



University of Sri Jayewardenepura

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ஸ்ரீ ஜயவர்த்தனபுர பல்கலைக்கழகம்

OTMURS 2023
PROCEEDINGS OF THE
OPERATIONS AND TECHNOLOGY
MANAGEMENT
UNDERGRADUATE RESEARCH
SYMPOSIUM

03rd November, 2023

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

**PROCEEDINGS OF THE OPERATIONS AND
TECHNOLOGY MANAGEMENT UNDERGRADUATE
RESEARCH SYMPOSIUM 2023
(OTMURS 2023)**

EXTENDED ABSTRACTS

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

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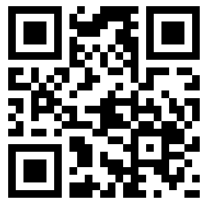
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Message from the Dean - FMSC
**6th Operations and Technology Management Undergraduate Research
Symposium 2023 (OTMURS -2023)**

Congratulations to all the budding scholars presenting their research papers at the 6th Operations and Technology Management Undergraduate Research Symposium, on behalf of the entire Faculty of Management Studies and Commerce (FMSC).

In addition, I would like to express my sincere gratitude to the Research Center for Innovation, Operations, and Quality Management, as well as the Department of Decision Sciences, for their exceptional efforts in orchestrating this symposium. The dedication you have shown in fostering a vibrant exchange of ideas is truly commendable and it will indeed influence the academic journey of our students. I applaud your initiatives to introduce young minds to the realms of research, innovation, and academic exploration in technology and operations management.

To the young researchers, congratulations on your outstanding contributions to the OTMURS -2023. This symposium offers a fantastic opportunity for you to connect with experts, fostering a vibrant exchange of ideas that will shape your academic journey. Your commitment to curiosity, innovation, and the pursuit of knowledge is commendable. May this experience be a stepping stone toward scholarly success, opening doors to new opportunities and illuminating a bright path for your future endeavours.

On behalf of the FMSC, University of Sri Jayewardenepura, I extend my best wishes to all of you. May this symposium serve as a bridge, connecting our students with experts and propelling them toward scholarly success. Celebrating curiosity, innovation, and the pursuit of knowledge, I am confident that it will enrich our students' academic experiences and make meaningful contributions to the broader academic community.

Warm regards,

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

**Operations and Technology Management Undergraduate
Research Symposium 2023**
*Research Center for Innovation, Operations and Quality Management
Department of Decision Sciences
Faculty of Management Studies and Commerce
University of Sri Jayewardenepura*

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SWITCHING INTENTION TOWARDS RE-MANUFACTURED PRODUCTS UNDER INFLATION: A STUDY OF THE CONSUMER ELECTRONICS INDUSTRY IN SRI LANKA

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INTRODUCTION

As a country which follows a tight deflationary physical policy, despite trapping into an economic crisis, in order to enforce a circular economy with a close loop supply chain, Sri Lankan market demands using goods that can be effectively recycled and remanufactured. From the consumer's point of view, the purchase of re-manufactured products indicates an intended change of preference of the market as it emphasizes the new and remanufactured products might be thought of as ideal alternatives, therefore a switch may be intended (Guide & Li, 2010).

According to the past literature, the present study is considered higher price of brand-new products as the push factor, government incentive and environmental benefit as pull factor and attitude toward the remanufactured products as the mooring factor (Hazen et al., 2017; Perez-Castillo & Vera-Martinez, 2021). According to Hazen et al. (2017) higher price of brand-new products, government incentive and environmental benefits have significant influence for the intention to switch to the remanufactured products. Push and pull factors do not always seem to have a significant impact on intentions of consumer to migrate to remanufactured goods (Gadenne et al., 2011, Perez-Castillo & Vera-Martinez, 2021). This could be as a result of not taking the mediating effects of mooring elements into account. Past literature might not investigate the relationship between push and pull factors for the switching intention toward the remanufactured product using mooring factor as mediator in the South Asia during the economic and political crisis.

A limited number of studies are being conducted in Sri Lanka to explore at switching intentions of customers towards remanufactured products under inflationary environment. That area has been covered through the study.

Research Question 01: What is the impact of higher price of brand-new products as push factor, attitude toward remanufactured products as mooring factor, government incentive and environmental benefits as pull factors on the switching intention customers to purchase remanufactured products?

Research Question 02: What is the mediating effect of attitude towards remanufactured products on the relationship between push and pull factors with the switching intention to remanufactured products?

OBJECTIVES

The aim of this study is to determine whether Sri Lankan consumers have favorable perception towards the close loop supply chain through preference to purchase remanufactured products. As such, this study has provided practical evidences from the consumer electronics industry despite high level of headline inflation and import restrictions. Additionally, it can be said that eco-conscious customers were the first to purchase remanufactured goods.

Research Objective 01: To explain the role of push and pull factors on the switching intention of customers to purchase remanufactured products in Sri Lanka.

Research Objective 02: To explain the mediating impact of attitude towards remanufactured products as the mooring factor when there is an impact of push or pull factor on the switching intention of customers to purchase remanufactured products in Sri Lanka.

METHODOLOGY

Deductive methodology, which is heavily reliant on variables and testing hypotheses, was employed in this study (Saunders, Lewis, & Thornhill, 2009). The population become sustainable consumers of consumer electronics industry as they have an understanding of the environment (Singhal, Tripathy & Jena, 2019, Khor & Hazen, 2016). Therefore, they can be considered sustainable consumers who are the early adopters of the close-loop supply chain. The researcher chose one of the non-probabilistic sampling techniques to carry out the current investigation after taking into account the limits that can be applied, such as time constraints and the difficulty to obtain data fast (Sekaran, 2003). Due to several factors, the current methodology of the study involves convenience sampling (Singhal, Tripathy & Jena, 2019). The sample is made up of sustainable consumers who have at least a bachelor's degree in education (Singhal et al.,2019; Hazen et al.,2017).

