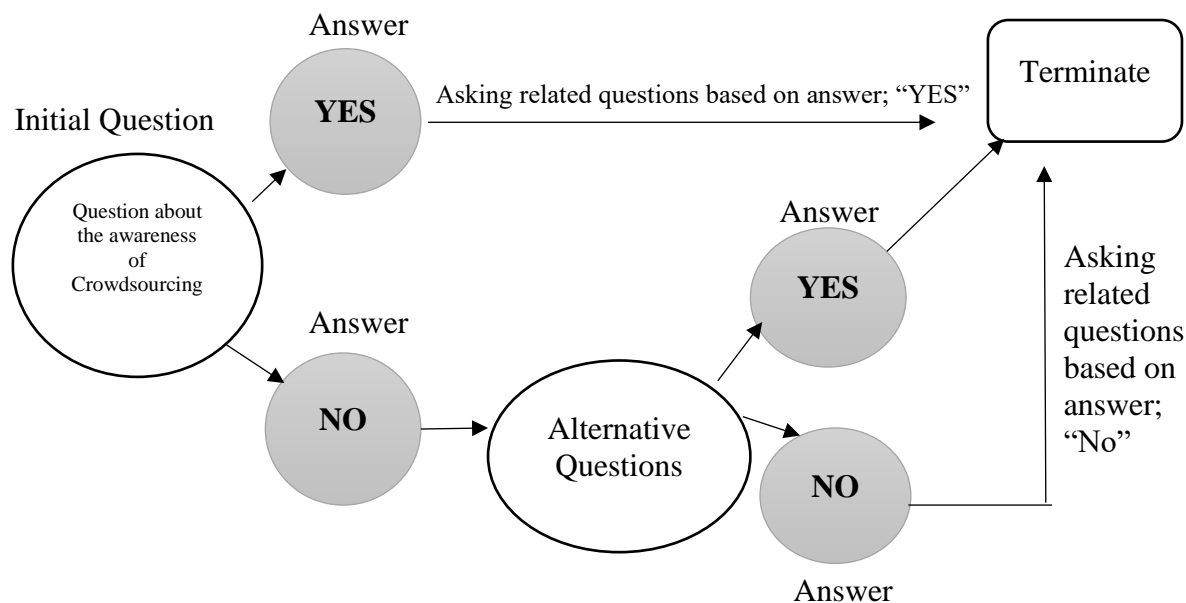


Figure 3: Interview Plan and Structure

Thematic analysis was applied to the interview data, offering a nuanced understanding of the subject matter (Braun & Clarke, 2006). In conducting this study, stringent ethical considerations were meticulously followed to uphold the integrity and confidentiality of the research process. The methodology has been thoughtfully crafted to facilitate a comprehensive and in-depth exploration of the phenomenon, aiming to illuminate the current state and potential pathways for the integration of crowdsourcing practices within the Sri Lankan supermarket sector. The commitment to ethical standards ensures the responsible handling of data and the protection of participants' confidentiality, ultimately contributing to the reliability and credibility of the research findings. This approach reflects a dedication to maintaining the highest standards of ethical conduct throughout the research endeavor, reinforcing the trustworthiness of the study and its implications.

RESULTS AND DISCUSSION

The insights garnered from responses of managers within the Sri Lankan supermarket sector offer a comprehensive perspective on the industry's engagement with collaborative approaches and decision-making dynamics. Despite varying levels of familiarity with crowdsourcing concepts among participants, a consistent theme emerges from the findings: there is limited application of crowdsourcing within day-to-day business operations. This observation underscores a potential gap between awareness and practical implementation, suggesting an opportunity for targeted interventions or strategies to bridge this divide. The nuanced understanding provided by these responses is invaluable for addressing challenges and devising tailored approaches to promote the effective integration of crowdsourcing practices within the Sri Lankan supermarket sector.

Although there hasn't been much adoption or adherence to crowdsourcing ideals, there is an apparent need for increased awareness and intentional incorporation of these methodologies. The managers

emphasize proactive strategies, customer-centric decision-making, and collaboration with diverse stakeholders. The insights also highlight the sector's commitment to external collaborations, innovation adoption, and agile decision-making. Cultural dynamics, leadership principles, and the role of technology further shape decision-making practices.

Overall, the responses underscore the significance of bridging knowledge gaps for the successful integration of crowdsourcing and collaborative strategies, laying the groundwork for enhanced decision-making, innovation, and competitiveness in the Sri Lankan supermarket industry.

DISCUSSION

The examination of key managers' responses in the Sri Lankan supermarket sector reveals a gradation landscape regarding their familiarity and engagement with crowdsourcing. While instances of personal understanding exist, the disconnect between individual awareness and organizational practices raises questions about alignment. One manager's perspective provides depth, indicating implicit alignment with crowdsourcing principles, contributing to business strategies. However, another manager's lack of familiarity suggests a potential industry-wide awareness gap. The acknowledgement by another manager regarding the inadvertent embodiment of crowdsourcing principles highlights the need for deeper exploration and awareness-building initiatives within the sector.

Overall, the findings underscore the complexity of crowdsourcing integration in the Sri Lankan supermarket sector, emphasizing the importance of aligning individual knowledge with corporate strategies and fostering sector-wide awareness. Considering the diverse perspectives on crowdsourcing within the Sri Lankan supermarket sector, it is recommended that companies undertake a comprehensive review of organizational strategies to align individual knowledge with corporate practices. Initiatives to bridge the gap between personal understanding and company involvement, as observed by one manager, are crucial.

Furthermore, building on the positive acknowledgment of aligning practices with crowdsourcing principles, companies should actively leverage and promote these implicit collaborative efforts. For another manager's insight into inadvertent alignment, it is recommended to conduct in-depth explorations and implement targeted awareness programs to ensure a conscious and strategic integration of crowdsourcing principles within operational strategies. This approach will foster a more cohesive and informed adoption of crowdsourcing practices in the Sri Lankan supermarket sector.

IMPLICATIONS ON RESEARCH

The research findings in the context of the Sri Lankan supermarket sector carry profound implications with significant importance for various stakeholders, including industry players, policymakers, and academics. The study provides strategic insights for Sri Lankan supermarket businesses, offering guidance on leveraging crowdsourcing to enhance customer engagement, streamline operations, and maintain competitiveness in a dynamic market. Recognizing the need for awareness-building initiatives, the research recommends training programs for key managers to familiarize them with crowdsourcing concepts and encourage collaborative decision-making.

Moreover, the study highlights the importance of understanding social-cultural factors influencing crowdsourcing adoption, suggesting that this knowledge can inform policies in the supermarket sector to promote inclusivity and diversity in decision-making processes. The research contributes to academic understanding by enhancing insights into crowdsourcing dynamics in emerging markets, paving the way for further exploration of its applicability and effectiveness in diverse cultural and economic contexts. It underscores the potential for supermarket businesses to stay ahead of industry trends by embracing crowdsourcing principles, advocating for investments in technology, and fostering an innovation-friendly environment. Finally, the research underscores the importance of a strategic, context-specific approach to crowdsourcing adoption in supermarkets, emphasizing the need to balance benefits and challenges for successful integration into their operations.

Keywords: *Big data analytics capability, supply chain resilience, logistics industry, drivers*

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ADOPTION OF APP BASED RIDE HAILING SERVICES: COMPARISON BETWEEN FEMALE AND MALE USERS IN SRI LANKA

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INTRODUCTION

Over the decades, there have been numerous significant advances and discoveries in the striking evolution of transportation. Recent advancements in transportation can be seen in the emergence of ride-hailing apps. Platforms like Uber and Lyft have transformed the traditional taxi industry by providing convenient, on-the-spot transportation options via smartphone apps, primarily due to advancements in mobile technology and connectivity. This research will specifically use the word “ride- hailing application” for ordering a taxi via smart phone. These services connect users with available drivers, offering a more convenient alternative to traditional taxi experiences. The vehicles enable passengers to enjoy a personalized transportation experience by picking them up and dropping them off at predetermined locations.

