
Factors Affecting the Adoption of E-Commerce by the Manufacturing Sector SMEs in Sri Lanka: An Empirical Study in Colombo District

Gunabalan, V.^a, Mudalige, D.M.^b, and De Silva, J.R.H.^c

^{a,b,c} *University of Moratuwa*

^bdarshanadm@uom.lk, ^crashenkad@uom.lk

Abstract

In the Sri Lankan context, SMEs are identified as an essential strategic sector for enhancing social development in Sri Lanka. The research studies that have been done in other developing countries highlighted that the growth and expansion of SMEs are inhibited by problems coming out from the product, markets and the regulatory system they operate in. The use of e-commerce is one of the most significant developments in the past decades for conducting business activities. The objective of the research is to determine the barriers faced by Sri Lankan SMEs in adopting to e-commerce. The population of this study is the SMEs which operate in the manufacturing sector. 200 manufacturing sector SMEs in Colombo district were selected as the sample by using the simple random sampling method. A questionnaire was used as the survey instrument. Technical characteristics, organizational characteristics, environmental characteristics and knowledge characteristics are independent variables and the perceived risk is the moderating variable. Willingness to adapt to e-commerce is the dependent variable of this study. SPSS was used to analyze the data. Findings revealed that technical characteristics and environmental characteristics positively affect the willingness to adapt to e-commerce while organizational characteristics are not having a significant impact on the dependent variable of willingness to adopt to e-commerce. Perceived risk moderates the relationship between environmental characteristics and adoption of e-commerce and knowledge characteristics and willingness to adapt to e-commerce. Implications for technology vendors are to create a positive strong e-commerce environment to SMEs in order to quickly adapt to e-commerce. The government and policy makers should formulate policies to avoid the barriers from technological characteristics and environmental characteristics faced by SMEs through motivating SMEs to adapt to e-commerce by conducting workshops and exhibitions which give them knowledge about new technologies.

Keywords: Adoption, E-commerce, Perceived risk, SMEs

1. Introduction

The critical role of Small and Medium Enterprises (SMEs) in economic growth are innovation, job creation and contribution to the country's Gross Domestic Production. In the Sri Lankan context, SMEs have been identified as an essential strategic sector for enhancing the economic growth and social development in Sri Lanka. The SMEs cover broad areas of economic activities in Sri Lanka including Industry and Construction and Trade and Service sector (Economic Survey Report, 2013/14).

In order to survive in the business environment domestically and internationally, firms should always have willingness to improve themselves by creating innovative ideas to satisfy the customers' needs and wants (Ahmad et al., 2015). However, it is more complicated when the transaction occurred in the far distance, especially the difference between the people involves in different time zones. Therefore, "electronic commerce (e-commerce)" is the only medium that can solve these issues (Saif-Ur-Rehman & Alam, 2016).

Successful adoption and implementation of e-commerce acts as the catalyst of the economic growth in Sri Lanka as well as in other developing countries (Kwadwo et al., 2016). Fillis et al., (2003) observed that SMEs could gain competitive advantage through adopting to e-commerce and it could help to improve their market performance by having entrance to the global market. Other than that access to new customers, cost reduction, streamlining of business processes, improved operational efficiencies, supplier contacts and trading partners, creating new ways of selling products and greater competitive advantages are benefits of adoption of e-commerce (Al-Hudhaif & Alkubeyyer, 2011).

As per past literature, Modzi et al., (2016) have stated that technical barriers, knowledge barriers, organizational barriers, behavioral barriers, environmental barriers and governmental barriers as the factors affecting the implementation of e-commerce and knowledge barrier was the most relevant. Iddris (2012) found that lack of right technical skills, e-commerce security, initial cost, resistance by people and culture, lack of interest by management, lack of developed legal and regulatory system have been identified as barriers to adopt to e-commerce. Gareth, Afolayan & Plant (2014) found that there are positive relationships between ease of use and number of employees with e-commerce adoption vice versa and there is a negative relationship between benefits of use, sector of the organization and position of company in the supply among Nigerian SMEs.

