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A Study of Barriers to Initial and Post E-Commerce Adoption among Small Businesses in Sri Lanka

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ABSTRACT

Small businesses in Sri Lanka are considered the backbone of the economy, and e-commerce can be viewed as a ladder for business growth. However, Sri Lankan Small businesses are not adopting e-commerce to its full potential. This research examines potential barriers within the Technology-Organization-Environment (TOE) framework that affect the decision to adopt electronic commerce and post e-commerce adoption within small businesses in the Sri Lanka. The study employed a quantitative research approach, proportionate stratified random sampling procedures were used to select a sample of 453 firms in Hambantota District, Sri Lanka. Primary data were collected using a pre-designed and tested questionnaire. For analyzing the data derived from multiple regression. According to statistical analysis in this research the results indicates that, initial and post adoption by these businesses were found to be hindered by some of barriers existing within individual ,technological, organizational, and environmental context including lack of knowledge and awareness of e-commerce, fear to change, lack of qualified personnel to develop and support ecommerce, lack of popularity for online marketing and inadequate delivery networks, higher competition and indirect or hidden cost associated with e-commerce. The research findings will aid in developing more effective government policies and planning decisions to foster a more vibrant small business ecosystem in developing countries.

Keywords: adoption, barriers, developing countries, electronic commerce, small business

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1. Introduction

Small businesses are crucial for employment and economic growth in Sri Lanka. this sector plays a vital role in economic development through the creation of employment opportunities, poverty alleviation, the mobilization of domestic savings, income distribution, regional development, and training of workers and entrepreneurs, creating an economic environment in which large firms flourish and contribute to export earnings (CBSL,2019). Based on the data provided by the Department of Census and Statistics in Sri Lanka, there were 1.02 million Micro, Small, and Medium Enterprises (MSMEs) in the country as of 2013/14, comprising 99.6 percent of all enterprises. Despite the importance of small enterprises for the country's economic development, the performance level of small enterprises in Sri Lanka is not up to the level compared to regional peers and developed countries (CBSL,2019). Also, the impact of the economic crisis in 2022 and the COVID-19 pandemic has been severe on small businesses in Sri Lanka. In 2020, the Asian Development Bank conducted a survey that revealed a significant decline in revenue for MSMEs in Sri Lanka. The survey indicated a decrease of 55.2% compared to the same period in 2019. The decrease in employment was also significant, with a decrease of 66.7 percent. Enhancing access to technology and digital platforms, mainly

e-commerce, can help small Sri Lankan businesses expand their reach and improve operational efficiency.

E-Commerce Readiness Assessment Report of Sri Lanka,2019 took into account the nation's baseline e-commerce situation, taking into account legislation and regulations, the technological environment, logistics, e-payment, and financial service imperatives. The findings of the research suggest that the level of e-commerce readiness among Sri Lankan citizens is still inadequate. The level of e-commerce maturity in Sri Lanka is estimated to be 34 percent, indicating that although businesses have started to use e-commerce, it has not yet reached a suitable level of maturity. Also, most Sri Lankan small firms do not adopt e-commerce and still use traditional ways to run their businesses (Kapurubandara & Lawson, 2006).

Several studies have examined barriers to e-commerce adoption in various countries, but research on Sri Lanka's obstacles is scarce. Previous research has not adequately addressed the adoption process's nature and underestimated the difference between initial adoption and institutionalization. (Tran & Corner, 2016). Therefore, this research aims to identify the barriers that impede small businesses' initial and extent level adoption of e-commerce in Sri Lanka.

2. Literature Review

The adoption of e-commerce by small businesses has been the subject of much research, with various theoretical frameworks proposed to understand the factors that influence the process. Among these frameworks is the TOE framework, which was developed by Tornatzky and Fleischer in 1990. This framework focuses on the technological, organizational, and environmental contexts that shape the adoption and implementation of e-commerce within organizations. Previous research has acknowledged the TOE framework as a valuable approach to studying e-commerce adoption in organizations. However, in developing economies like Sri Lanka, individual decision-making plays a significant role in the adoption of e-commerce by small businesses. Therefore, this study extends the TOE framework to incorporate the individual context, which enables the identification of four distinct dimensions of barriers to e-commerce adoption in Sri Lanka - technological, organizational, environmental, and individual barriers. Several sources of literature demonstrate that SMEs encounter significant obstacles in adopting and diffusing e-commerce. Based on this, the barriers to e-commerce adoption in small businesses are summarized in Table 1.

Table 1.
Barriers to E-Commerce Adoption

Barriers to e-commerce	**Sources**
Lack of awareness and knowledge of e-commerce	Ghobakhloo et al. (2011), Nazir & Roomi (2020)
Fear and reluctance to change	Teo, T. S. H., & Ranganathan, C. (2004)
inadequate telecommunications infrastructure	Rumanyika & Mashenene (2014), Wanzu et al. (2019), Myovella et al. (2020)
Lack of qualified personnel to develop and support e-commerce	Rumanyika & Mashenene (2014)
High cost of technology and implementing e-commerce	Al-Tit, (2020), Zaied (2012), Nazir & Roomi (2020)
Complexity of implementing and managing e-commerce	Shah Alam et al. (2008)
Indirect or hidden costs associated with e-commerce	Reardon et al. (2021), Alyoubi (2015)
Unsuitable products for online marketing	Kartiwi & MacGregor (2007), MacGregor & Vrazalic (2005)