The ride-hailing sector in Sri Lanka has attracted a variety of participants, with PickMe and Uber emerging as the leaders (Perera & Samarasinghe, 2020). Due to their reliable and convenient ride-hailing services that meet commuter needs, these platforms are commonly used by Sri Lankans. Additionally, these platforms provide extra on-demand services that are available to users such as online food delivery, courier services (Hansani & Karunarathne, 2021).

Whether or not to use an m-taxi is a matter of choice. However, clients' interest in selecting a ride hailing application is volatile (Damsara,2020). According to the literature, price, relative advantage, ease of use, and safety and security are the most important factors when studying customer adoption in ride hailing services (Almunawar, Anshari, & Lim, 2020; Ruangkanjanases & Techapoolphol, 2018). Despite the rising role of ride-hailing in transportation in Sri Lanka, this research attempted to fill the space left on identifying which attributes are highly valued by female and male as passengers when using app-based ride hailing services. Numerous research has been done both globally and locally to determine the variables that affect the adoption of ride-hailing apps. There is a lack of literature specifically focusing on a comparative analysis of how male and female users perceive the adoption of app-based ride-hailing services in the context of Sri Lanka. Finding the factors that contribute to people's interest in using app-based ride hailing services is the main goal of this study. In summary the researcher has developed the following research questions in accordance with the background information mentioned above: Does the price, relative advantage, ease of use, physical security, social influence, feeling towards technology of ride-hailing applications influence the adoption of app-based ride-hailing service by female and male users?

OBJECTIVES

This study attempts to identify the factors that influence people's decisions to choose ride hailing apps for their everyday commuting requirements in Colombo, Sri Lanka. Thus, the objective of this study is to investigate whether price, relative advantage, ease of use, physical security, feeling towards technology, and social influence of ride-hailing applications have an effect on the adoption of app-based ride-hailing service by female and male users.

- Research Objectives 01:* To investigate whether Price Value of ride-hailing applications have an effect on the adoption of app-based ride-hailing service by male users.
- Research Objective 02:* To examine whether Relative advantages of ride-hailing applications have an effect on the adoption of app-based ride-hailing service by female users.
- Research Objective 03:* To examine whether Relative advantages of ride-hailing applications have an effect on the adoption of app-based ride-hailing service by male users.
- Research Objective 04:* To investigate whether Ease of use of ride-hailing applications have an effect on the adoption of app-based ride-hailing service by female users.
- Research Objective 05:* To investigate whether Ease of use of ride-hailing applications have an effect on the adoption of app-based ride-hailing service by male users.
- Research Objective 06:* To examine whether Physical security of ride-hailing applications have an effect on the adoption of app-based ride-hailing service by female users.
- Research Objective 07:* To examine whether Physical security of ride-hailing applications have an effect on the adoption of app-based ride-hailing service by male users.
- Research Objective 08:* To investigate whether Feelings towards technology of ride-hailing applications have an effect on the adoption of app-based ride-hailing service by female users.
- Research Objective 09:* To investigate whether Feelings towards technology of ride-hailing applications have an effect on the adoption of app-based ride-hailing service by male users.
- Research Objective 10:* To understand whether social influence of ride-hailing applications has an effect on the adoption of app-based ride-hailing service by female users.
- Research Objective 11:* To understand whether social influence of ride-hailing applications has an effect on the adoption of app-based ride-hailing service by male users.

METHODOLOGY

The deductive research approach and quantitative method has been used in this research. The quantitative approach was used because the goal of this study is descriptive analysis and hypothesis

testing (analytical and predictive). Twelve hypotheses will be evaluated in this study. The objective of this study is to discover attributes that influence app-based ride-hailing service adoption in Sri Lanka. Individuals who use taxi services in Colombo district in Sri Lanka were considered as unit of analysis of this study. The target population consists of all passengers who use ride-hailing apps in western province. The Colombo region has been selected as the study's strategic location because it has the largest number of service providers and has a higher possibility of user trip attractions (Rangana, Madhushani, & Jayarathna, 2019). The selected sampling technique for data collection is convenience sampling with a sample count of 400, which includes half of the samples being female and the rest being male which was suggested by Ruangkanjanes & Techapoolphol (2018). An online questionnaire survey was developed to collect. The conceptual model will represent the relationship between selected five independent variables and one dependent variable as shown in figure 1.

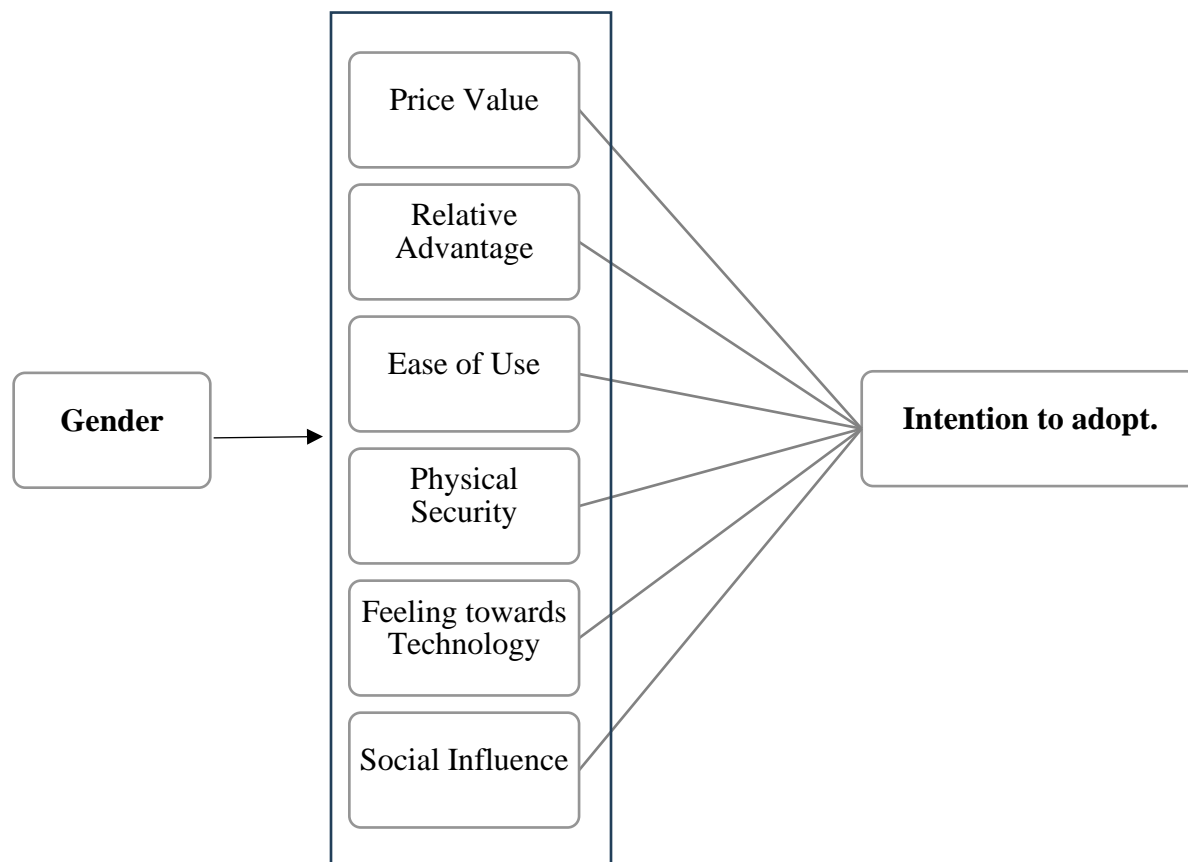


Figure 1: Conceptual Framework of the Study

Source: Survey Data (2023)

The goal of this study is to find the relationship between the factors that influence people's decisions to choose ride hailing apps for their everyday commuting requirements in Colombo. Thus, the following hypothesis have been developed.