Most of the Sri Lankan SMEs do not adopt to e-commerce and still they are using traditional ways to run their businesses (Kapurubandara & Lawson, 2006). Most of the earlier investigations carried out in Sri Lanka have focused on the critical success factors of e-

business SMEs. However, there are limited attempts to examine this issue from a barriers' perspective in Sri Lanka. There is a research gap in the Sri Lankan context on manufacturing sector SMEs and the adoption of e-commerce and very few research studies were done in Sri Lanka on the topic 'e-commerce'. This research study focuses on technological, organizational, environment and knowledge factors with a moderating variable of perceived risk factors.

1.1. Research Problem

Review of previous studies worldwide indicates several notable issues about the development of e-business development amongst SMEs. First, regardless of various e-business potentials, most SMEs do not fully realize the intended benefits (Jia, 2008). The benefits are mainly restricted to intra and inter-organizational communication efficiency while more strategic benefits such as market access and cost saving are relatively limited (Molla & Heeks, 2007). Such slow progress could be attributed to the unique barriers of the SMEs in terms of its nature of operation and managerial aspects (Parker & Castleman, 2007). Also, SMEs are facing typical resources constraint; particularly the lack of knowledge and technology experts (MacGregor & Vrazalic, 2006). The researcher also focuses on the manufacturing sector SMEs to carry out this study.

1.2. Research Objectives

- To identify the current scenario of e-commerce usage by manufacturing sector SMEs in Sri Lanka
- To determine the factors affecting the willingness to adopting to e-commerce by Manufacturing sector SMEs in Sri Lanka
- To propose recommendations for successful adaptations of e-commerce applications by manufacturing sector SMEs in Sri Lanka

2. Literature Review

In current world scenario, e-commerce is an emerging disruptive technology which uses the technology of telecommunication to help sellers and customers for their trade or transaction and generating a better relationship with consumers in the process of information exchange (Tan, Chong & Eze, 2010). The main components of e-commerce include website, e-mail, internet, extranet, LAN and wireless area network and voice over internet protocol (Drew, 2003). Zwass (1996) states that e-commerce on the internet goes beyond the simple act of buying and selling electronically; it involves a wide range of pre and post-sales activities such as advertising, maintaining business relationship and enhancing business communication.

SMEs are highly important to the economic growth of country as well as to the regional development, employment generation and poverty reduction. According to the National Policy frame work for Small Medium Enterprise Development of Ministry of Industry and Commerce (2014), SMEs are backbone of the economy and they account for more than 75% of total number of enterprises and provide 45% of the employment and contribute to 52% of Gross Domestic Production. To boost the SME sector in Sri Lanka, a number of Entrepreneurship Development Programs are conducted by governmental, non-governmental and private agencies.

Manufacturing industries are one of the main wealth producing sectors of economy and it employs a huge share of labor force and produces materials required by country's infrastructure and economy of other sectors. The percentage of manufacturing industry establishment in Colombo district for small and medium enterprise was 11% out of 25 district in Sri Lanka and persons engaged to the own business were 18.9% which is the highest percentage compared to other districts(Annual Survey of Industries, Department of Survey, 2016).

Moreover, MacGregor & Vrazalic (2005) found that despite exponential growth of e-commerce within SMEs, the rate of e-commerce adaptation by these businesses has remained relatively low. Ndyali(2013) identified technical barriers as the most important barriers to adopt e-commerce by Tanzania SMEs. Legal, regulatory barriers, lack of internet security and limited internet portals are highlighted as the most significant barriers in Tanzania to adopt to e-commerce by SMEs. Similarly, Iddris (2012) qualitative research study found that lack of right technical skills, e-commerce security, resistance by people and culture, initial cost, lack of developed legal and regulatory system and lack of interest management are most critical barriers faced by SMEs in Ghana.

The study conducted by Sri Lankan Business Development Centre in 2002 found that the major inhibiting factor to adoption of e-commerce by Sri Lankan SMEs are lack of awareness of benefits of e-commerce in business activities, poor English knowledge and IT capacity of SMEs, online businesses and marketing are currently not in practice and less accepted among SMEs and internet banking by SMEs are limited.

3. Research Methodology

3.1 Conceptual Framework

The researcher has developed the conceptual framework using technical-organization-environment (TOE) framework and additionally has used the knowledge characteristics to

establish the hypothesis for this study. Perceived risk acts as a mediating variable which explains the relationship between the independent variables of technical characteristics, organizational characteristics, environmental characteristics and knowledge characteristics and dependent variable of willingness to adopt to e-commerce (Kwadwo et al., 2016; Ahmad et al., 2015).