Barriers to e-commerce	Sources
Lack of popularity for online shopping	Boerhanoeddin (2000), Tariq et al., (2016), Lim et al. (2016). Kumaning & Godfred (2019), Kapurubandara & Lowson (2012).
Limited use of use of digital payments	Demirguc-Kunt et al. (2018), Nazir and Roomi (2020)
Higher e-commerce competition	Sultana et al. (2011)
Lack of government support	Nazir & Roomi (2020), Ghobakhloo et al. (2011)
Inadequate delivery networks	Lawrence & Tar (2010), Adel A. Alyoubi (2015)

Based on the theoretical overview provided above, there exists a solid foundation for developing an integrative framework that can effectively capture the salient attributes of the various factors that impact e-commerce adoption in organizations. This framework is represented in Figure 1.

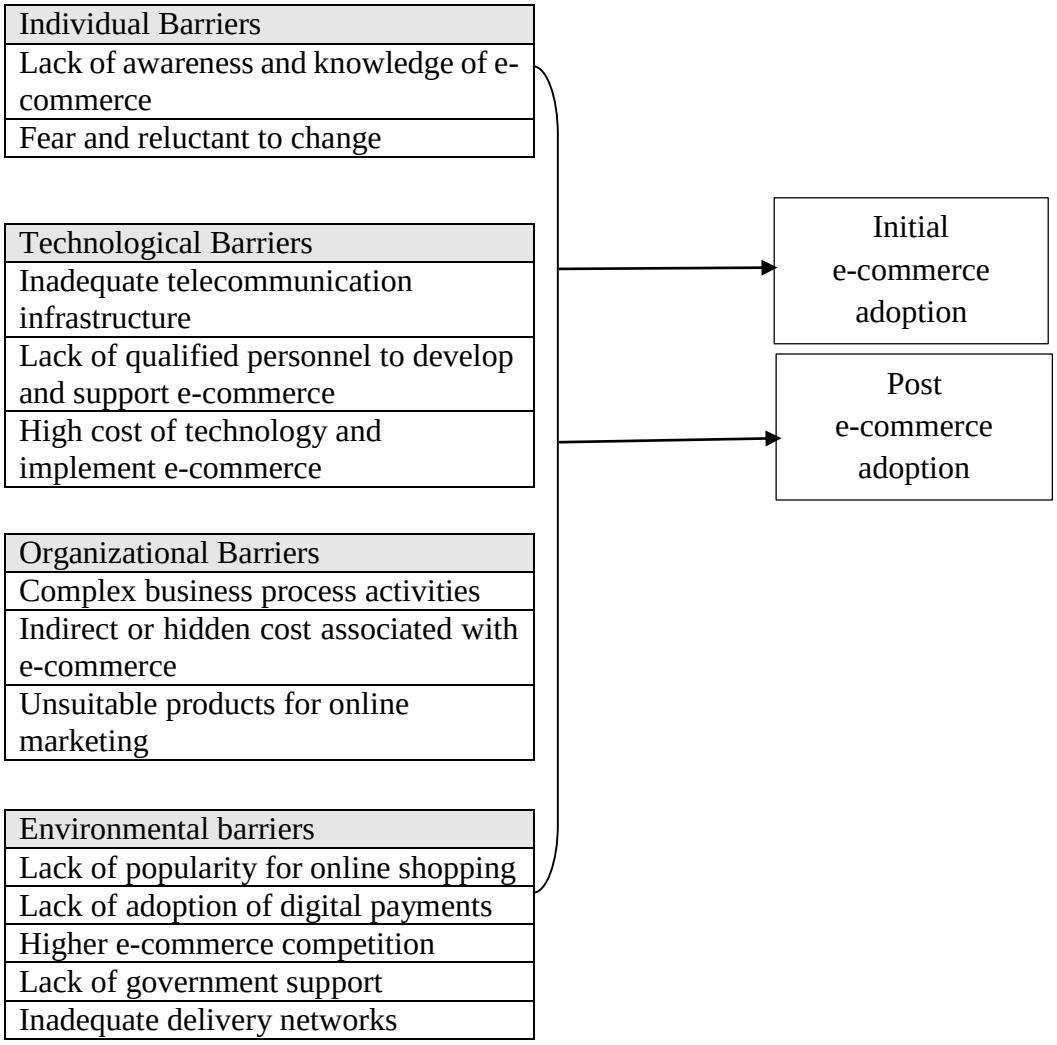

Figure 1. Conceptual framework
Source: Author's compilation

3. Methodology

The current research used a descriptive survey strategy with a quantitative approach to investigate the relationship between e-commerce adoption and barriers among small business owners in Hambantota, Sri Lanka. The targeted sample size was 475 small businesses, and the survey instrument used was a questionnaire.