HYPOTHESES

- H1 a:* Price Value of ride-hailing applications have an effect on the adoption of app-based ride-hailing service by male users.
- H1 b:* Price Value of ride-hailing applications have an effect on the adoption of app-based ride-hailing service by female users.
- H2 a:* Relative advantages of ride-hailing applications have an effect on the adoption of app-based ride-hailing service by male users.
- H2 b:* Relative advantages of ride-hailing applications have an effect on the adoption of app-based ride-hailing service by female users.
- H3 a:* Ease of use of ride-hailing applications have an effect on the adoption of app-based ride-hailing service by male users.
- H3 b:* Ease of use of ride-hailing applications have an effect on the adoption of app-based ride-hailing service by female users.
- H4 a:* Physical security of ride-hailing applications have an effect on the adoption of app-based ride-hailing service by male users.
- H4 b:* Physical security of ride-hailing applications have an effect on the adoption of app based ride-hailing service by female users.
- H5 a:* Feelings towards technology of ride-hailing applications have an effect on the adoption of app-based ride-hailing service by male users.
- H5 b:* Feelings towards technology of ride-hailing applications have an effect on the adoption of app-based ride-hailing service by female users.
- H6 a:* Social influence of ride-hailing applications have an effect on the adoption of app-based ride-hailing service by male users.
- H6 b:* Social influence of ride-hailing applications have an effect on the adoption of app-based ride-hailing service by female users.

RESULTS

Data analysis was done using Statistical Package for Social Sciences (SPSS). Total of 302 questionnaires were collected but after data cleaning only 252 surveys were taken for the analysis. Bartlett's test P-value of 0.000, indicating that this factor analysis is good and statistically significant, and statistics 0.859, which is an extremely good number, confirm this (Saunders, Lewis, & Thornhill, 2009). Validity and reliability are used to assess the quality of this research. The AVE values variables are above 0.50. Thus, there is sufficient convergent validity. Cronbach's alpha value and composite reliability values obtained from this study have been greater than 0.7 confirming internal consistency reliability. From the findings obtained from stepwise multiple regression, following hypotheses was accepted as shown in table 1.

Table 2: Hypotheses testing results

Independent variable	Hypothesis	Statistical decision
Price	H1a: Price Value of ride-hailing applications have an effect on the adoption of app-based ride-hailing service by male users.	Rejected
	H1b: Price Value of ride-hailing applications have an effect on the adoption of app-based ride-hailing service by female users.	Accepted
Relative Advantage	H2a: Relative advantage of ride-hailing applications have an effect on the adoption of app-based ride-hailing service by male users.	Accepted
	H2b: Relative advantage of ride-hailing applications have an effect on the adoption of app-based ride-hailing service by female users.	Rejected
Ease of use	H3a: Ease of use of ride-hailing applications have an effect on the adoption of app-based ride-hailing service by male users.	Rejected
	H3b: Ease of use of ride-hailing applications have an effect on the adoption of app-based ride-hailing service by female users.	Rejected
Physical Security	H4a: Physical security of ride-hailing applications have an effect on the adoption of app-based ride-hailing service by male users.	Rejected
	H4b: Physical security of ride-hailing applications have an effect on the	Rejected

	adoption of app-based ride-hailing service by female users.	
Feeling towards technology	H5a: Feeling towards technology of ride-hailing applications have an effect on the adoption of app-based ride-hailing service by male users.	Accepted
	H5b: Feeling towards technology of ride-hailing applications have an effect on the adoption of app-based ride-hailing service by female users.	Accepted
Social Influence	H6a: Social influence of ride-hailing applications have an effect on the adoption of app-based ride-hailing service by male users.	Rejected
	H6b: Social influence of ride-hailing applications have an effect on the adoption of app-based ride-hailing service by female users.	Rejected

Source: Survey Data

DISCUSSION

Findings from demographic analysis highlights the fact that ride hailing is more popular among employed users as a means for their mobility and most respondents have been using ride-hailing services for more than one year where female users account for 63% and male 58%. According to the present study, the significant factors that affect the intention to adopt app-based ride-hailing services of both male and female users are their feelings towards technology. Price variable is only affecting female users when selecting a ride-hailing service according to the test statistics which is proven in previous studies (International Finance Corporation, 2020). However, male users look for ease of use and a relative advantage over female users. Relative advantage is a factor that has been significant only for male users. The majority of daily and frequent users of ride-hailing services are male users (32%), according to the descriptive statistics, and this could be a possible reason for this variable to be significant for male users. In this research, social influence and physical security did not show any significance, although these factors have been significant in past research (Almunawar, Anshari, & Lim, 2020; Ruangkanjanases & Techapoolphol, 2018). Thus, the result of this research

requires further research to explain why consumers will pay less attention to the above-mentioned factors.

IMPLICATIONS

The results of the current study have demonstrated that both male and female consumers' decisions to use app-based taxi services are significantly influenced by feelings towards technology. As a result, the study found that by enhancing the quality of their technology and making the features of mobile applications more user-friendly, Sri Lankan online taxi services could raise the intention to use mobile taxi booking app service and improve consumer satisfaction. It could be noted that for male, ride hailing is just a part of their daily life and price, physical security or social influence cannot do a significant influence to motivate their intentions to adopt a ride hailing service. Female users are more price conscious than male users. The results of this study, according to the researcher, ought to help app-based taxi service companies to compete more effectively by encouraging them to improve overall performance through higher-quality services and better value for money. These policies and procedures will have a significant impact on the growth of Sri Lanka's transportation sector.

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INVESTIGATING ADOPTION OF TECHNOLOGY AMONG THE GOVERNMENT EMPLOYEES IN SRI LANKA: USING UTAUT MODEL

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INTRODUCTION

The business world has become more complex and competitive due to technological advancements and knowledgeable customers. Companies are increasingly focusing on environmentally friendly practices and embracing Green Supply Chain Management Practices into their supply chain (Ahmed et al., 2018). GSCM integrates environmental thinking into various stages of the supply chain including, product design, material sourcing, manufacturing, delivery, and after-sale services. GSCM practices have a unique effect on business performance on the supplier side as well as on the demand side (Ni et al., 2019). However, failure to implement GSCM practices may have negative consequences (Hsu et al., 2008). Researchers revealed that whatever the industry, they should put their effort into the GSCM process. Through the number of research done based on the manufacturing industry, studies in the apparel sector are lacking (Hijjawi, 2022). This study is conducted to fill the gap in the lack of research on the adoption and impact of green supply chain practices on the organizational performance of the apparel sector in Sri Lanka.

RESEARCH PROBLEM

Manufacturing firms are adopting sustainable practices, including green supply chain management, to reduce pollution and resource depletion. The impact of these practices on organizational performance, specifically in the apparel sector of Sri Lanka, is a significant question with limited research. Many studies have been developed to find out the impact of GSCM practices on their industry while lacking research for the apparel industry in Sri Lanka. This study aims to fill that gap by examining the effects of green supply chain management practices on the performance of leading apparel companies in Sri Lanka.

RESEARCH QUESTION

What is the Impact of green supply chain management practices on the organizational performance of the apparel sector in Sri Lanka?

OBJECTIVE

Derived from the research question, the objective of the study is to understand how adopting green supply chain management practices in the supply chain affects key performance indicators and overall business success within the context of Sri Lanka's apparel industry.

METHODOLOGY

This study examined the connection between Green Supply Chain Management (GSCM) practices and company performance with a particular emphasis on the apparel industry in Sri Lanka. Green Purchasing, Reverse Logistics, Green Distribution, and Green Design were investigated as independent variables while the dependent variable was organizational performance. Executives and managers of garment companies in Sri Lanka's urban areas were given questionnaires, and measures like profitability and wastage recovery costs were used to gauge organizational success after the adoption of the GSCM. Out of more than 200 apparel producers, 60 were included in the study by convenience sampling due to communication issues. In general, it sought to investigate how GSCM practices affected Sri Lankan apparel businesses' performance in terms of efficiency and effectiveness. This study was conducted using a quantitative research approach and analyzed the data using SPSS. With KMO, Bartlett's Test, and Cronbach's alpha, the reliability and validity were evaluated before going to the main analysis. The GSCM and OP elements of the Sri Lankan apparel industry were highlighted through descriptive analysis. While multiple regression analysis evaluated the effect of four GSCM practices on OP as a dependent variable, correlation analysis examined associations.