Correlation analysis uses to explore the direction and strength of the linear relationship between the four factors and switching intention while hierarchical multiple regression analysis uses to examine the impacts of four factors on the switching intention (single dependent variable) towards the remanufactured consumer electronics while examining the mediating impact of mooring factor. Software program of SPSS and SPSS PROCESS v3.5 Macros was used to analyse the study's collected data, which were based on the structured questionnaire in order to examine the direct and indirect relationships among the variables.

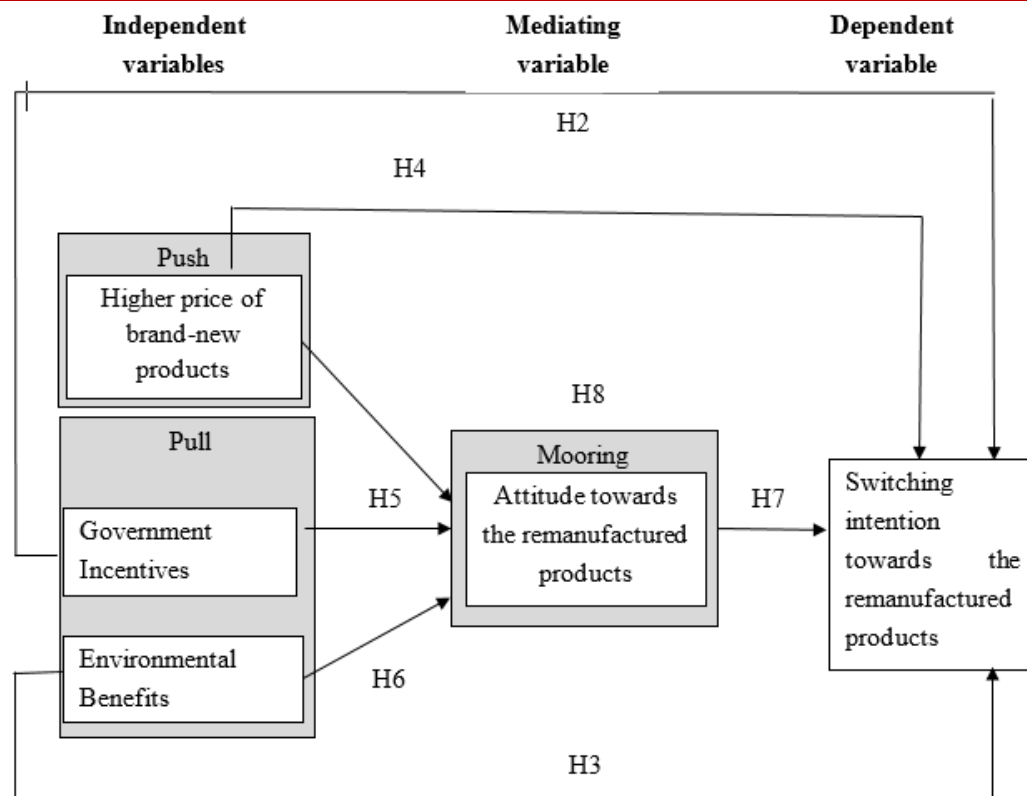


Figure 1: Conceptual model

Source: *Author*

HYPOTHESES

- H₁:** Higher price of brand-new products will impact on the switching intention towards the remanufactured products.
- H₂:** Government incentive will impact on the switching intention towards the remanufactured products.
- H₃:** Environmental benefits will impact on the switching intention towards the remanufactured products.
- H₄:** Higher price of the brand-new product will impact on the attitude towards the remanufactured products.
- H₅:** Government incentive will impact on the attitude towards the remanufactured products.
- H₆:** Environmental benefits will impact on the attitude towards the remanufactured products.
- H₇:** Attitude towards the remanufactured products will impact on switching intention towards the remanufactured products.
- H_{8a}:** Consumer attitude toward remanufactured products will mediate the relationship between higher price of the brand-new product and switching intention towards the remanufactured products.
- H_{8b}:** Consumer attitude toward remanufactured products will mediate the relationship between government incentive and switching intention towards the remanufactured products.

H8c: Consumer attitude toward remanufactured products will mediate the relationship between environmental benefits and switching intention towards the remanufactured products.

FINDINGS

In this study, the independent and dependent variables are both impacted by a mediator. Regression analysis was performed on the current study using Andrew F. Hayes' analytical method using SPSS PROCESS v3.5.

Table 1: Results of the Hypothesis Tests

Hypothesis	LLCI	ULCI	P	Decision
H1	0.3020	0.4556	0.0000	Supported
H2	0.3178	0.5031	0.0000	Supported
H3	0.2514	0.4176	0.0000	Supported
H4	0.4516	0.5595	0.0000	Supported
H5.	0.5405	0.6593	0.0000	Supported
H6	0.4589	0.5836	0.0000	Supported
H7	0.0706	0.2957	0.0000	Supported
H8a.	0.1323*	0.2920**	-	Supported
H8b	0.1585*	0.3639**	-	Supported
H8c	0.1801*	0.3575**	-	Supported

Source: *Survey Data*

Note: * BootLLCI

** BootULCI

DISCUSSION

This study investigates the impact of push and pull factors on consumers' intention to switch to remanufactured products, with attitude toward remanufactured products as a mediating variable. The conceptual framework is based on the Push-Pull-Mooring (PPM) theory proposed by Moon (1995). The study examines the relationship between push and pull factors and switching intention in the Sri Lankan consumer electronics industry, considering the higher price of brand-new products as a push factor, government incentives and environmental benefits as pull factors. The findings show a significant relationship between push and pull factors and switching intention, particularly in an inflationary context. However, the results differ from a study conducted in Mexico, suggesting country-specific variations (Perez-Castillo & Vera-Martinez, 2020). Moreover, the study confirms that the higher price of brand-new

products, government incentives, and environmental benefits have a significant impact on attitude toward remanufactured products. Furthermore, attitude toward remanufactured products significantly influence switching intention, indicating the importance of consumers' mind-set and attitudes. The study also reveals that attitude toward remanufactured products mediates the relationship between push and pull factors and switching intention in the Sri Lankan consumer electronics industry during an economic crisis. These findings support the relevance of attitude toward remanufactured products as a mooring factor in the push-pull mooring theory.