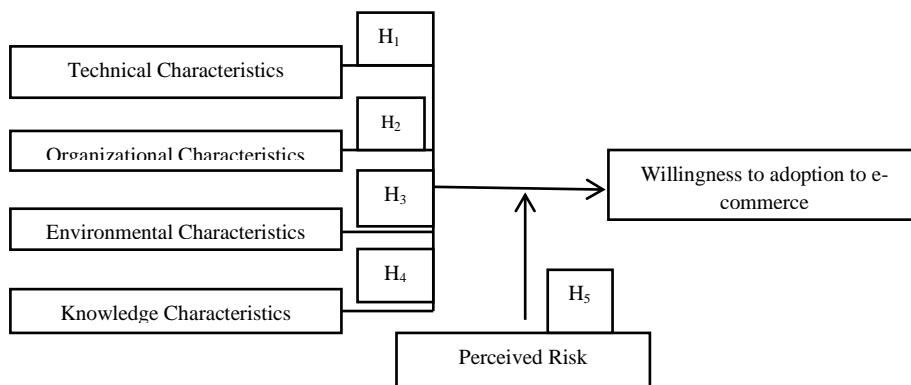


Figure 1: Conceptual Framework

3.2 Operationalization

As per the literature, Technical Characteristics were operationalized through cost, infrastructure and technology availability. Organizational Characteristics were operationalized through capital, culture of the organization and firm performance. Environmental Characteristics were operationalized through competitive pressure, government, market and partners/vendors. Knowledge Characteristics were operationalized through owners' IT experiences, owners' IT ability, IT executive members and employees of the firm. Perceived risk acts as a mediating variable and it was operationalized through privacy risk, service risk and function risk.

3.3 Research Hypothesis

Based on the conceptual framework and the objectives of the research, the researcher has identified hypotheses to analyze the relationship between barriers and adoption of e-commerce by Sri Lankan SMEs. Following hypothesis are developed;

H₁: There is a relationship between Technological Characteristics and Adoption of E-commerce by Sri Lankan SMEs.

H₂: There is a relationship between Organizational Characteristics and Adoption E-commerce by Sri Lankan SMEs.

H₃: There is a relationship between Environmental Characteristics and Adoption E-commerce by Sri Lankan SMEs.

H₄: There is a relationship between Knowledge Characteristics and Adoption E-commerce by Sri Lankan SMEs.

H₅: Perceived Risk moderates the relationship between barriers and willingness to adoption to the e-commerce.

3.4 Methodology

The population of this study is the owners who are running their own business having not more than 300 employees in Colombo District as highest number of SMEs in manufacturing sector falls into the Colombo district (Annual Survey of Industries, Final Report 2016, Department of Census and Statistics). The targeted sample size is 200 SMEs for this research study and random sampling technique was used. A questionnaire with five point Likert-scale from 5-strongly agree – 1-Strongly disagree was designed based on the conceptual framework for identifying e-commerce adoption barriers by manufacturing sector SMEs in Sri Lanka. The data was analyzed by using Statistical Package for the Social Sciences (SPSS) software.

4. Data Analysis

4.1 Descriptive Statistics Analysis

The results derived from the variables measured using Likert measurement scale, “Cost”-criterion in measuring technology characteristics shows the highest mean value of 4.0923 and standard deviation value of 0.15143. This implies that most of the responses are within 4.0923 ± 0.1514 (3.9409-4.2437 on Likert scale). The variable “Government”- criterion in measuring environmental characteristics also has highest mean value of 4.01 and standard deviation of 0.11, implying that the majority of respondents are within 3.9-4.12 on Likert scale. Further, the variable “Culture of Organization” - criterion in measuring organizational characteristics is having lowest mean value of 2.06 with standard deviation value of 0.19 which implies that the majority of responses are within 2.0602 ± 0.19619 (2.2564-1.8640 on Likert scale method). The independent variables “firm performance” (2.6932 ± 0.1346), “owners’ IT knowledge” (2.6962 ± 0.1377), “owners’ IT experiences” (2.6770 ± 0.0641) and “executives’ IT knowledge and experiences” (2.0637 ± 0.1837) have lowest mean values. The moderating variable “service risk” has lowest mean value of 2.0721 and standard deviation of 0.2162, which implies that most of the response rates are within 2.0721 ± 0.2162 .