FINDINGS

Descriptive analysis

Since the study is focused on the apparel sector, all are from the apparel sector and most of the respondents are from organizations that have employees more than 1000. Considering the employment category, most of the respondents are from middle management, and it has 41.8 percent.

KMO values for all the variables are between 0.6 and 0.7, which is recommended as it is mediocre, but it is acceptable. Bartlett's test has a significant inter-item correlation between each independent and dependent variable.

Table 3: KMO and Bartlett's Test

Factors	KMO Value	Bartlett's test(sig)	No of Items
Green Purchasing	0.801	0.00	7
Green Design	0.697	0.00	5
Green Distribution	0.682	0.00	5
Reverse Logistics	0.693	0.00	3
Firm's Performance	0.653	0.00	6

Source: Survey Findings (2023)

Reliability Test

All the variables have alpha values between 0.793-0.897 and have greater internal consistency of the scales.

Table 4: Reliability Measures on the Dimension

Variable	No of Items	Cronbach's Alpha
Green Purchasing	7	0.873
Green Design	5	0.726
Green Distribution	5	0.793
Reverse Logistics	3	0.798
Firm's Performance	6	0.728

Source: Survey Findings (2023)

Correlation Test

Pearson's correlation coefficient values are greater than 0.6 for all independent variables and have moderate positive relationships between all independent variables and organizational performance.

Table 5: Test of Correlation

Independent variables	Dependent Variable (OP)
	Pearson's correlation coefficient
Green Purchasing	0.639
Green Design	0.733
Green Distribution	0.646
Reverse Logistics	0.670

Source: Survey Findings (2023)

Test of Regression

Before going with the regression check the fitness of the model with adjusted R-squared. The adjusted R square is 0.609, which explains the proportion of the variability in the dependent variable is accounted for by the independent variables in the regression model. The study carried out the analysis of variances (ANOVA) test which has a significant value of 0.00 concluding model is statistically significant. The study has to reject the green distribution and reverse logistics, hence the value generated through the regression has a non-significant impact.

Table 4: Test of Regression

Model	Sig	Beta
Constant	0.008	0.941
Green Distribution	0.69	0.172
Reverse Logistics	0.24	0.111

Green Design	0.031	0.304
Green Purchasing	0.047	0.191

Source: Survey Findings (2023)

The relationship between organizational performance and the GSCM practices in the apparel sector of Sri Lanka can be illustrated below.

$$\text{Organizational Performance} = 0.941 + 0.304 \text{ GDE} + 0.191 \text{ GP}$$

GP = Green Purchasing

GDE = Green Design

DISCUSSION

Purposing to explore the impact of GSCM practices on organizational performance in Sri Lanka, the study considered four dimensions to discover the result. Such as Green Design, Green Purchasing, Green Distribution, and Reverse Logistics. The conceptual framework which developed refers (Priyashani et al., n.d). The result concluded that this variable of Green Purchasing and Green design has a significant relationship with organizational performance and a significant impact on the organizational performance of the apparel industry in Sri Lanka. According to the study, it has been confirmed that when the adoption of GSCM practices is high, higher adherence to these practices results in improved performance of the organization (Zhu et al., 2007). However, the dimensions which are green distribution and reverse logistics do not show a significant impact on organizational performance, and due to that these hypotheses have been rejected. Considering the dimensions that haven't relationship with organizational performance in the apparel sector in Sri Lanka, there are some difficulties in implementing sustainability with green distribution such as cost, and the lack of awareness of the management (Yang et al., n.d.) and lower level of implementing reverse logistics may be the reason for not having a significant relationship (Amemba et al., 2013). Finally, the study concluded that green purchasing and green design have a significant positive impact on organizational performance in the apparel sector in Sri Lanka.

IMPLICATIONS ON RESEARCH/POLICY

This study fills the gap in previous research by evaluating the impact of GSCM practices on organizational performance in the apparel sector in Sri Lanka. It provides insight into the issues of the supply chain and provides guidance to improve the operation by implementing GSCM practices. This will help stakeholders to make decisions on future investments based on a better understanding of these factors. This study acts as a valuable secondary data source for future researchers as well by providing updated information on the adoption of GSCM practices in the real world. Also, the study offers valuable insight for the researcher by providing a deep understanding of relevant areas and exploring the theoretical implications and strategies for dynamic environments.

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THE IMPACT OF E-PROCUREMENT ON INTERNAL AND EXTERNAL CUSTOMER SATISFACTION OF APPAREL SECTOR IN KALUTARA DISTRICT, SRI LANKA

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INTRODUCTION

The garment sector in Sri Lanka has been vital to the nation's economy, generating large amounts of foreign exchange revenues and job possibilities. Export Development Board (EDB) report highlights the apparel sector's significance as a major driver of Sri Lanka's economy: it accounts for 47.72% of total exports and 56.07% of exports of industrial products (Daily Ft, 2019). Businesses in Sri Lanka's apparel industry must use value-added strategies and dependable supply chains in order to be competitive. Industry experts claim that prosperous apparel exporters like MAS, Brandix, and Hidramani Group have proven to be skilled at exporting value-added clothing like lingerie and smart wear, which has allowed them to prosper in the international market (Mandawala1, 2021). The garment sector is influenced by various elements, including design, marketing, capital investment, speed to market, and external customer satisfaction. Precise electronic procurement systems facilitate stronger ties between buyers and sellers, allowing for increased adaptability, efficiency, and flexibility in the procurement process. The advancement of the firm as a whole improves external client satisfaction and service (Somani, 2023).

E-procurement has made it possible to lower the cost of purchasing relative to transaction costs, improve supply chain awareness and connections, and ensure environmental sustainability by doing away with paperwork (Proqura , 2021). More importantly, e-procurement may be a key factor in assuring the prompt and efficient acquisition of materials and components, which is crucial for many businesses. Both internal and exterior customer service are impacted by the availability of necessary resources. Additionally, it is crucial to find out how satisfied the parties involved in e-procurement are and what needs to be improved. The purpose of this study is to identify the variables that influence how satisfied both internal and external consumers are with e-procurement in Sri Lanka's garment business (Alexander Yuditsky, 2019).

RESEARCH QUESTIONS

Research Question 01: Does the e-procurement have an influence on the satisfaction of internal customers in the industry of apparel sector in Kalutara district, Sri Lanka?

Research Question 02: Does the e-procurement have impact on the satisfaction of external customer in the industry of apparel sector in Sri Lanka?

OBJECTIVES

Research Objective 01: To assess the impact of e-procurement on internal customer satisfaction in the apparel sector in Sri Lanka.

Research Objective 02: To examine the impact of e-procurement on external customer satisfaction in the apparel sector in Sri Lanka.

METHODOLOGY

This study's research design is quantitative and uses highly structured approaches to collect data and tackle the study's research problem. Regression analysis and descriptive statistics approaches were used to analyze the data. The primary component of the data gathering instruments in the quantitative approach is questionnaire data, which is used in a deductive manner. Through data analysis, the study seeks to verify the notion.

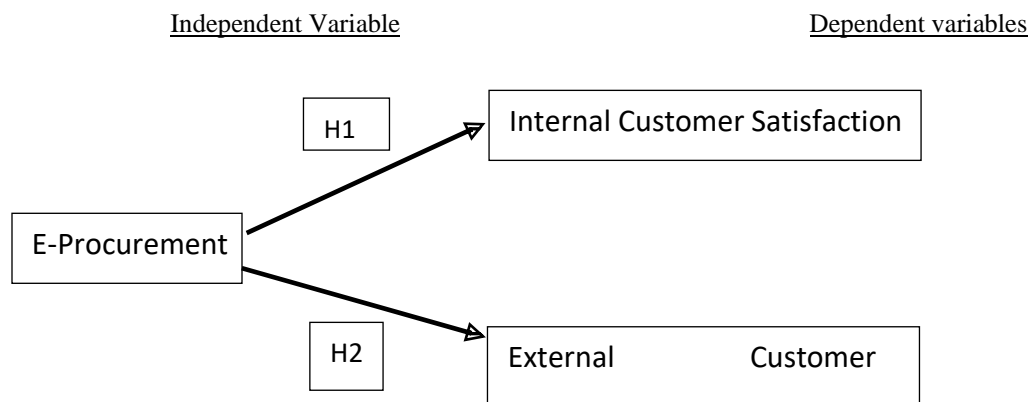


Figure 4: Conceptual Framework

Source: Developed by Author

The hypotheses for the study are as follows:

H₁: Use of E-procurement will impact on the internal customer satisfaction.