IMPLICATIONS OF RESEARCH

The research findings of this study indicate that attitude toward remanufactured products plays a significant role as a mooring factor in mediating the relationship between the higher price of brand-new products, government incentives, and environmental advantages on switching intentions. This study fills an empirical gap in the existing literature, particularly in the South Asian context, as there is limited research on sustainable consumption and remanufactured products in Sri Lanka. The practical significance of this study lies in its potential to inform supply chain development strategies, reverse logistics applications, and the enhancement of customer attraction towards remanufactured products. It also highlights the role of remanufacturing in improving supply chain resilience through close loop supply chain and contributing to the country's international market presence and deflationary fiscal policy effectiveness.

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BIG DATA ANALYTICS ADOPTION CAPABILITIES: ORGANIZATIONAL DRIVERS AND EFFECTS ON SUPPLY CHAIN RESILIENCE

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INTRODUCTION

Big data analytics (BDA) has become a pivotal topic in the modern digital era, seen as essential for strategic planning, risk management, and resource allocation in contemporary businesses (Ivanov et al., 2019). Among the various domains of management that has potential to reap benefits from BDA, supply chain (SC) operations have prominence. This is because BDA capabilities offer multifaceted advantages to SCs, namely, improved customer behavior analysis, enhanced SC transparency, and increased operational efficiency (Kache & Seuring, 2017). Amidst the turbulent business landscape of today, where discussions on resilience have taken center stage, dialogue about supply chain resilience (SCR) and the role of BD in enhancing SCR is a point of focus (Craighead et al., 2007; Sabahi & Parast, 2020). In relation to the Sri Lankan context, the recent social, economic, and political challenges have intensified the need for SCR, prompting local managers to seek innovative solutions. In light of this, evaluating the potential for Sri Lankan organizations to harness BD as an innovative tool to enhance SCR becomes particularly relevant. However, given the novelty of BD in Sri Lanka, it is essential to delve into the big data analytics adoption capabilities (BDAAC) within local entities. A review of the existing literature reveals that while studies have explored the technical and environmental determinants of BD adoption across various industries, comprehensive research on the internal organizational drivers of BD adoption is lacking. Therefore, investigating the impact of BDAAC on SCR and gauging the availability of such drivers in Sri Lankan companies takes on considerable significance, offering valuable insights into this evolving landscape.

The following research questions were addressed by the study:

- Research Question 01:* What are the organizational drivers of big data analytics adoption capabilities?
- Research Question 02:* What is the effect of big data analytics adoption capabilities on supply chain resilience?
- Research Question 02:* What is the level of availability of different drivers within the logistic industry of Sri Lanka?

The following objectives were derived accordingly:

- Research Objective 01:* Identify the drivers of big data analytics adoption capabilities
- Research Objective 02:* Examine the effect of big data analytics adoption capabilities on supply chain resilience

Research Objective 02: Identify the level of availability of drivers within the logistic industry of Sri Lanka.

LITERATURE REVIEW

Maroufkhani et al. (2020) studied factors influencing BDA adoption, classifying them under technological, environmental, and organizational domains. Organizational factors focused only on top management support, financial readiness, and organizational preparedness. Conversely, Jha et al. (2020) in a qualitative study stated that organizational factors such as data management, human resources, organizational politics, global integration, and environmental determinism could potentially affect BDA capability development. However, no empirical study has confirmed these to be drivers of BDA capability development.

Moreover, previous studies revealed that BDA enhances SCR by improving visibility and real-time information sharing (Bahrami et al., 2022; Iftikhar et al., 2022). This prompts the need to investigate if BDAAC impacts SCR similarly in the Sri Lankan context.

The logistics industry is notable as an integral part of most industries in ensuring SCR by integrating activities across global SCs and offering strategic advantages (Panayides & So, 2005). Similarly, Sri Lanka saw logistics firms gaining prominence in recent times due to pandemic-related restrictions and globalization (Leigh, 2020; Perkumienė et al., 2020). Therefore, understanding the relevance of BDAAC on SCR in the context of Sri Lanka's logistics industry was deemed crucial.

METHODOLOGY

HYPOTHESES AND RESEARCH MODEL

Two main hypotheses (H_1 and H_2) were developed.