4.2 Model Summary and ANOVA Table

Multiple correlation coefficient (R) is 0.376 using all predictors simultaneously. The R square is 0.141 which the equation explains is 14.1% of the total variance. The three-predictors cost, firm performance and executives' IT knowledge are statistically significant and account to 14.1% of the willingness to adopting e-commerce by SMEs.

The ANOVA table mentions the p-value as 0.154 which is greater than 0.05. Therefore, there is no statically significant difference between the group means. The highest beta coefficient of 0.301 implies that Partners/Vendors/Suppliers - criterion in measuring environmental characteristics is the most important significant variable. It is followed by cost (0.187), culture of the organization (0.185), government (0.144), technology availability (0.014) and competitive pressure (0.029) which have the highest values.

Table 1: ANOVA table

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	5.465	13	.420	1.255	.154 ^b
Residual	33.172	99	.335		
Total	38.637	112			

a. Dependent Variable: adoption of ecommerce

b. Predictors: (Constant), meanTC, meanEM, meanKOA, meanTTV, meanEP, meanKE, meanTI, meanOFP, meanOC, meanEG, meanECP, meanOCO, meanKOE

Cost is found as the next significant variable with beta value of 0.187 which is affecting the willingness to adopt to e-commerce by SMEs. This result agrees with the previous finding of Iddris (2012), Ndyali (2013), Rahayu and Day (2015) and H. Zaid (2012)

4.3 Hypothesis Test

Technological characteristics ($r=0.016$) and environmental characteristics ($r=0.025$) positively influence the willingness to adopt to e-commerce by SMEs while organizational characteristics ($r=-0.118$) and knowledge characteristics ($r=-0.196$) negatively influence the adoption of e-commerce. Technological characteristics and knowledge characteristics are only significant at 95% confidence level. The moderating variable perceived risk is having a negative relationship between dependent variable ($r=-0.097$).

Only hypothesis 1 was accepted while hypothesis 2, hypothesis 3, hypothesis 4 were rejected. Only one hypothesis is significant and others are not significant at 5% confidence interval level.

Table 2: Correlation values and significant values of constructs

Constructs	Correlation Value	Significant Value
Technological Characteristics	0.016	0.000
Organizational Characteristics	-0.118	0.109
Environmental Characteristics	0.025	0.097
Knowledge Characteristics	-0.196	0.020

4.4. Multiple Regression Analysis for Moderating Variables

Hypothesis 5 is expanded to as the Perceived Risk moderates the relationship between (*Technical, Organizational, Environmental and Knowledge characteristics,*) and willingness to adopt to e-commerce.

H₅: Perceived Risk moderates the relationship between Technical characteristics and willingness to adopting the e-commerce.

Table 3 mentions that the R square is changed with moderator which has generated from multiple regression analysis. There is a small R square change with moderator. With that there is no significant relationship between moderator and independent variable. This result shows Perceived risk is not moderating the relationship between technical characteristics and willingness to adopt to e-commerce.

Table 3: The Multiple Analysis Result of Moderating Variable and Technical characteristics

Model	R	R Square	Adjusted R Square	SRD Error of the estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig.F Change
1	.037 ^a	.001	-.017	.59163	.001	.076	2	108	.927
2	.040 ^b	.002	-.026	.59433	.000	.020	1	107	.888

a. Predictors: (Constant), meanperceiv, meantec

b. Predictors: (Constant), meanperceiv, meantec, moderator

H₆: Perceived Risk moderates the relationship between Organizational characteristics and willingness to adopting the e-commerce.

Table 4 mentions the R square change with moderator which has generated from multiple regression analysis in SPSS.

Table 4: The multiple analysis result of moderating variable and organizational characteristics

Model	R	R Square	Adjusted R Square	SRD Error of the estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig.F Change
1	.123 ^a	.015	-.003	.58758	.015	.824	2	108	.441
2	.138 ^b	.019	-.009	.58913	.004	.431	1	107	.513

a. Predictors: (Constant), meanorg, meanperceiv

R square value change from 0.015 to 0.004. However, perceived risk moderating the relationship between organizational characteristics and willingness to adopt to e-commerce by SMEs there is no significant relationship between moderator and independent variable.