H₂: Use of E-procurement will impact on the external customer satisfaction.

Both internal and external consumers of Sri Lanka's garment industry make up the research population. Employees from the procurement department and related departments, as well as internal customers from apparel manufacturing in the Kaluthara district that use e-procurement, may make up the sample. The chosen sample will be given online self-administered questionnaires to complete in order to collect data. Because respondents complete the questionnaires on their own, participation is optional, anonymity, and confidentiality are guaranteed (Bhandari, 2023).

There are three sections to the structured questionnaire. In the initial segment, data on gender, age, profession, degree of education, and the extent of e-procurement in the organization is gathered. The second section collects data on the impact of e-procurement on internal customer satisfaction, measuring the relevant variables with fifteen indicators. The third section examines the impact of e-procurement on external customer satisfaction, employing eight indicators to assess levels of satisfaction. External customer satisfaction was also recorded from employees who dealt with outside customers (Barnabas Maagi, 2023).

FINDINGS

According to the results obtained from the collected data analysis in relation to the independent and dependent variables for the apparel plants in Kalutara district, Sri Lanka, the descriptive statistics internal customer satisfaction given the mean value of 5.1694 which expresses that the majority of the responses are in the level of high and standard deviation of 1.04934, for the statistics external customer satisfaction given the mean value of 5.0911 which expresses that the majority of the responses are in the level of high and standard deviation of 1.04934. The regression analysis and regression equation show that $ICS = 0.390393 + 0.910132 EP$. The R^2 of 0.79 indicates that the established regression model explains 79% of the variation in internal customer satisfaction. The regression equation of $ECS = 2.48059 + 0.497152 EP$ and the R^2 of 0.545 indicate that the established regression model explains 54% of the variation in external customer satisfaction. The analysis revealed a p-value of 0.0 for both internal customer satisfaction vs. e-procurement and external customer satisfaction vs. e-procurement in this study, providing strong statistical evidence to reject the null hypothesis. In the apparel industry, the results revealed a positive relationship between internal customer satisfaction and e-procurement functions, as well as a positive relationship between external customer satisfaction and e-procurement functions

DISCUSSION

In the apparel manufacturing industry, the availability of quality raw materials at the right time and quantity is critical for maintaining a smooth production flow. E-procurement has significantly improved the speed and efficiency of many processes, including supplier selection, purchase order placement, and timely raw material receipt. To gain a competitive advantage and achieve success, apparel organizations must invest in e-procurement processes and maintain their effectiveness and optimization. Organizations should prioritize understanding and implementing internal customer service principles because this can serve as an indicator of the level of external customer service provided. Organizations must establish policies and practices for measuring internal customer service and maintaining a balance of internal and external customers. While internal customer service should be prioritized, businesses should not overlook the needs and satisfaction of their external customers (Duncan, 2023).

IMPLICATION OF RESEARCH

Theoretical Implications

Understanding the Impact of E-procurement: This study adds to the body of knowledge by shedding light on the impact of e-procurement on both internal and external customer satisfaction in the apparel manufacturing industry. It provides empirical evidence to support the link between e-procurement and customer satisfaction. Internal Customer Service is Important: The study emphasizes the importance of internal customer service within organizations. It emphasizes the importance of organizations putting their internal customers' (employees') satisfaction and well-being first in order to improve overall customer satisfaction and organizational success (CallMiner, 2022).

Practical Implications

E-procurement System Strategic Implementation: Organizations in the apparel manufacturing industry can use the research findings to strategically implement e-procurement systems. The study focuses on the specific factors that e-procurement influences, such as material availability, adaptability, flexibility, and cost reduction. Organizations can optimize their procurement processes and improve both internal and external customer satisfaction by focusing on these factors.

Balancing Internal and External Customer Service: The study emphasizes the importance of balancing internal and external customer service. Organizations should invest in policies and practices that measure and improve internal customer service while keeping external customers' needs and satisfaction in mind. This balance ensures the organization's overall success and competitiveness in the marketplace.

Continuous Improvement and Adaptation: The findings of the study highlight the dynamic nature of e-procurement and the need for continuous improvement and adaptation. Organizations should evaluate and update their e-procurement systems on a regular basis to keep up with changing business operations, technological advances, and customer expectations. This adaptability ensures that e-procurement practices are sustainable and effective (Samani, 2023).

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THE IMPACT OF LEAN PRACTICES IMPLEMENTATION ON EMPLOYEE WORK-RELATED STRESS IN THE APPAREL INDUSTRY IN THE WESTERN PROVINCE OF SRI LANKA

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INTRODUCTION

Employee stress is a growing concern in developing countries and is more pronounced when compared to developed nations due to globalization and the changing nature of work. Stress levels are particularly high in countries undergoing rapid and drastic economic and social changes (Houtman & Jettinghoff, 2007). The consequences of stress are far-reaching, affecting both individuals and organizational performance, (Conti et al., 2006). Hence, it is of utmost importance to identify stress in organizations within the context of developing countries therefore, this research investigates the impact of lean practices on employee work-related stress in the apparel industry in Sri Lanka Western Province., The reason to analyze work-related stress with organizations which are driven by lean management is that lean Production is, in literature some authors argued that lean management is not only for solely increasing the profit/ operational performance of organizations but also has a multidimensional effect therefore it should be further developed (Chugani et al. 2017; Longoni et al., 2013; Shah & Ward, 2003). Therefore this research has tried to find whether lean management can cause stress.

PROBLEM STATEMENT

In the literature on Lean Management, the majority of practitioners in the field have explored and believe that lean practices exert a significant impact on organizations' performance (Bashar, Hasin, & Adnan 2021; Iqbal et al., 2020; Sahoo & Yadav 2018; Wickramasinghe & Perera., 2016; Wickramasinghe & Wickramasinghe, 2017). However, some practitioners argue that lean practices have multidimensional effects and lean management should be further developed (Chugani et al. 2017; Shah & Ward 2003; Wickramaarachchi & Madhusanka., 2020). There are a limited number of studies conducted on human and employee aspects compared to operational and organizational performance. Only a small number of researchers have concentrated on how lean practices impact employee satisfaction, stress, quality of life, and related factors. (Conti et al. 2006; Wickramasinghe & Wickramasinghe 2012). The necessity for researching this topic is heightened even more in developing contexts because employee stress is expected to be more prevalent in developing

countries compared to developed ones. For developing countries, as well as for countries 'in transition,' often no specific national data on work-related stress is available due to poor recording mechanisms (Houtman & Jettinghoff, 2007).

OBJECTIVE

To examine the impact of the implementation of lean practices on Employee Work-related Stress in the Apparel Industry in the Western Province of Sri Lanka.

METHODOLOGY

This research adopted the positivism philosophy, emphasizing empirical observation, measurement, and the scientific method and the deductive approach is employed, in terms of research choice, a mono-method approach is applied, relying solely on one data collection technique, the questionnaire, to ensure consistency. The research is conducted with a cross-sectional time horizon, offering insights into a specific point in time. Further in this study, the unit of analysis comprises executives and managers within apparel companies located in the Western Province of Sri Lanka. The population under investigation consists of these executives and managers, with approximately 30% of the workforce in supervisory and managerial roles, making the population estimate approximately 90,000 individuals, as per Wickramasinghe & Wickramasinghe (2017).