H₁: was tested through five sub-hypotheses:

H_{1A}: Companies with more data management will have higher BDAAC

H_{1B}: Companies with more human resource training will have higher BDAAC

H_{1C}: Companies with favourable organizational politics can have higher BDAAC

H_{1D}: Companies with more global integration will have higher BDAAC

H_{1E}: Companies with more environmental determinism will have more BDAAC

H₂: BDAAC have a positive effect on SCR

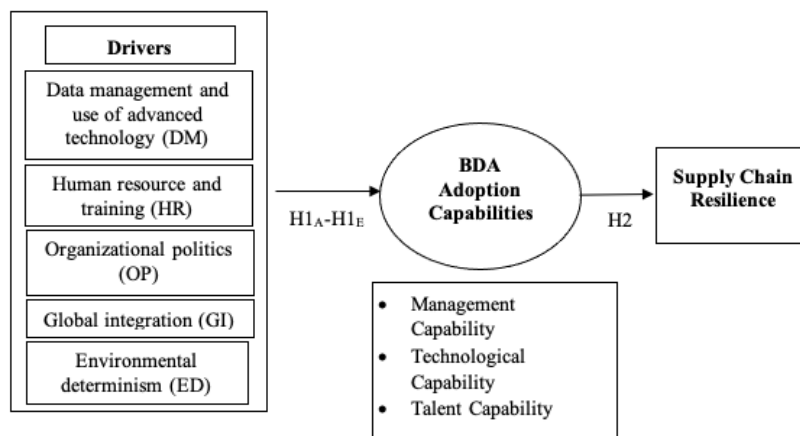


Figure 2: Research Model

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.

RESULTS AND DISCUSSION

The validity assessment confirmed the internal consistency and construct validity. The descriptive analysis indicated that 70% of respondents were large scale companies with 59% of responses being provided by mid-level managers, supporting that the respondents possessed satisfactory knowledge regarding BDAAC and SCR within their companies.

Table 1: Results of Hypothesis Testing

Hypotheses	Relationship	Path Coefficient	P values
H1 _A	DM -> BDAAC	0.117	0.303
H1 _B	HR -> BDAAC	0.058	0.669
H1 _C	OP -> BDAAC	0.363	0.006
H1 _D	GI -> BDAAC	0.207	0.012
H1 _E	ED -> BDAAC	0.275	0.006
H ₂	BDAAC -> SCR	0.814	0.000

Tested at 5% level of significance

In the hypothesis test, sub-hypotheses H1A to H1E determined the significance of each driver on BDAAC. The p-values in Table 1 indicate OP (H1C), GI (H1D), and ED (H1E) have significant effects on BDAAC, backing the findings of Jha et al. (2020). However, the significant effect of ED contradicts the results of Maroufkhani et al. (2020) and Lai et al. (2018), emphasizing the importance of benchmarking practices in BD adoption. Conversely, DM (H1A) and HR (H1B) did not exhibit significant effects, which contradicts the claims of Jha et al. (2020). These findings corroborate with Mikalef et al. (2017) and Rai et al. (2006) suggesting inadequate concentration on information flow and the limited human resource training in BDA. Consequently, focusing on organizational dynamics, global trends, and competitive pressure is crucial, along with emphasizing the role of information and knowledge transfer among employees to facilitate BDAAC.

Positive relationship between BDAAC and SCR under H2 backed findings of Iftikhar et al. (2022) and Bahrami et al. (2022), indicating that giving strategic importance to business analytics, advanced technological infrastructure and empowering skills through analytics could enhance the responsiveness, reliability and visibility of SCs.

Driver	Mean	Standard Deviation	P value
DM	5.1067	1.45557	.000
HR	5.3500	1.40054	.000
OP	5.1920	1.37037	.000
GI	5.7240	1.41072	.000
ED	5.5260	1.36911	.000

Table 2: One Sample T-Test Results

Tested at 5% level of significance

The one sample t-test was conducted by setting the mid value (4) of the 7-point Likert scale used in the survey as the target value. The p-values as shown in

Table 2 confirms significant availability of each driver within logistic companies of Sri Lanka. The t-test suggested that steps should be taken actively to elevate the adoption of BDA to ensure positive results through the drivers.

IMPLICATIONS

THEORETICAL IMPLICATIONS

This study sought to validate organizational drivers for big data analytics adoption and introduce a framework for assessing BD adoption potential in Sri Lankan logistics companies. It identified how factors such as flexible organizational culture, exposure to global trends, and competitive pressure affect BD adoption and their impact on supply chain resilience.

MANAGERIAL IMPLICATIONS

Companies should prioritize and invest in knowledge acquisition in big data analytics, recognizing its positive impact on supply chain resilience. Managing data efficiently through technology should receive as much attention as operational and cost considerations. Managers can foster an innovative environment where employees can explore new methods to enhance information flow in companies.

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

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IMPORTANCE OF USAGE OF CLOUD APPS AND PLATFORMS FOR ACADEMIC ACTIVITIES: A CASE OF UNDERGRADUATES AT THE UNIVERSITY OF SRI JAYEWARDENEPURA, SRI LANKA

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INTRODUCTION

In the present context, technology continues to develop and plays a vital role daily. People all over the world are adopting new technologies to fulfil their needs. When it comes to an academic setting these cloud apps and platforms are being used by teachers and students across the world to perform their educational activities because youngsters in the present context are very curious to use new technologies (Changchit, 2014). Today cloud apps and platforms enable students to enhance their skills such as critical thinking, collaboration, and innovative thinking as well (Vandis, 2019). When it comes to cloud apps and platforms related to e-learning it's where available hardware and software computing resources combine and work as an e-learning platform that has some advantages like flexibility, diversity, measurement, and opening (Riahi, 2015). Most researchers highlight the lacking of cloud training and poor level of ICT infrastructure which is another important requirement to use cloud apps efficiently, are as main limitation of using cloud apps and platforms for research and learning support activities (Filiz et al., 2022; Islam, 2019; Subair et al., 2012; Rameez et al., 2020). However, in Sri Lankan higher education sector has not sufficient evidence regarding how the cloud apps and platforms influence on students' educational activities and what are the drawbacks when using these technologies. This study pays attention on how this new technological equipment influence students' education and further the importance of infrastructure.