The dependent variable of this study is e-commerce adoption, which is operationalized using four e-commerce activities: electronic advertising and marketing, electronic order and delivery, electronic customer support, and electronic payment. Two forms of e-commerce adoption are investigated: initial e-commerce adoption and intensity/post-e-commerce adoption. The first measure of e-commerce adoption, initial e-commerce adoption, is defined as the likelihood of e-commerce adoption and is operationalized as e-commerce adoption decision behavior. This was measured using a single question that asked respondents about their adoption plans for use four e-commerce activities. The question utilized a five-point Likert scale ranging from (1) do not plan to use it to (5) current user. The second measure of e-commerce adoption, intensity/post-e-commerce adoption, refers to the extent of an organization's utilization of e-commerce, reflecting its frequency of usage of four e-commerce activities. To assess this measure, the study surveyed small firms that had already adopted at least one of the four e-commerce activities studied in this research. The extent of e-commerce adoption was measured using a single question that asked respondents about their frequency of e-commerce usage. This question employs a five-point Likert scale, which ranges from (1) don't; (2) neutral; (3), rarely; (4), Slightly frequently; (5) Quite frequently. The independent variables in this study consist of thirteen (13) e-commerce adoption barriers that have been identified in the literature. These barriers are measured using a five-point Likert scale ranging from Strongly Agree (5) to Strongly Disagree (1), as indicated in the questionnaire provided in Appendix 1.

The data collection process was carried out with the assistance of development officers from the Small Enterprise Development division, Hambantota, Sri Lanka resulting in a high response rate of approximately 95%.

The collected data were analyzed using R software. Multiple regression analysis was conducted to identify significant obstacles that negatively affect e-commerce adoption among small businesses in Sri Lanka. Two regression models were used to measure the effect of these barriers on initial e-commerce adoption and post-e-commerce adoption, respectively. The equations for the regression models are as follows:

$$IA_i = \hat{\beta}_0 + \hat{\beta}_1 K_i + \hat{\beta}_2 F_i + \hat{\beta}_3 I_i + \hat{\beta}_4 S_i + \hat{\beta}_5 C_i + \hat{\beta}_6 X_i + \hat{\beta}_7 H_i + \hat{\beta}_8 T_i + \hat{\beta}_9 P_i + \hat{\beta}_{10} O_i + \hat{\beta}_{11} M_i + \hat{\beta}_{12} G_i + \hat{\beta}_{13} D_i + \hat{\varepsilon} \quad (1)$$

$$PA_i = \hat{\beta}_0 + \hat{\beta}_1 K_i + \hat{\beta}_2 F_i + \hat{\beta}_3 I_i + \hat{\beta}_4 S_i + \hat{\beta}_5 C_i + \hat{\beta}_6 X_i + \hat{\beta}_7 H_i + \hat{\beta}_8 T_i + \hat{\beta}_9 P_i + \hat{\beta}_{10} O_i + \hat{\beta}_{11} M_i + \hat{\beta}_{12} G_i + \hat{\beta}_{13} D_i + \hat{\varepsilon} \quad (2)$$

Table 2.
Notation of Variables

Statistic	Type of Variables	Variable Definition
IA_i	Quantitative Continuous	Initial e-commerce adoption
PA_i	Quantitative Continuous	Post e-commerce adoption
K_i	Ordinal	Lack of awareness and knowledge of e-commerce
F_i	Ordinal	Fear and reluctant to change
I_i	Ordinal	Inadequate telecommunications infrastructure
S_i	Ordinal	Lack of qualified personnel to develop and support ecommerce
C_i	Ordinal	High cost of technology and implement e-commerce
X_i	Ordinal	Complex business process activities
H_i	Ordinal	Indirect or hidden cost associated with e-commerce
T_i	Ordinal	Unsuitable products for online marketing
P_i	Ordinal	Lack of popularity for online shopping
O_i	Ordinal	Lack of adoption of digital payments
M_i	Ordinal	Higher competition
G_i	Ordinal	Lack of government support

Statistic	Type of Variables	Variable Definition
D_i	Ordinal	Inadequate delivery networks
$\hat{\beta}_0$		Constant
$\hat{\beta}_1, \hat{\beta}_2, \hat{\beta}_3, \hat{\beta}_4, \hat{\beta}_5, \hat{\beta}_6, \hat{\beta}_7$		Coefficient
$\hat{\beta}_8, \hat{\beta}_9. \hat{\beta}_{10}, \hat{\beta}_{11}, \hat{\beta}_{12}, \hat{\beta}_{13}$		
ε		error terms

Source: Author's compilation

4. Data Analysis and Discussion

To test the relationships between influencing factors (identified barriers), and initial e-commerce adoption and post (extent of) e-commerce adoption multiple regression analyses were used. Assumptions such as correlation, normality, linearity, homoscedasticity, and multicollinearity were tested to ensure the validity and accuracy of the regression analysis.

4.1. Initial E-commerce Adoption and Identified Barriers

Table 3 displays the results of a multiple regression analysis that investigates the relationship between initial e-commerce adoption as the dependent variable and potential barriers to e-commerce adoption as the independent variables. tests for the presence of autocorrelation in the residuals of the regression model.