The quantitative data and collected through the structured questionnaire developed based on the finding of Wickramasinghe & Wickremasinghe (2017).

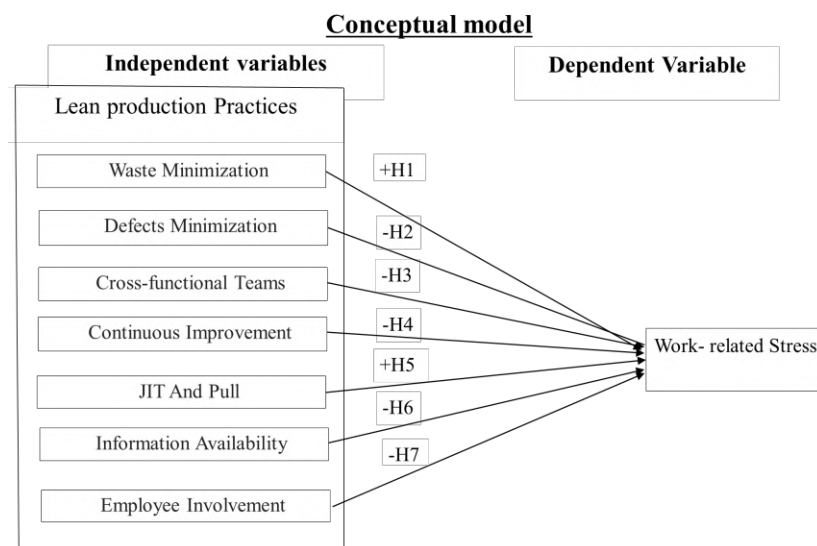


Figure 1: Conceptual Framework

To ensure a 95% confidence level, the sample size should be at least 370 responses, following the guidance of Saunders et al., (2016) To accommodate time and accessibility constraints, a convenient

sampling method, a non-probabilistic approach, is employed. This method is commonly used when faced with such constraints in the research field (Saunders et al., 2016).

The questionnaire collected data on a five-point Likert scale type measurement scale. For analyzing data, descriptive analysis has been used to analyze demographic variables and inferential statistics has been used to analyze the conceptual model further, for investigating the proposed hypothesis, multiple linear regression analysis has been applied to 129 valid responses.

DATA ANALYSIS

The collected data was tested for reliability and validity estimating the Cronbach's Alpha and Average Variance Extracted (AVE). Cronbach's Alpha values for all the variables were recorded greater than 0.8 indicating higher internal consistency reliability. AVE values were recorded above 0.6 with higher validity.

Table 01: Hypotheses Testing

Hypotheses	Beta Value	Sig Value	Decision
H1	-0.021	0.859	Not Statistically Significant
H2	-0.006	0.962	Not Statistically Significant
H3	-0.166	0.211	Not Statistically Significant
H4	-0.192	0.149	Not Statistically Significant
H5	-0.194	0.155	Not Statistically Significant
H6	0.418	0.002	Statistically significant
H7	-0.175	0.182	Not Statistically Significant

Source: Survey Data

As per the hypotheses tested, it cannot be conclude that there is a significant relationship between lean variables and employee work-related stress because significance value is greater than 0.05, In order to be significantly correlate, value should be less than 0.05 (Hair et al., 2017).

FINDINGS AND CONCLUSION

According to the findings of this analysis, some contradictory results emerged. But Work- related Stress is associated with Information Availability variable or dependent variable it obtained lower AVE value. This is due to having large number of indicators to measure the dependent variable. This might have resulted this research findings leads to statistically insignificant. Otherwise, all multivariate assumptions for testing multiple regression were in required level and no common method biasness found in data further non-response biasness test has been conducted and it revealed that was not impacted to the analysis as well.

In literature, there is a limited number of researchers who analyzed lean management practices with employee perspective, it means from employee satisfaction, employee happiness, and employee stress as well. Therefore, it is difficult to compare results with other researchers 'findings in the field.

FUTURE RESEARCH STUDIES

For Future Analysis, this research suggests that it is important to mitigate the limitations of this study. As data collection method, this analysis has used Mono Method and convenient sampling method which may leads to higher biasness in data.

Key words: *Work-related stress, Lean Management, Lean Production Practices, Lean Management Practices*

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IMPACT OF SERVICE QUALITY ON CUSTOMER SATISFACTION IN ONLINE SHOPPING: SPECIAL REFERENCE TO COLOMBO DISTRICT IN SRI LANKA

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INTRODUCTION

The rise of the internet has empowered consumers, provided convenience and transformed the way people shop. Online businesses offer benefits such as ease of use, better prices, a wide range of products, infinite choice, and access to consumer reviews (Chen, et al., 2004). This shift towards online shopping has led physical businesses to seek competitive advantages by engaging with customers online (Ahmad, et al., 2022). Several studies have been conducted on the relationship between service quality and satisfaction, with some concluding that contentment influences service quality (Zeithmal, et al., 1998).

Understanding and improving service quality in online shopping is essential for the success of online businesses. By meeting customer expectations and providing exceptional service, retailers can enhance customer satisfaction, loyalty, and overall success in the increasingly competitive online marketplace.

Limited number of studies are being conducted in Sri Lanka to explore the service quality on customer satisfaction in online shopping. The researchers hope that the findings of this study will serve as a reality check on how different service quality factors will affect to the customer satisfaction in online shopping in Sri Lanka. which is also one of society's key expectations.

Hence, the study attempts to answer the following research question.

Research Question: How does service quality factors affect the customer satisfaction in the context of online shopping in Sri Lanka.

The purpose of this study is to investigate the relationship between service quality and customer satisfaction of online shopping in the context of Sri Lanka, specifically focusing on customers residing in the Colombo District. The study aims to provide evidence by gathering feedback from customers who have experience with online shopping platforms via a survey.

OBJECTIVES

Derived from the research question, the objective of the study is to to determine the impact of service quality on customer satisfaction in the online shopping context of the Colombo District in Sri Lanka.

METHODOLOGY

This quantitative study employs a deductive approach, utilizing hypotheses to examine the impact of service quality on customer satisfaction. The population of this study comprises online shoppers above 18 years which is the legal age of majority in Sri Lanka in the Colombo district of Sri Lanka for the year 2023. A sample size of 384 online shoppers was determined using the "Morgan Table" to ensure representative data (Krejcie & Morgan, 1970). The sample was selected using the convenience sampling method, considering the practicality and accessibility of the individuals within the population (Sekaran, 2003).

Service quality is treated as the independent variable, while customer satisfaction is considered as dependent variable. Many researchers have proposed different attributes and dimensions to measure service quality in online shopping. (Rita, et al., 2019) conducted an early study about service quality of online shopping which examined how customers form expectations on technology based online shopping service quality and suggested five main attributes of service quality: website design, customer service, security and privacy, reliability.

Hypothesis of the study

The collected data for this study, obtained through a structured questionnaire, were analyzed using the SPSS software program.

- H₁: There is a significant relationship between website design and customer satisfaction in online shopping.
- H₂: There is a significant relationship between customer service and customer satisfaction in online shopping.
- H₃: There is a significant relationship between security and privacy and customer satisfaction in online shopping.
- H₄: There is a significant relationship between reliability and customer satisfaction in online shopping.