H₇: Perceived Risk moderates the relationship between Environmental characteristics and willingness to adopting the e-commerce.

Table 5 mentions the R square change with moderator which has generated from multiple regression analysis in SPSS software. R square value changes from 0.001 to 0.024. The Perceived risk is moderating the relationship between Environmental characteristics and willingness to adopting to the e-commerce by SMEs. Thus, Perceived Risk moderates the relationship between Environmental characteristics and willingness to adopting the e-commerce with 0.1% confidence interval level.

Table 6 mentions the R square changes with moderator which has generated from multiple regression analysis in SPSS software. R square value changes from 0.047 to 0.023. The Perceived risk is moderating the relationship between knowledge characteristics and willingness to adapt to e-commerce by SMEs. Thus, Perceived Risk moderates the relationship between knowledge characteristics and willingness to adapt to e-commerce with 0.1% confidence interval level.

Table 5: The multiple analysis result of moderating variable and environmental characteristics

Model	R	R Square	Adjusted R Square	SRD Error of the estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig.F Change
1	.032 ^a	.001	-.017	.59175	.001	.054	2	108	.947
2	.157 ^b	.025	-.003	.58746	.024	2.581	1	107	.111

a. Predictors: (Constant), meanEnv, meanperceiv

b. Predictors: (Constant), meanEnv, meanperceiv, moderator3

Model Summary

H8: Perceived Risk moderates the relationship between Knowledge characteristics and willingness to adopting the e-commerce.

Table 6: The multiple analysis result of moderating variable and knowledge characteristics

Model	R	R Square	Adjusted R Square	SRD Error of the estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig.F Change
1	.216 ^a	.047	.029	.57810	.047	2.637	2	108	.076
2	.264 ^b	.070	.044	.57368	.023	2.669	1	107	.105

a. Predictors: (Constant), meanknow, meanperceiv

b. Predictors: (Constant), meanknow, meanperceiv, moderator4

The below Table 7 shows summarize results of Hypothesis test.

Table 7: Result of Hypothesis Test of Moderating variable

H ₅ : Perceived Risk moderates the relationship between Technical characteristics and willingness to adopting the e-commerce.	Rejected
H ₆ : Perceived Risk moderates the relationship between Organizational characteristics and willingness to adopting the e-commerce.	Rejected
H ₇ : Perceived Risk moderates the relationship between Environmental characteristics and willingness to adopting the e-commerce.	Accepted
H ₈ : Perceived Risk moderates the relationship between Knowledge characteristics and willingness to adopting the e-commerce.	Accepted

5. Results and Discussion

The first objective is achieved through the literature study. The previous literature emphasized that most of the Sri Lankan SMEs were adapted to telephone, fax, internet facilities in their business activities while fewer percentages of SMEs had websites, e-mails. Even though SMEs have internet facilities, only 10% of people use internet for their business purposes. The research article highlighted that Sri Lankan SMEs are not getting external support for improving credit card facilities, collaboration among SMEs, introducing suitable software for their business.

The second objective is achieved through the questionnaire survey among SMEs in the Colombo district. The researcher has found that there is a significant positive relationship between technical barriers and willingness to adapt to e-commerce. Similar results were found by Lawson, Alcock, Cooper, & Burgess (2003) among the manufacturing sector in Australia. Florunso et al., (2006) also found the same factors which affect Nigerian SMEs to adapt to e-commerce.

The researcher found that there is no any relationship between organizational characteristics and willingness to adopting to the e-commerce. This is similar to the findings of Rahayu & Day (2015); Gibbs & Kraemer (2004); Ahmad et al. (2015) and Kwadwo et al. (2016). Conversely, Van Huy, Rowe, Truex, & Huynh (2012) and Rabie (2013) mentioned in the research article that organizational characteristics are not affecting the e-commerce adoption by SMEs.