Table 3.
Results of Regression Analysis preserved barriers and initial e-commerce adoption

Variable	Beta	Standard error	t-value	Sig.
(Intercept)	5.489	0.146	37.445	0.000
Lack of awareness and knowledge of e-commerce	-0.3184	0.036	-8.678	0.000
Fear and reluctant to change	-0.120	0.040	-2.985	0.000
Inadequate telecommunications infrastructure	0.053	0.042	1.244	0.214
Lack of qualified personnel to develop and support ecommerce	-0.214	0.043	-4.909	0.000
High cost of technology and implement e-commerce	0.025	0.041	0.621	0.534
Complex business process activities	0.013	0.037	0.372	0.710
Indirect or hidden cost associated with e-commerce	0.013	0.043	0.319	0.211
Unsuitable products for online marketing	0.057	0.038	1.491	0.136
Lack of popularity for online shopping	-0.112	0.034	-3.225	0.000
Lack of adoption of digital Payments	0.049	0.042	1.172	0.241
Higher e-commerce competition	0.044	0.035	1.250	0.211
Lack of government support	-0.034	0.040	-0.857	0.392
Inadequate delivery networks	-0.137	0.042	-3.198	0.000
N=251, F = 37.54, p-value: $< 2.2e^{-16}$,				
Adjusted R-squared ($R^{2)}$ = 0.513, Durbin-Watson = 1.638				

Source: Author's compilation

The findings from the multiple regression analysis revealed that a number of independent variables are significantly associated with the dependent variable, initial e-commerce adoption. Specifically, lack of awareness and knowledge of e-commerce, fear and reluctance to change, lack of qualified personnel to develop and support e-commerce, lack of popularity for online shopping, and inadequate delivery networks are all negatively related to e-commerce adoption, as evidenced by their negative coefficients and significant t-values (p-values < 0.05). For instance, small firm owners who lack awareness and knowledge of e-commerce are likely to experience a decrease in initial e-commerce adoption by 31.86 percent, holding all other variables constant.

However, other independent variables, such as inadequate telecommunications infrastructure, high cost of technology and implementing e-commerce, complex business process activities, indirect or hidden costs associated with e-commerce, unsuitable products for online marketing, lack of adoption of digital payments, higher e-commerce competition and lack of government support, are not significantly related to e-commerce adoption, as indicated by their non-significant t-values (p-values > 0.05).

The Durbin-Watson statistic of 1.638 suggests that there is no significant autocorrelation in the residuals of the regression model. This indicates that the independence of the observations has been met, and there is no systematic pattern of residual errors in the model.

Moreover, the overall model is statistically significant. The R-squared value of 0.5135 suggests that approximately 51.35 percent of the variation in initial e-commerce adoption by small businesses in Sri Lanka can be explained by the identified barriers in the study. This implies that the model has a reasonable level of predictive power and can be valuable in understanding the factors that influence e-commerce adoption.

4.2. Post E-Commerce Adoption and Identified Barriers

Table 4 presents a summary of the model in which examines the impact of various barriers to post e-commerce adoption on small businesses in Sri Lanka. The results indicate that several factors significantly affect post e-commerce adoption among small businesses in Sri Lanka.

Table 4.
Results of Regression Analysis preserved barriers and post e-commerce adoption

Variable	Beta	Standard error	t-value	Sig.
(Intercept)	4.087	0.114	35.598	0.000
Lack of awareness and knowledge of e-commerce	-0.093	0.032	-2.893	0.000
Fear and reluctant to change	-0.059	0.047	-1.270	0.207
Inadequate telecommunications infrastructure	0.061	0.037	1.645	0.103
Lack of qualified personnel to develop and support ecommerce	0.009	0.053	0.178	0.858
High cost of technology and implement e-commerce	0.057	0.036	1.584	0.116
Complex business process activities	0.051	0.030	1.655	0.101
Indirect or hidden cost associated with e-commerce	-0.083	0.039	-2.133	0.000
Unsuitable products for online marketing	0.031	0.036	0.849	0.397
Lack of popularity for online shopping	-0.047	0.031	-1.479	0.142
Lack of adoption of digital Payments	0.029	0.044	0.663	0.508
Higher e-commerce competition	-0.165	0.032	-5.168	0.000
Lack of government support	0.051	0.042	1.364	0.175
Inadequate delivery networks	0.057	0.042	1.364	0.175
N=108, F = 4.644, p-value: 0.000, R^2 = 0.30698, Durbin-Watson = 1.706				

Source: Author's compilation

Among the barriers, a lack of awareness and knowledge of e-commerce negatively affects e-commerce adoption. Small businesses that lack the necessary knowledge and understanding of e-commerce are less likely to adopt it. Additionally, indirect or hidden costs associated with e-commerce adoption negatively affect e-commerce adoption. Similarly, the beta coefficient for Lack of awareness and knowledge of e-commerce is -0.093, which means that post-e-commerce adoption will drop by 9 percent for small firm owners who lack awareness and knowledge of e-commerce, assuming all other variables remain constant. Similarly, the beta coefficient for indirect or hidden costs associated with e-commerce is -0.083, which means that post-e-commerce adoption will drop by 8.3 percent due to indirect or hidden costs associated

with e-commerce. Higher e-commerce competition also negatively affects e-commerce adoption. The beta coefficient for higher e-commerce competition is -0.165, which means that post-e-commerce adoption will drop by 16.5 percent due to higher competition. This suggests that small businesses may be less likely to adopt e-commerce if they perceive the market to be saturated or dominated by larger, more established competitors.