OBJECTIVES

The main objective of this study is to identify the mediating impact of the usage of cloud-based apps and platforms (UCAP) on the relationship from the quality dimensions to the perceived success of academic activities (PSAA) of the undergraduates of University of Sri Jayewardenepura(USJP), Sri Lanka. The specific objectives are as:

- Research Objectives 01:* To evaluate the existing levels of easiness, usefulness, quality of infrastructure, and UCAP for the academic activities of undergraduates.
- Research Objective 02:* To explore the level of PSAA.
- Research Objective 03:* To evaluate the impact of the quality determinants on the UCAP.
- Research Objective 04:* To evaluate the impact of the UCAP on the PSAA.
- Research Objective 05:* To evaluate the impact of the quality determinants on the PSAA.

METHODOLOGY

The study follows the positivistic philosophy and used the hypothetico-deductive method. A questionnaire-based survey was used as the method of data collection and it was done as a cross-sectional survey with a self-administered online questionnaire. The study population consisted of undergraduates of the USJP in Sri Lanka. All seven (07) faculties (at the study time) were used and the sample size was calculated as proportionate to the student population of each faculty. A randomly selected 5000 students were used as the sample and an online questionnaire was sent to them. Finally, 433 successful responses were received and analyzed.

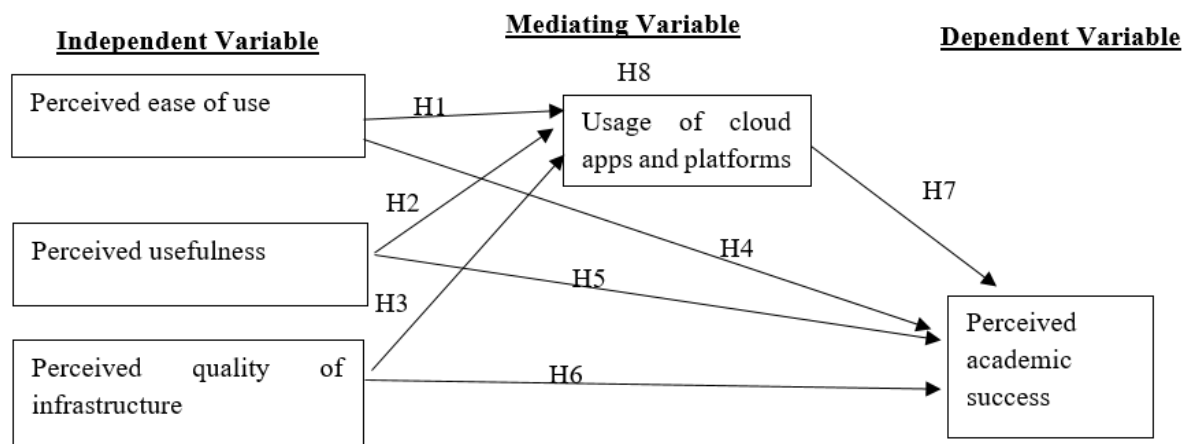


Figure 1: Conceptual Framework of the Study

Source: Developed by the Author

This study has used the Technology Acceptance Model (TAM) which was introduced by Davis (1989), to get an explanation for the factors affecting computer acceptance by end-users and the behavior of the users as they react to innovative computer technologies. The most important operational input of any academic activity is the quality of its infrastructure. This infrastructure includes elements necessary for teaching and learning, such as computers, internet connections, etc. Apart from the independent variables such as 'perceived ease'(PE) of use and 'perceived usefulness'(PU) in the TAM, 'perceived quality of infrastructure'(PQ) has been used as a modification to the original TAM. The direct effects and the indirect effects of the quality determinants on the PSAA were measured with the Process Macro of SPSS which was introduced by Hayes (Coutts & Hayes, 2022).

HYPOTHESES

Below are the hypotheses of the study,

- H₁/H₂/H₃:** Perceived ease of use / Perceived usefulness / Perceived quality of infrastructure will have an impact on the usage of cloud apps and platforms.
- H₄/H₅/H₆:** *Perceived ease of use / Perceived usefulness / Perceived quality of infrastructure* will have an impact on the perceived success of academic activities.

H7: Usage of cloud apps and platforms will have an impact on the perceived academic success.

H8a/H8b/H8c: Usage of cloud apps and platforms will mediate, the relationship from the *Perceived ease of use / Perceived usefulness / Perceived quality of infrastructure* to the perceived academic success.

RESULTS AND FINDINGS

The Kaiser-Meyer-Olkin (KMO) values are above 0.7 for all constructs and the Bartlett's Test of sphericity of all the constructs were significant at a 5% level. These two tests ensured the uni-dimensionality, 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 0.7 and it ensured the reliability of each construct. Results of the demographic analysis highlight those respondents represented all the selected faculties (majority from management) and the academic years (majority from 2nd year). The female proportion was higher than the males. All constructs had the mean values between 5-6 (scale from 1-7) and the variability values showed a lower level of variability (less 20%) with the values between 6%-14%.

Results of the Correlation Analysis showed strong positive relationships ($r > 0.7$) between PE, PU, PQ, and UCAP as well as between PE, PU, PQ, UCAP and PSAA. Results of the Regression Analysis (SPSS PROCESS v4.2 by Andrew F. Hayes) showed significant impacts (5%) of PE, PU, and PQ on UCAP and on PSAA. Table 1 illustrates the results of the Regression Analysis done to test the 10 hypotheses in the study. The final model was tested for the model accuracy including the residual analysis. Linearity, Multi-collinearity statistics, Homoscedasticity, and Independence and the normality of the residuals were at an accepted level. Further, the final model is free of outliers and influential points.