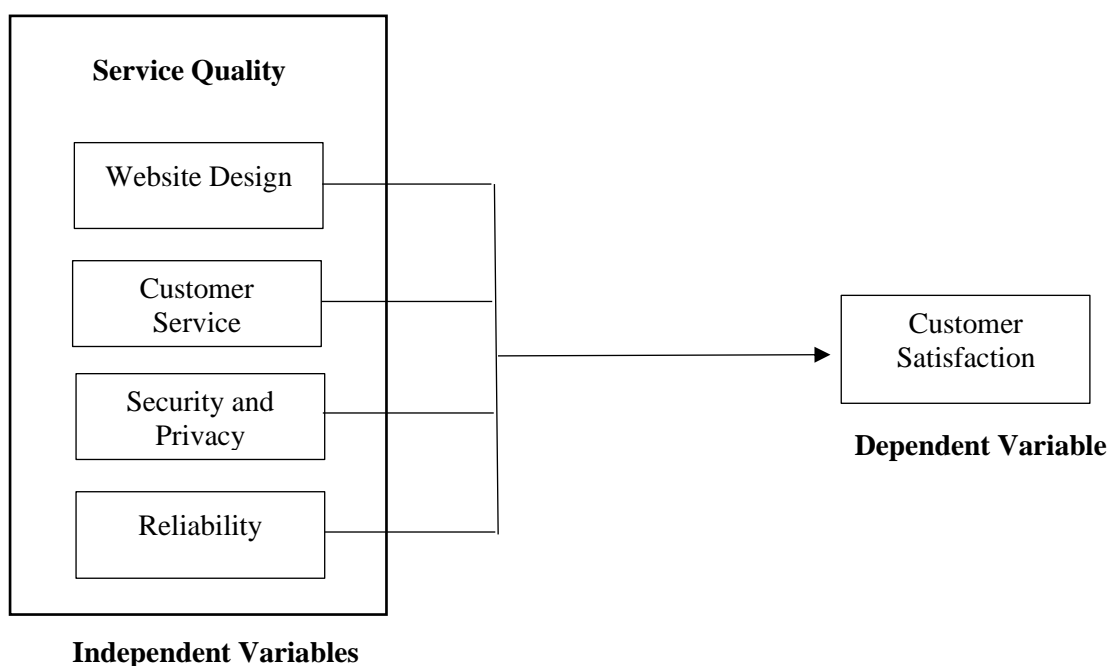


Figure 1: Conceptual Framework

Source: Author

FINDINGS

DESCRIPTIVE ANALYSIS

KMO values for all the variables are between 0.6 and 1, which is indicating that the sample size is adequate to proceed with the factor analysis. Bartlett's Test values for the testing variables are 0.000 which shows that the correlations exist between the variables and that each variable has a perfect item-to-item correlation with itself.

Table 1: KMO And Bartlett Test

Variable	KMO Value	Sig Value
Web Design	0.791	0.000
Customer Service	0.891	0.000
Security and Privacy	0.786	0.000
Reliability	0.859	0.000
Customer Satisfaction	0.881	0.000

Source: Survey Findings

RELIABILITY TEST

Cronbach's alpha is higher than 0.9 which indicates a high level of internal consistency for scale with the sample of 384.

Table 2: Cronbach Alpha

Variable	Cronbach's Alpha
Web Design	0.948
Customer Service	0.935
Security and Privacy	0.949
Reliability	0.939
Customer Satisfaction	0.936

Source: Survey Findings

NORMALITY TEST

Through the application of the kurtosis and skewness normality testing method, confirmed that all independent variables and dependent variable allowed a normal distribution.

Table 3: Skewness and Kurtosis Statistics for the Variables

Dimension	Skewness	Kurtosis
Web Design	-1.641	3.261

Customer Service	-2.067	5.045
Security and Privacy	-1.177	2.126
Reliability	-2.069	5.689

Source: Survey Findings

CORRELATION TEST

Pearson's correlation coefficient values are greater than 0.7 which conclude the relationship between the dependent variables and the independent has a significant positive relationship.

Table 4 : Test of Correlation

Determinants	Pearson correlation coefficient
Web Design	0.800
Customer Service	0.872
Security and Privacy	0.769
Reliability	0.858

Source: Survey Findings

REGRESSION ANALYSIS

R-sq which is known as 0.8250 which shows the independent variable of this model accurately represents the 82.5% of the variance of dependent variable. Hence providing the evidence that the model has a good fitness.

Table 5: Hypothesis Test results

Hypothesis	Sig value	Beta	Hypothesis Testing Result at 95% confidence interval
H ₁ : There is an Impact of website design on customer satisfaction in online shopping	0.000	0.161	Null Hypothesis rejected (0.000 < 0.05)
H ₂ : There is an Impact of customer service on customer satisfaction in online shopping	0.000	0.408	Null Hypothesis rejected (0.000 < 0.05)
H ₃ : There is an Impact of security and privacy on customer satisfaction in online shopping	0.000	0.031	Null Hypothesis rejected (0.000 < 0.05)
H ₄ : There is an Impact of reliability on customer satisfaction in online shopping	0.000	0.371	Null Hypothesis rejected (0.000 < 0.05)

Source: Survey Findings

The table presenting the results indicates a positive impact between the dimensions of the independent variable with the dependent variable. These relationships were found to be statistically significant at a 5% level of significance. Based on these findings, the researcher can conclude that there exists a significant impact between the dependent variables and the independent variable.

DISCUSSION

This study contributes to the understating of impact of service quality on customer satisfaction in the context of online shopping in Sri Lanka. The research findings indicate that there is a positive effect of website design on customer satisfaction, which is consistent with previous studies conducted by Rita, et al., 2019. Furthermore, the study demonstrates a significant relationship between customer service and customer satisfaction, which is supported by the work of Wolfinbarger & Gilly, 2023. Additionally, the study reveals a significant relationship between security and privacy and customer satisfaction, as well as between reliability and customer satisfaction. These findings are in line with previous research conducted by Abdoli, 2018 and Rita, et al., 2019.

In conclusion, this study's findings provide evidence of the impact of service quality on customer satisfaction in online shopping in Sri Lanka. The results emphasize the importance of website design, customer service, security, privacy, and reliability in influencing customer satisfaction in the online shopping experience.

IMPLICATIONS FOR RESEARCH

These insights can be valuable for businesses and policymakers in Sri Lanka to enhance their understanding of customer satisfaction and inform strategies for improving service quality in the online shopping sector. The study provides valuable insights for retail managers in designing online shopping strategies. It emphasizes the importance of service quality, customer satisfaction, and the need for a holistic approach. Retailers should align their online store practices with internal strategies, logistics services, and competencies. Managers should evaluate the significance customers attribute to online store service quality within their industry segment and allocate resources accordingly. The Covid-19 crisis and increased demand for digital channels have highlighted the importance of omnichannel management for e-services. A global survey indicates that many shoppers prefer contactless options, leading to a rise in online shopping. In Sri Lanka, e-commerce and social commerce have become indispensable across sectors. In conclusion, this research offers valuable inputs to retail managers in designing effective online shopping strategies. By recognizing the significance of service quality, customer satisfaction, and omnichannel management, retailers can better position themselves to meet the evolving needs and preferences of their customers in the digital era.

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IMPACT OF WAITING-TIME TIME RELATED DETERMINATES ON SATISFACTION OF OUT-PATIENTS AT PRIVATE HOSPITALS IN COLOMBO DISTRICT

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INTRODUCTION

The hospital industry is becoming more and more concerned with outpatient waiting-time time and queue discipline because it is a measure of organizational efficiency (Pillay et al., 2011). The public healthcare service in Sri Lanka is a free service for the citizens but has faced many challenges in terms of service delivery. Long queues due to the low capacity and limited availability of special treatments due to the poor level of fund allocation are some of the crucial issues in the public sector (Algiriya et al., 2014; Amarathunge et al., 2021; Kalubowila et al., 2017). As a result, the private sector grabbed this opportunity and promised to provide a quick and quality service for a fee. People who have busy schedules prefer to get a quick service at a comfortable time for them, from a private sector medical hospital (PMH). The determinants related to the waiting-time time such as waiting-time time, the information provided while waiting, the waiting environment, and the discipline of the queue are found as highly influential determinants of patient's satisfaction (Atinga et al., 2011; Bielen & Demoulin, 2007; Kamau, 2012). Though people do not want to stay long in a hospital lobby, they expect a good and comfortable environment in the hospital (Kamau, 2012).

However, as to some evidence, the waiting-time and related determinants and efficiency in PMHs found as not as they promised and not at a satisfactory level (Kruse et al., 2018; Samarakoon, 2015). However, it is difficult to get a clear idea about their services because of lacking the empirical evidence in the area of waiting-time and related determinants at PMHs in Sri Lanka. Hence, there is an empirical gap regarding the relationship between waiting-time related determinants and patient satisfaction in PMHs in Sri Lanka. This study will give an overall view of the waiting-time related determinants which can influence on satisfaction of outpatients at the leading PMHs which have 24-hour outpatient services and have daily doctor-channelling service in the Colombo district.