Other factors, such as fear and reluctance to change, inadequate telecommunications infrastructure, Lack of qualified personnel to develop and support e-commerce, high costs for technology and implementing e-commerce, complex business process activities, unsuitable products for online marketing, Lack of popularity for online shopping, Lack of adoption of digital payments, Lack of government support, and inadequate delivery networks, do not significantly affect e-commerce adoption among small businesses in Sri Lanka. The overall regression model is significant, with an F-value of 4.644 and a p-value of 0.000. The model explains 30.69 percent of the variance in e-commerce adoption among small businesses in Sri Lanka. The Durbin-Watson statistic of 1.706 indicates that there is no significant autocorrelation present in the model's residuals. Overall, these findings suggest that improving awareness and reducing the indirect costs associated with e-commerce adoption may be critical to increasing post-e-commerce adoption among small businesses in Sri Lanka.

5. Discussion

A key focus of this study is to explore the impact of barriers on both the initiation and extent e-commerce adoption among small businesses in Sri Lanka. Multiple regression analysis is used to derive two equations. The results reveal that the main barrier to the successful adoption and implementation of e-commerce is the lack of awareness and knowledge of e-commerce. The research findings are consistent with previous studies that have highlighted the role of knowledge and awareness as significant barriers to e-commerce adoption in small businesses (Ghobakhloo et al. (2013); Nazir & Roomi, (2020). Sri Lankan businesses may lack the necessary knowledge and awareness about e-commerce, including its benefits, processes, and challenges. This lack of knowledge and awareness may hinder their adoption of e-commerce technologies and strategies, leading to suboptimal adoption outcomes. The findings suggest that small businesses in Sri Lanka may face contextual challenges related to digital literacy, education, and access to information and resources, contributing to their lack of knowledge and awareness about e-commerce. Developing countries, like Sri Lanka, may have limited access to formal education and training programs that specifically address e-commerce knowledge and skills. Additionally, limited access to relevant information and resources may further hinder small business's ability to acquire knowledge and raise awareness about e-commerce.

The regression analysis findings revealed a significant association between fear of change and e-commerce adoption in small businesses in Sri Lanka, which aligns with previous research (Teo, T. S. H., & Ranganathan, C.,2004). This suggests that fear of change is a barrier to adopting e-commerce technologies among small businesses in Sri Lanka. The observed relationship between fear of change and e-commerce adoption in small businesses in Sri Lanka could be explained by various factors. Small businesses may perceive e-commerce adoption as a significant change in their existing business practices, requiring them to adapt and learn new technologies, modify their business processes, and potentially disrupt their established ways of doing business. This perception of change may trigger fear among small business owners and employees, leading to resistance towards e-commerce adoption. Also, small businesses in Sri Lanka may face resource constraints, such as a lack of financial resources, technical expertise, or human resources, which may contribute to their fear of change. Adopting e-commerce technologies may require investments in new hardware, software, training, and skilled

personnel, which small businesses could perceive as risky or burdensome (Yousafzai et al., 2007). Moreover, the cultural and contextual factors in Sri Lanka may also play a role in shaping the fear of change among small businesses. Sri Lanka has a unique cultural context, and small businesses may adhere to traditional business practices and resist changes that are perceived as deviating from the norm or disrupting established norms. Additionally, the lack of familiarity or experience with e-commerce among small businesses in Sri Lanka may contribute to fear of change. They may feel unfamiliar or uncomfortable with adopting new technologies.

The results of regression analysis conducted to examine the factors influencing e-commerce adoption in small businesses in Sri Lanka revealed a significant lack of qualified personnel to develop and support e-commerce initiatives. This finding aligns with a previous study that has highlighted the importance of human resources in the successful implementation and maintenance of e-commerce in organizations (Rumanyika & Mashenene,2014). The rapid growth of e-commerce in Sri Lanka has outpaced the supply of skilled personnel with expertise in e-commerce technologies, digital marketing, and online payment systems. This shortage of skilled personnel is further exacerbated by the brain drain, where qualified individuals often seek employment opportunities abroad, leaving a talent gap in the local market. Small businesses in Sri Lanka, particularly those in rural areas, face limited access to quality education and training programs that can equip them with the necessary skills for e-commerce. This lack of education and training opportunities can hinder the development of a competent workforce capable of leveraging e-commerce technologies for business growth. Furthermore, the findings of this study are consistent with the research conducted by Syed et al. (2012), which highlighted the limited availability of ICT staff in developing economies, where those who are employed often demand higher salaries and prefer to work in larger organizations. Small businesses cannot afford to hire their expensive services or pay a high salary.

Regression results have shown that the lack of popularity for online shopping is a significant factor in e-commerce adoption among small businesses in Sri Lanka. This finding is consistent with previous studies by Lim et al. (2016) and Kumaning & Godfred (2019). In a Western consumer culture, where there is little time to go to commercial markets to visit physical stores and buy, most South Asian consumers enjoy outdoor shopping by making it a family event and, therefore, prefer to visit stores instead of relying on online purchases (Nazir & Roomi, 2020). Additionally, studies by Kapurubandara & Lawson (2006) have shown that limited awareness and knowledge about e-commerce among small businesses and consumers also contribute to the lack of popularity of e-commerce in Sri Lanka. This lack of popularity may be attributed to various factors, including cultural preferences, inadequate digital infrastructure, and limited awareness and knowledge about e-commerce among small businesses and consumers.