Table 1: Results of the Regression Analysis

		Variable					Effect	
Hypothesis	Result	Mediating	Independent	Dependent	Beta	R ²	Direct	Indirect
H1	Supported		PE	<i>UCAP</i>	1.2456*	0.3990*	0.6776*	0.1427*
H4	Supported		PE	<i>PSAA</i>	0.8203*	0.6787*		
H7 & H8a	Supported	UCAP	PE	<i>PSAA</i>	0.6776*	0.7096*		
	Supported		UCAP ¹	<i>PSAA</i>	0.1145*			
H2	Supported		PU	<i>UCAP</i>	1.3825*	0.4463*	0.6058*	0.1880*
H5	Supported		PU	<i>PSAA</i>	0.7939*	0.5772*		
H7 & H8b	Supported	UCAP	PU	<i>PSAA</i>	0.6058*	0.6174*		
	Supported		UCAP ¹	<i>PSAA</i>	0.1360*			
H3	Supported		PQ	<i>UCAP</i>	1.4252*	0.4872*	0.6514*	0.1552*
H6	Supported		PQ	<i>PSAA</i>	0.8067*	0.6121*		
H7 & H8c	Supported	UCAP	PQ	<i>PSAA</i>	0.6514*	0.6360*		
	Supported		UCAP ¹	<i>PSAA</i>	0.1089*			

Source: Developed by the Author

*-Significant at 1% level

¹-Significance of PE, PU, and PQ ensured the partial mediation

DISCUSSION

All the constructs have good level of perseverance and the low level of variabilities ensured the consistency of the answers given and the reliability of the average values calculated. As to the findings of the regression analysis, PE, PU, and PQ have direct significant positive impacts on the UCAP. Further, PE, PU, PQ, and UCAP have direct significant positive impacts on the PSAA. Though some literature showed all the PE, PU, and PQ are not significant simultaneously, Changchit (2014) confirmed the direct impacts of PE, PU, and PQ, on the PSAA simultaneously like the current study. The momentous finding of the study is the significant mediating impact (indirect) of the UCAP on the relationship between PE and PSAA, PU and PSAA, and PQ and PSAA. However, the significant PE, PU, and PQ in their relevant full models ensured the mediating impact of UCAP is occurred as partial mediation to the relevant relationship.

IMPLICATIONS ON RESEARCH

The visibility of having a significant mediating impact of usage of cloud-apps and platforms can be used to enhance the success of the academic activities of the students who are using cloud-apps and platforms for the academic purposes. The institutional authorities should think the ways of encouraging the students to use these apps and platforms with the intention of increase their academic success. The average levels of perseverance of the students for the usefulness, easiness, infrastructure, and usage are at higher level with a consistent manner. It implies that the students of the University of Sri Jayewardenepura have a higher level of perseverance on these dimensions and it can be used to introduce more on-line resource to the academic activities. It will enrich their knowledge and awareness of the latest information, facts, and findings in the modern world.

However, the findings of this study are more relevant to the USJP undergraduates. In future, this can be expanded by using a larger sample including all the State and Private Universities and can be conducted as a comparative study.

Keywords: *Cloud Apps and Platforms, Perceived Ease of Use, Perceived Usefulness, Perceived Quality of Infrastructure, Perceived Academic Success.*

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EFFECTS OF THE SELF-SERVICE TECHNOLOGY ON CUSTOMER VALUE: WITH SPECIAL REFERENCE TO THE CUSTOMERS OF MOBILE BANKING IN COLOMBO DISTRICT

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INTRODUCTION

Developments in information technologies have a considerable impact on many industries globally. Self Service Technologies (SSTs) are technologies that allow customers to perform operational tasks independently, making them value co-creators and co-producers. (Hilton et al., 2013). This has led to reduced labour and operations costs in the banking sector, particularly in Mobile Banking. (Hilton et al., 2013). The banking sector is one of the industries with SST such as Mobile Banking. Thus, the study was focused on the impact of the attributes of SST on enhancing Customer Value to deliver a good customer experience. Despite the advantages of mobile banking, it's found that long-term engagement with Mobile banking is considerably low even though the usage of smartphones and the internet is high (Central Bank of Sri Lanka, 2021). Therefore, this study is focused on identifying the SST attributes in mobile banking and understanding the effect of those SST attributes in mobile banking on Customer Value. Despite numerous studies conducted on customer adoption of Mobile Banking, few research studies have been conducted on customer value in Mobile Banking in the Sri Lankan context.

RESEARCH QUESTIONS

Based on the objectives identified, research questions of the study are identified as follows.

- Research Questions 01:* Is there any impact of Usefulness on Customer Value?
- Research Questions 02:* Is there any impact of Cost Saved on Customer Value?
- Research Questions 03:* Is there any impact of Self-Control on Customer Value?

OBJECTIVES

The objectives of the study are to investigate,

- Research Objective 01:* if there is any significant impact of SST attributes in mobile banking on Customer Value.

HYPOTHESES

- H₁:** There is a positive impact between higher the Usefulness with higher the Customer Value
- H₂:** There is a positive impact between higher the Cost Saved and higher the Customer Value
- H₃:** There is a positive impact between higher the Self-Control and higher the Customer Value

METHODOLOGY

The research followed a Quantitative approach to deliver a more reliable outcome. Customers who have mobile banking experience were included as the unit of study. Population was consisted of users of mobile banking within Colombo District. Convenient sampling was used to gather data due to the time constraint and the limitation of access to the true number of the population. Data was collected from 222 respondents using a questionnaire. It was developed adopting the model developed by Ho, S. & Ko, Y. (2008) with certain modifications.

Collected data was analysed with the SPSS AMOS Graphics application for structural equation modelling (SEM). SEM is able to capture more complex-relationships among multiple-variables and captures both observed and latent variables. Cronbach's alpha was used to assess reliability, while the Kaiser-Meyer-Olkin Measure of Sampling Adequacy and Bartlett's test are used to assess validity.