The third hypothesis implies that there is a relationship between the environmental characteristics and the adoption of e-commerce by SMEs and it is rejected. This result is agreed by Rahayu & Day (2015); Kwadwo et al., (2016), Van Huy et al. (2012) and Ahmad et al. (2015). This finding was opposed by Ndyali (2013) and Iddris (2012).

The fourth hypothesis implies that there is a relationship between the knowledge characteristics and adoption of e-commerce by SMEs and it is also rejected. This is similar to the results of Wymer & Regan (2005). Most of the research study results show that there is a positive relationship between knowledge characteristics and adoption of e-commerce.

The third objective was achieved through the multiple regression analysis for dependent variable towards independent variables and the moderating variable. The researcher has found that perceived risk is moderating the relationship between willingness to adapt to e-commerce and independent variables; environmental characteristics and knowledge characteristics. Benazić & Tanković (2016) mentioned that the role of perceived risk and cost

consequently affects the online purchase of the customers. Van Huy et al. (2012) found that perceived risk has a negative coefficient and inhibits the e-commerce adoption.

The final objective is to propose recommendations to create a successful business entity by SMEs. The researcher gives suggestions to the government to overcome from this type of risk faced by SMEs when implementing e-commerce and infrastructure development in their business entity. It is also needed to arrange awareness programs to SMEs regarding ICT, give guidelines for hardware and software, and introduce some legal support to SMEs in financial assistance, tax incentives and credit card facilities.

6. Conclusion

In the Sri Lankan context, a very few SMEs firms are already adopting e-commerce which has given them the improved presence in the international market, while most of the SMEs' firms are resisting the move to adopt e-commerce technology. The combination of literature study related to e-commerce, e-business and e-marketing that have been done in developing countries identified that Owner/Manager decision making is the most important factor for adopting e-commerce in SME sector. SMEs hardly agreed that adoption of e-commerce is essential in today's business and they are hindered because they are plagued with many constraints and some of which are specific only to developing countries like Sri Lanka.

Various factors have been identified as significant causes for adopting e-commerce by SMEs, which can be broadly classified into internal and external barriers. Internal barriers can be resolved by organization by itself, meanwhile external barriers need to be addressed by government or policymakers. In this study, the seventeen variables grouped into five groups namely technical characteristics, organizational characteristics, Environmental characteristics, knowledge characteristics and perceived risks were identified as determinant factors that influence Sri Lankan SMEs to adopt the e-commerce.

The data collection was done in Colombo district and the researcher has found through the visit to SMEs that e-commerce technology could be beneficial to their organizations' activities. The SMEs agreed that they are plagued with the barriers not only within the organization but also by external environment. Whether internal factors or external factors, they all slow down the process of adopting to e-commerce.

References

Ahmad, S. Z., Abu Bakar, A. R., Faziharudean, T. M., & Mohamad Zaki, K. A. (2015). An Empirical Study of Factors Affecting e-Commerce Adoption among Small- and

Medium-Sized Enterprises in a Developing Country: Evidence from Malaysia. *Information Technology for Development*, 21(4), 555–572.

Al-Hudhaif, S. A., & Alkubeyyer, A. (2011). E-Commerce Adoption Factors in Saudi Arabia. *International Journal of Business and Management*, 6(9), 122–133.

ALraja, M. N., & Aref, M. (2015). Customer acceptance of e-commerce: Integrating Perceived Risk with TAM. *International Journal of Applied Business and Economic Research*, 13(2), 913–921.

Beheshti, H. M., & Salehi-Sangari, E. (2007). The benefits of e-business adoption: An empirical study of Swedish SMEs. *Service Business*, 1(3), 233–245.

Benazić, D., & Tanković, A. Č. (2016). Impact of Perceived Risk and Perceived Cost on Trust in the Online Shopping Web Sites and Customer Repurchase Intention. *24th CROMAR Congress*, (October), 104–122.

Bhalekar, P., Ingle, S., & Pathak, K. (2014). The Study of e-Commerce. *Asian Journal of Computer Science And Information Technology*, 4(3), 25–27.

Gibbs, J. L., & Kraemer, K. L. (2004). A Cross-Country Investigation of the Determinants of Scope of E-commerce Use: An Institutional Approach. *Electronic Markets*, 14(2), 124–137.

Gunawardana, K. D. (2006). The Impact of Firm-Based Characteristics on Adoption of E-Commerce in SME in Sri Lanka. *SSRN Electronic Journal*, 1–19.