The results indicated that the inadequacy of the delivery network and support significantly impacted initial e-commerce adoption, indicating that small businesses facing challenges in establishing a robust and reliable delivery network may struggle with e-commerce implementation and management. The inadequate delivery network and support can be attributed to several factors. Firstly, Sri Lanka's e-commerce infrastructure, particularly in rural areas, may be underdeveloped, with limited reliable transportation networks, warehousing facilities, and last-mile delivery services. This can result in delays, disruptions, and higher costs associated with e-commerce operations, such as order fulfillment, shipping, and returns, which can negatively impact customer satisfaction and trust. Secondly, small businesses in Sri Lanka may face challenges accessing timely and responsive customer support services, including order tracking, payment processing, and dispute resolution. Inadequate customer support can result in a lack of consumer trust and confidence, leading to decreased e-commerce adoption and customer retention (Wijesiri et al., 2017). The consequences of inadequate delivery

networks and support for e-commerce adoption in small businesses in Sri Lanka are significant. E-commerce relies heavily on efficient logistics and reliable customer support to ensure the timely and satisfactory delivery of products or services to customers. Without a robust delivery network and responsive customer support, small businesses may face challenges in meeting customer expectations, fulfilling orders on time, and building trust among consumers, which can hinder the growth and success of their e-commerce initiatives. This is consistent with previous research by Lawrence and Tar (2010) . These studies also highlighted the importance of a reliable delivery network and support system for the successful implementation and management of e-commerce, particularly for small businesses.

Higher competition is found to be the most significant obstacle affecting the extent of the adoption of e-commerce. Large, established e-commerce companies hold a significant advantage in brand recognition and customer loyalty. New entrants may struggle to gain traction and compete with these established players. Additionally, e-commerce customers are highly price sensitive and constantly searching for the best deals. This can lead to instance, price competition, making it difficult for new entrances to compete on price. This result agrees with previous innovation adoption research, which found that effective e-commerce action decreases competition from big companies .The finding is consistent with the research conducted by Sultana et al. (2011), which indicates that small businesses face challenges in e-commerce due to intense price competition, especially from larger competitors. Consequently, small businesses may find it challenging to adopt e-commerce as they strive to compete for market share and profitability in a fiercely competitive market.

The study's findings suggest that hidden costs can significantly impact the post-e-commerce adoption outcomes of small businesses in Sri Lanka. These findings suggest that hidden costs play a crucial role in small businesses' adoption and post-adoption phases of e-commerce. These results are consistent with previous research highlighting the importance of considering hidden costs as barriers to e-commerce adoption, particularly in small business contexts (Reardon et al.,2021; Alyoubi,2015),). These hidden costs can pose financial constraints on small businesses and affect their ability to sustain e-commerce operations.

Based on the multiple regression analysis, it was found that several factors previously identified as barriers to e-commerce adoption among small enterprises in developing countries were not found to have a significant negative association with initial and post-e-commerce adoption among small businesses in Sri Lanka. For instance, inadequate telecommunications infrastructure, high cost of technology and implementing e-commerce, complex business process activities, indirect or hidden costs associated with e-commerce, unsuitable products for online marketing, lack of adoption of digital payments, and lack of government support were not significant barriers to initial e-commerce adoption. Similarly, fear and reluctance to change, lack of qualified personnel, inadequate telecommunications infrastructure, High cost of technology and e-commerce implementation, complex business processes, unsuitable products for online marketing, lack of adoption of digital payments, lack of government support, inadequate delivery networks, and lack of popularity for online shopping were not significant barriers to post-e-commerce adoption. These findings contrast with some previous studies. It should be acknowledged that although these factors were not found to be significant barriers in this study, they could still present difficulties for small businesses when first adopting and implementing e-commerce.

6. Conclusion

The primary objective of this study was to investigate the factors that affect the adoption of e-commerce among small businesses in Sri Lanka. Specifically, the study aimed to identify the

key determinants that explain the slow uptake of this innovation in the small business sector. This study intends to address barriers considering the TOE framework, considering two different dimensions of adoption: initial e-commerce adoption and extent of e-commerce adoption. The research found that lack of awareness and knowledge is the most significant barrier which hinders the initial and post-adoption. Also, fear and reluctance to change, lack of qualified personnel to develop and support e-commerce, lack of popularity for online shopping, and inadequate delivery network factors negatively influence initial adoption. Moreover, higher competition and indirect or hidden costs associated with e-commerce factors negatively influenced small firms in Sri Lanka in their post-adoption of e-commerce.

The results of this study carry important implications for professionals in the field and scholars in academia. This study provides practical implications for governments, policymakers, owners and managers of businesses, technology vendors, and service providers. This study is useful for the owners/managers of small businesses and for practitioners who seek to understand the barriers to e-commerce implementation processes in their small businesses. This understanding could help them to manage their directions and priorities regarding adopting e-commerce in terms of training their employees, updating their technological infrastructure, and having their agenda to build their readiness to adopt e-commerce.