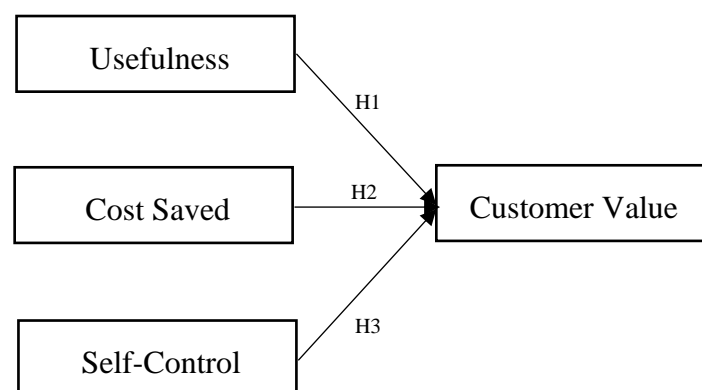


Figure 3: Conceptual Framework

Source: Developed by Author

It is able to estimate the reliability of individual items, components, and the entire instrument using confirmatory factor analysis (Doll and Xia, 1997). It was utilized in measuring the Goodness-of-fit indices. Tests involving with convergent validity and discriminant validity

were carried out to evaluate the validity of the measurement model. As per Hair et al (2010), the ideal level of standardized factor loadings for the indicators is greater than 0.70 even though 0.5 is acceptable. AVE should be greater than 0.5 and Composite Reliability should be greater than 0.7 to achieve the construct validity. For discriminant validity, the square root of AVE is used. Following CFA, the hypotheses were tested and the study was drawn to a conclusion.

FINDINGS

Number of responses collected (n) was 222 units with 115 male and 107 female respondents. Even though 51.8% of total respondents have been using mobile banking more than a year, and the frequency of usage is less than 5 times per month is 38.3%. Age-wise most of the respondents below 25-year-old are engaged in mobile banking more-actively, rather than older groups above 25 years.

In this study, Cronbach's Alpha, KMO and Bartlett's test of sphericity verified the reliability and the validity of the data collected. Using SEM it had been tested and analysed the relationship of SST attributes of mobile banking, customer value and customer intention to continue use in the research model with 18 observed variables, and 4 latent variables.

Measurement model ensured the goodness of fit indices thresholds suggested by the researchers Baumgartner and Homburg (1996), Doll and Xia, (1997) and Kim et al (2016). Convergent and discriminant validity were ensured. For the Absolute Fit Indices, CMIN/DF was recorded as 2.306, RMSEA with 0.077, GFI is 0.854 and AGFI value is calculated as 0.812. In order to assess the convergent validity of the model, individual standardized factor loadings, Average Variance Extracted (AVE), and composite reliabilities were used. To assess the discriminant validity, the square root of the AVE of each construct were compared with the inter-construct correlation estimates between each construct.

Structural model also stated a good model fit and satisfies identified paths in the study (Table 1). Therefore, identified hypotheses of the study were supported.

Table 3 :Path Coefficients

Path	Path coefficients	Standardized path coefficients	Standard Error	P- value
USF → CUSV	0.426	0.402	0.115	0.001
CSV → CUSV	0.281	0.239	0.101	0.027

SCT → CUSV	0.177	0.315	0.063	0.001
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Source: Developed by the Author

DISCUSSION

Customers' initial acceptance of SSTs depends on the benefits they receive to increase value. When the service is faster, more-convenient, less-expensive, or when it results in a unique offering that is not attainable through another method (Hilton et al., 2013) customers will be attracted to it. By conducting this study, it has been insisted on investigating the factors which increase the value of mobile banking services by evaluating their opinions on the current services provided by the banks. Out of the variables in this study, customer value can be identified as one of the determinants of the customer's intention to use the services as per the findings of Ho, S. & Ko, Y. (2008). Customer value has a positive impact on the behavioural intention of the customers.

As the outcome of the study with all hypotheses being satisfied, SST characteristics (Usefulness, Cost Saved and Self-Control) have a positive impact on Customer Value in mobile banking process According to Tam (2004) and Ho and Ko (2008) Customer Value can influence the decision of repurchasing desire of a customer with a significant way. Furthermore, the study resulted in satisfying all the hypotheses build on the conceptual framework. The study implied there is a statistically significant relationship between the self-service technology attributes of mobile banking (usefulness, cost-saved and self-control) and customer value. Therefore, the study has provided solutions for the research questions.

IMPLICATIONS OF RESEARCH

In the bank's point of view, it is a fact that SST is an option that gives companies cost benefits. Even though the setting-up costs are comparatively high, in the long-term it will reduce the transaction costs like labour costs according to Jayasiri and Weerathunga (2019). To achieve this, Ho and Ko (2008) suggests instead of pursuing "unknown" potential consumers, banks should incentivize their current customers to use mobile banking to promote SSTs by ensuring that the requirements enhance the customer value. If they are satisfied, eventually the customers will become interested in long-term switching towards the mobile banking.

As Ho and Ko (2008) suggests customers who can easily access and use Internet banking services such as transactions and information enquiries with less efforts with user-friendly

interfaces and less complicated procedures, can recognize the use of new technology. Based on the findings of the research it is known that the SST attributes and customer value should be positively addressed. Therefore, the banks should look into the requirements of the customers and ensure that the requirements are fulfilled such as the indicators of usefulness, cost saved and self-control which will enhance the customer value. If they are satisfied, eventually the customers will be interested in switching towards the mobile banking for the long term.

Keywords: Customer, Value, Mobile Banking

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IMPACT OF GREEN SUPPLY CHAIN MANAGEMENT PRACTICES ON ORGANIZATIONAL PERFORMANCE OF THE APPAREL SECTOR IN SRI LANKA

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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 4: 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 5: 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 6: 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.