The research questions aroused with this are as:

- Research Question 01:* What are the current levels of satisfaction on waiting-time related determinants and patients' satisfaction?
- Research Question 02:* Do the waiting-time related determinants have any influence on patients' satisfaction?
- Research Question 03:* Do the age and gender of the patient change the behaviour of the existing relationship from waiting-time related determinants to patients' satisfaction?

The findings of this research will help the people who are paying attention to 'waiting line management' which is a key determinant of service quality in any organization. If the waiting time is shorter, customer satisfaction will be high. Knowing how the waiting time and queue discipline influence patient satisfaction in PMHs in the Colombo district, will benefit to Sri Lankan PMHs to retain their customers in the long term.

OBJECTIVES

The main objective of the study is to find the influential waiting-time related determinants on outpatients' satisfaction in PMHs in the Colombo district. The specific objectives are as:

- Research Objective 01:* To identify the current satisfaction levels of waiting-time related determinants and outpatient satisfaction.
- Research Objective 02:* To measure the strength of the relationship between outpatient satisfaction and the waiting-time related determinants.
- Research Objective 03:* To test the significance of the impact of waiting-time related determinants on outpatient satisfaction.
- Research Objective 04:* To test the moderating impacts of age and gender of patients on the relationship of waiting-time related determinants to outpatient satisfaction.

METHODOLOGY

This study followed the positivistic philosophy and used the deductive approach. The quantitative data were collected through a self-administered questionnaire which was developed by modifying such tools in the literature (Kamau, 2012). The population of the study is estimated as 15,000 outpatients per week at PMHs in Colombo District in Sri Lanka. The sample size was calculated using the "Morgan Table" (Krejcie & Morgan, 1970). The sample size was 375 and added 10% to maintain the non-responses and the final size of the sample was 425 responses. The items in the questionnaire were measured with a five-point Likert scale with '1' for strongly disagree and '5' for strongly agreed. Figure 1 illustrates the conceptual framework of the study.

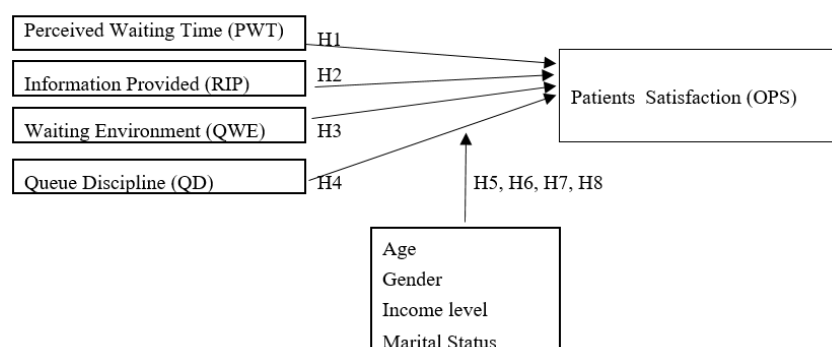


Figure 1: Conceptual Framework

HYPOTHESIS

- H₁: Shorter the perceived waiting-time (PWT) will higher the patients' satisfaction (OPS)
H₂: Higher the richness of the information provided (RIP) will higher the OPS.
H₃: Higher the quality of the waiting environment (QWE) will higher the OPS.
H₄: Higher the queue discipline (QD) will higher the OPS.
H₅/ H₆/ H₇/ H₈: Age /Gender / Income level / Marital Status of the patient will moderate the relationship of waiting-time time determinants to OPS.

FINDINGS

The Kaiser-Meyer-Olkin (KMO) values are above 0.6 for all constructs and the Bartlett's Test of sphericity of all the constructs was significant at a 5% level. These two tests ensured the unidimensionality, item-to-item correlation, and the discriminant validity of the constructs in the study. The Cronbach's Alpha values for all the constructs were above 0.6 and it ensured the reliability of each construct.

The majority of the respondents were females (55.6%) and nearly 50% of the respondents were between 20-40 years. Another 25% was from the age group 40-60 years. Nearly 51% belongs to the income category less than Rs 50,000 per month and only 16% belong to the category above Rs. 200,000. The average perseverance of the determinants RIP, QWE, QD and OPS are in good level as above 3.7 of the 1-5 Likert scale and the maximum was for waiting-environment (4.12). But, the average for the PWT is low as 2.53 indicates a poor level of satisfaction on the waiting-time. Except for the perceived waiting-time (22%) all other constructs had the variability values less than 20% (in between 15%-20%), which indicates a less variability of the given responses. Other than the perceived waiting-time (-.522) all other independent variables had positive, significant (1%) but moderate level relationships with outpatient satisfaction. Only the queue discipline, richness of information provided, and perceived waiting-time showed significant impacts on outpatient satisfaction with 65% ($R^2 = 0.65$) model adequacy.

Table 1: Results of the Regression Analysis

Model	Unstandardized Coefficients		Standardized Coefficients	Sig.	Collinearity Statistics	
	B	Std. Error	Beta		Tolerance	VIF
(Constant)	1.164	.186		.000		
QD	.521	.031	.570	.000	.683	1.464
RIP	.236	.032	.271	.000	.581	1.720
PWT	-.141	.029	-.167	.000	.695	1.438
Unmarried	.168	.040	.122	.000	.917	1.091
Income level 100,000-200,000	-.122	.049	-.073	.013	.945	1.059

Dependent variable: OPS

As moderating factors, Marital status increased the model adequacy nearly to 67% and the level of income increased the model adequacy up to 66%. Both moderating variables together increased the model adequacy up to 67% (Table 1). The final model was tested for the model accuracy including the residual analysis. Linearity, Multicollinearity statistics,

Homoscedasticity, Independence and the normality of the residuals were at an accepted level. Further, the final model is free of outliers and influential points.

Table 2: Results of the Hypothesis tests

Hypothesis	Result
H1: Shorter the perceived waiting time will higher the patients' satisfaction.	Supported**
H2: Higher the richness of the information provided will higher the patients' satisfaction.	Supported**
H3: Higher the quality of waiting environment will higher the patients' satisfaction.	Not Supported
H4: Higher the queue discipline will higher the patients' satisfaction.	Supported**
H5: Age of the patient will moderate the relationship of waiting time determinants to outpatients' satisfaction.	Not Supported
H6: Gender of the patient will moderate the relationship of waiting time determinants to outpatients' satisfaction.	Not Supported
H7: Income level of the patient will moderate the relationship of waiting time determinants to outpatients' satisfaction.	Supported*
H8: Marital Status of the patient will moderate the relationship of waiting time determinants to outpatients' satisfaction.	Supported**

Source: Survey data **- Significant at 1% level *- Significant at 5% level

DISCUSSION

Results of this study also confirmed that the perceived waiting time, information provided and queue discipline have significant influences on outpatient satisfaction. Further, the queue discipline has the highest impact on patient satisfaction. It aligns with the finding of Kamau, (2012) as a significant impact of Waiting Lines Management (similar to QD) on Customer Satisfaction. However, the quality of the waiting environment has not shown a significant impact on patient satisfaction. High waiting time leads to less satisfaction and the richness of the information provided and good queue discipline can enhance the patient's satisfaction. Gender and age of the customer did not show significant moderating impacts but, marital status and income level showed significant moderating impacts on the relationships from the waiting-time determinants to the satisfaction. Unmarried people showed a higher level of satisfaction than the other groups and the patients who belong to the income level of Rs 100,000 -200,000 showed less satisfaction than the other income level groups.

IMPLICATIONS ON RESEARCH

According to the above findings, a substantial range of PMHs have embraced and adopted waiting-time determinants to increase their outpatient satisfaction. The behaviour of the unmarried and other groups is different in a medical hospital and the level of income of the person also influences their satisfaction with the waiting time.

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