H. Zaied, A. N. (2012). Barriers to E-Commerce Adoption in Egyptian SMEs. *International Journal of Information Engineering and Electronic Business*, 4(3), 9–18.

Heale, R., & Twycross, A. (2015). Validity and reliability in quantitative research Paediatric Nurses' Pain Management Practices View project Pain Education View project Validity and reliability in quantitative studies, (January).

Iddris, F. (2012). Adoption of E-Commerce Solutions in Small and Medium-Sized Enterprises in Ghana. *European Journal of Business and Management*, 4(10), 2222–2839.

Ismail, N. A., & King, M. (2007). Factors influencing the alignment of accounting information systems in small and medium sized Malaysian manufacturing firms. *Journal of Information Systems and Small Business*, 1(1), 1–20.

- Jia, J. (2008). Electronic Commerce and Internationalisation in New Zealand SMEs Jia JIA A thesis submitted to Auckland University of Technology in partial fulfilment of the requirements for the degree of Master of Business Faculty of Business Primary Supervisor : Profes.
- Kapurubandara, M., & Lawson, R. (2009). Availability of E-commerce Support for SMEs in Developing Countries. *International Journal on Advances in ICT for Emerging Regions (ICTer)*, 1(1), 3–11.
- Kwadwo, M., Martinson, A., Evans, T., & Esther, A. (2016). Barriers to E-Commerce Adoption and Implementation Strategy: Empirical Review of Small and Medium-Sized Enterprises in Ghana. *British Journal of Economics, Management & Trade*, 13(1), 1–13.
- Lacka, E., Chan, H. K., & Yip, N. (2014). E-commerce platform acceptance: Suppliers, retailers, and consumers. *E-Commerce Platform Acceptance: Suppliers, Retailers, and Consumers*, 1–189.
- Lane, M., & Vyver, G. Van Der. (2004). An electronic commerce initiative in regional Sri Lanka: the vision for the central province electronic commerce portal. *The Electronic Journal of ...*, 1–18.
- Ling, T., & Guangwen, R. E. N. (2009). Research on the Perceived Risk of Consumer in E-business 2 The Analysis on the Perceived Risk of Consumer in E-business, 717–720.
- Mohamad, R., Building, A., & Ismail, N. A. (2010). Journal of Internet Banking and Commerce. *Journal of Internet Banking and Commerce*, 15(1), 1–11.
- Motjopolane, I. M., Peninsula, C., Town, C., & Africa, S. (2007). Electronic Commerce Adoption Approaches by SMMEs Western Cape , South Africa, 3–4.
- Nawaz, S. S., Rashida, M. F., & Gunapalan, S. (2015). Small and Medium Entrepreneurs ' Perspective on E-Commerce in Eastern Province of Sri Lanka, 5(6), 7–15.
- Ogechukwu, O. L. (2009). The Impact of Economic Liberalisation on Small and Medium Sized Enterprises in Nigeria, 12(1), 11–48.
- Ritter, J. B. (1992). Defining International Electronic Commerce Electronic Commerce. *Northwestern Journal of International Law and Business*, 13(1), 1–29.

- Saif-Ur-Rehman, & Alam, R. (2016). A Study of Barriers to E-Commerce Adoption among SMEs in Malaysia. *Gulf-Pacific Journal of Business Administration*, 1(February), 2–5.
- Saunders, M., Lewis, P., & Thornhill, A. (n.d.). *Saunders et al 2007 - Research Methods for Business Students__5th Edition*.
- Taherdoost, H. (2016). Validity and Reliability of the Research Instrument; How to Test the Validation of a Questionnaire/Survey in a Research. *SSRN Electronic Journal*, (January 2016).
- Victoria, A., In, P., Fulfillment, P., The, O. F., For, R., Award, T. H. E., ... Business, O. F. (2014). E-Commerce Adoption Among Small and Micro, (October).
- Weerasinghe R N, & Jayawardane, A. K. W. (2015). Innovation and Absorptive Capacity: An Empirical Study of Manufacturing SMEs in the Western Province of Sri Lanka. *Journal of Small Business and Entrepreneurship Development*, 3(1), 76–84.