References

Al-Tit, A. A. (2020). E-commerce drivers and barriers and their impact on e-customer loyalty in small and medium-sized enterprises (SMES). *Business: Theory and Practice*, *21*(1), 146-157. https://doi.org/10.3846/btp.2020.11612

Alyoubi, A. A. (2015). E-commerce in Developing Countries and how to Develop them during the Introduction of Modern Systems. *Procedia Computer Science, 65*, 479-483. https://doi.org/10.1016/j.procs.2015.09.127

Boerhanoeddin, Zuraida. 2000. "E-Commerce in Indonesia," (Online) retrieved 23rd December 2022 from http://www.isoc.org/inet2000/cdproceedings/7c/7c_3.htm

CBSL (2019). Annual Report 2019, Central Bank Sri Lanka (Online) retrieved 21th December 2022 from https://www.cbsl.gov.lk/sites/default/files/cbslweb_documents/publications/annual_report/2021/en/13_Box_04.pdf

Demirguc-Kunt, A., Klapper, L., Singer, D., Ansar, S., & Hess, J. (2018). The Global Findex Database 2017: Measuring Financial Inclusion and the Fintech Revolution. Washington DC, World Ban. http://doi.org/10.1596/978-1-4648-1259-0

Ghobakhloo, M., Arias-Aranda, D., & Benitez-Amado, J. (2011). Adoption of e-commerce applications in SMEs. *Industrial Management & Data Systems, 111(8), 1238-1269.* https://doi.org/10.1108/02635571111170785

Ghobakhloo, M., & Tang, S. H. (2013). The role of owner/manager in adoption of electronic commerce in small businesses: The case of developing countries. *Journal of Small Business and Enterprise Development, 20*(4), 754-787. https://doi.org/10.1108/JSBED-12-2011-0037

Kapurubandara, M., & Lawson, R. (2006). Barriers to Adopting ICT and e-commerce with SMEs in developing countries: an Exploratory study in Sri Lanka. *University of Western Sydney, Australia, 82*(1), 2005-2016.

Kartiwi, M., & MacGregor, R. C. (2007). Electronic commerce adoption barriers in small to medium-sized enterprises (SMEs) in developed and developing countries: A cross-country

comparison. *Journal of Electronic Commerce in Organizations (JECO), 5*(3), 35-51. https://doi.org/10.4018/jeco.2007070103

Kumaning, G. R., & Godfred, A. (2019). Challenges of E-commerce Adoption in the Ghanaian Hotel Industry. European Journal of Business and Management, 11(27), 126-134.

Lawrence, J. E., & Tar, U. A. (2010). Barriers to e-commerce in developing countries. *Information, Society and Justice Journal, 3*(1), 23-35.

Lim, Y. J., Osman, A., Salahuddin, S. N., Romle, A. R., & Abdullah, S. (2016a). Factors Influencing Online Shopping Behavior: The Mediating Role of Purchase Intention. *Procedia Economics and Finance, 35*, 401-410. https://doi.org/10.1016/S2212-5671(16)00050-2

MacGregor, R. C., & Vrazalic, L. (2005). A basic model of electronic commerce adoption barriers: A study of regional small businesses in Sweden and Australia. *Journal of Small Business and Enterprise Development, 12*(4), 510-527. https://doi.org/10.1108/14626000510628199

Myovella, G., Karacuka, M., & Haucap, J. (2020). Digitalization and economic growth: A comparative analysis of Sub-Saharan Africa and OECD economies. *Telecommunications Policy, 44*(2), 101856. https://doi.org/10.1016/j.telpol.2019.101856

Nazir, M. A., & Roomi, M. A. (2020). Barriers to Adopting Electronic Commerce for Small and Medium-sized Enterprises in Emerging Economies. *EMAJ: Emerging Markets Journal, 10*(2), 43-55. https://doi.org/10.5195/emaj.2020.203

Reardon, T., Heiman, A., Lu, L., Nuthalapati, C. S., Vos, R., & Zilberman, D. (2021). "Pivoting" by food industry firms to cope with COVID-19 in developing regions: E-commerce and "copivoting" delivery intermediaries. *Agricultural Economics, 52*(3), 459-475. https://doi.org/10.1111/agec.12631

Rumanyika, J. D., & Mashenene, R. G. (2014). Impediments of E-commerce Adoption among Small and Medium Enterprises in Tanzania: A review.

Shah Alam, S., Khatibi, A., Ismail Sayyed Ahmad, M., & Bin Ismail, H. (2008). Factors affecting e-commerce adoption in the electronic manufacturing companies in Malaysia. *International Journal of Commerce and Management, 17*(1/2), 125-139. https://doi.org/10.1108/10569210710776503

Sultana, R., Lopez, J. L., & Rusu, L. (2011). Barriers to e-commerce implementation in small enterprises in Sweden. Paper presented at the *ENTERprise Information Systems: International Conference, CENTERIS 2011, Vilamoura, Algarve, Portugal, October 5-7, 2011, Proceedings, Part I*, 178-189. https://doi.org/10.1007/978-3-642-24358-5_18

Syed, A. A., & Shaikh, F. M. (2012). Barriers in implementation of e-business technologies in small and medium enterprises (SMEs) in Pakistan. *Romanian Statistical Review, 60*(4), 65-72.

Tariq, A., Bashir, B., Shad, M. A., Main, A. Z., & Dar, M. A. (2016). Factors affecting online shopping behavior of consumers in Pakistan. *Journal of Marketing and Consumer Research, 19*(2016), 95-100.

Teo, T. S., & Ranganathan, C. (2004). Adopters and non-adopters of business-to-business electronic commerce in Singapore. *Information & Management, 42*(1), 89-102. https://doi.org/10.1016/j.im.2003.12.005

Tornatzky, L. G. a. F., M. (1990). *The processes of technological innovation*. Lexington Books, Lexington.