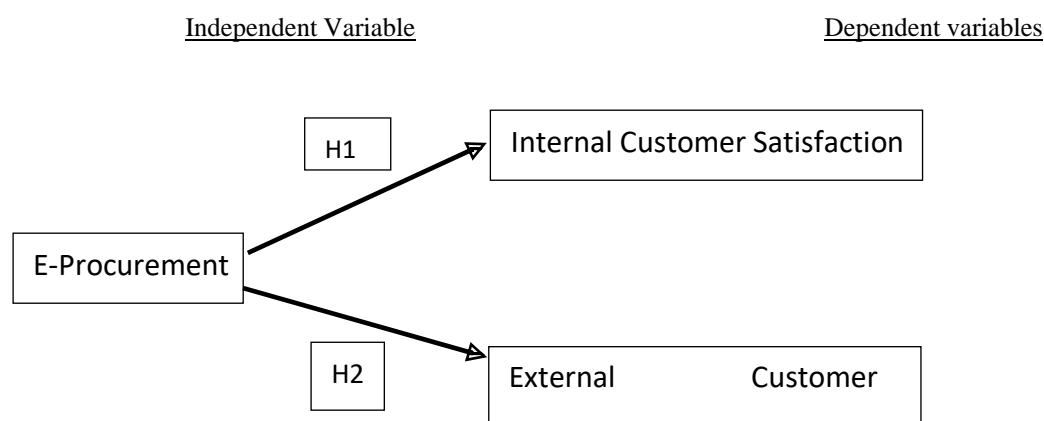


Figure 4: Conceptual Framework

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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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 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.

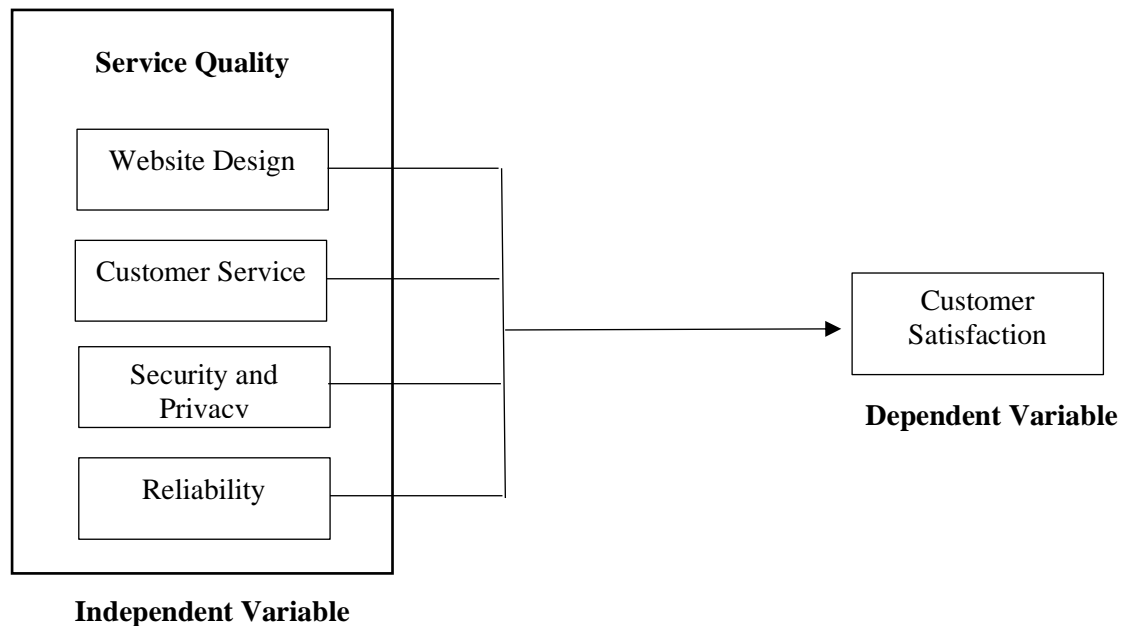


Figure 1: Conceptual Framework

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 (Algiriyage 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:

1. What are the current levels of satisfaction on waiting-time related determinants and patients' satisfaction?
2. Do the waiting-time related determinants have any influence on patients' satisfaction?
3. 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:

1. to identify the current satisfaction levels of waiting-time related determinants and outpatient satisfaction.
2. to measure the strength of the relationship between outpatient satisfaction and the waiting-time related determinants.
3. to test the significance of the impact of waiting-time related determinants on outpatient satisfaction.
4. 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.

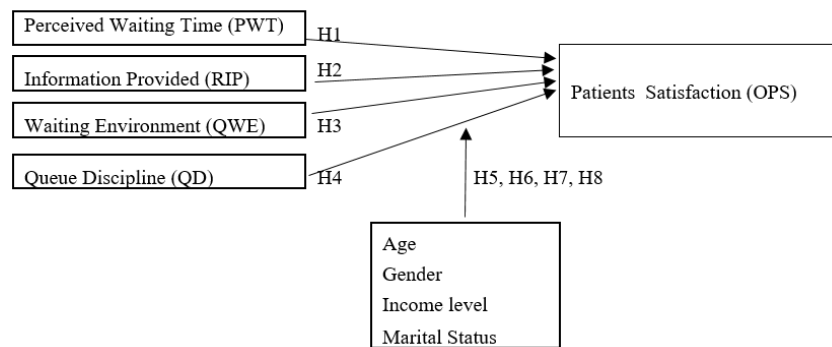


Figure 1: Conceptual Framework

HYPOTHESES

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 uni-dimensionality, 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 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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