Tran, H. T. T., & Corner, J. (2016). The impact of communication channels on mobile banking adoption. *International Journal of Bank Marketing*, *34*(1), 78-109. https://doi.org/10.1108/IJBM-06-2014-0073

Wanzu, I., Turyakira P. & Katumba, P. M. (2019). EC Adoption and Growth of SMEs in Uganda. International Journal of Business and Management, 14 (1), pp. 42-54. https://doi.org/10.5539/ijbm.v14n1p46

Wijesiri, M., Yaron, J., & Meoli, M. (2017). Assessing the financial and outreach efficiency of microfinance institutions: do age and size matter? *Journal of Multinational Financial Management, 40*, 63-76. https://doi.org/10.1016/j.mulfin.2017.05.004

Yousafzai, S. Y., Foxall, G. R., & Pallister, J. G. (2007). Technology acceptance: a meta-analysis of the TAM: Part 1. *Journal of Modelling in Management, 2*(3), 251-280. https://doi.org/10.1016/j.mulfin.2017.05.004

Appendix 1

Sample Survey Questionnaire

Questionnaire for Identification of the Barriers to adopt E-Commerce of Small Businesses in Sri Lanka

PLEASE NOTE This questionnaire must only be completed by the micro and small entrepreneurs in rural arears (Sri Lanka)

All information will be treated as STRICTLY CONFIDENTIAL and will only be used for academic purposes.

Instructions for completion:

1. Please answer the questions as objectively and honestly as possible.
2. Place a cross (x) in the space provided at each question which reflects your answer the most accurately.
3. It is essential that you indicate your choice clearly with a pen.
4. Please answer all the questions, as this will provide more information to the researcher so that an accurate analysis and interpretation of data can be made.

Thank you for your co-operation. We hope that you will find the questionnaire interesting and stimulating.

Section A: Personal Information

All your responses will be treated confidentially. We appreciate your help in providing this important information.

Mark the applicable block with a cross (X)

01. Gender

Male		Female	

02. Age (in years)

20 -30		31-40		41-50		Above 50	

03. How long have you been in the business?

Less than 1 years		1-5 years		5-10 years		10 years and above	

04. What is your highest education qualification?

Only primary Education		Only Secondary Education		Ordinary level		Advanced level		Diploma		Degree or higher	

05. What is your material status?

Unmarried		Married		Divorced		Widows		Separate	

06. Indicate your monthly household income (Rs.)

Less than 20,000	
20,000-30,000	
30,000-40,000	
40,000-50,000	
Above 50,000	

07. Indicate your business category

Animal production	
Apparel and Textile production	
Beautiful Flowers and Plant Business	
Beauty Salon	
Book Shop and Stationery	
Clay Pottery Industry	
Coir Production	
Craft production	
Electrical & Electronics Products Selling & Services	
Food and beverage production	
Furniture and Related Product Manufacturing	
Grocery shop	
Guesthouse	
Industrial Production	
Jewellery shop	
Ornamental fish farming	
Pharmacy and Healthcare Retail	
Photographic Activities	
Restaurant	
Convenience store	
Spice products Vendors	
Supermarket	
Vegetable and fruit Vendors	
Other	

Section B

Answer the following question by ranking the different options on an applicable block with a cross (X).

Q1. Our enterprise has decided to use of following e-commerce activities	Currently use	Within one year	Next two-three years	After three years	Not De-
Electronic marketing and advertising to promote business					
Electronic customer support to support our customers and handle their inquiries					
Electronic payments for handling financial transactions					
Electronic order and delivery to take orders through online and deliver products					

Q2. Our enterprise is currently use of following E-Commerce activities	Quite fre-quently	Slightly fre-quently	rarely	neutral	Do Not
Electronic marketing and advertising to promote business					
Electronic customer support to support our customers and handle their inquiries					
Electronic payments for handling financial transactions					
Electronic order and delivery to take orders through online and deliver products					

Q3. Which e-commerce tools are you using in your company	E-Mail	Social-Media	E-Marketplace	Own-Website	E-Payment	Application

Section C

Answer the following question by ranking the different options on an applicable block with a cross (X).

	Our enterprise is encountering challengers in adopting e-commerce, because of:	**Strongly Agree**	**Agree**	**Neutral View**	**Disagree**	**Strongly Disagree**
IN1	Lack of awareness and knowledge of e-commerce					
IN2	Fear and reluctant to change current business procedures and adopt innovation					
TE3	Inadequate telecommunications infrastructure including slow speed lines and regular connection failures					
TE4	Lack of qualified personnel to develop and support e-commerce with reasonable salaries					
TE5	High cost of technology and implement e-commerce					
OR6	Complex business process activities embedded in e-commerce					
OR7	Indirect or hidden cost such as transaction fees, shipping costs, and maintenance costs, associated with e-commerce					
OR1	Our business products, not suit for online marketing					
EN2	Lack of popularity for online shopping among consumers					
EN3	Lack of adoption digital payments such as credit, debit cards and online banking facilities among consumers and mostly prefer cash on delivery					
EN4	Higher e-commerce competition specially with large companies and branded products					
EN5	Lack of sufficient support from government organizations					
EN6	Inadequate transportation and delivery networks					