

Information Technology Factors Influence the Adoption to Ecommerce in Small and Medium Scale Organizations in Sri Lanka: A Research Agenda

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Abstract: Improvement of advance communication technologies and changes of business environments have resulted in as increasing demand for Information Technology (IT) products to be used in businesses today. But unfortunately, the Small and Medium Scale Businesses (SMEs) are not using those technologies effectively and not gain the competitive advantage over competitors. Although prior studies proposed many models and frameworks to understand the barrier to use advance communication technologies, the practicability remain a concern. Furthermore, those frameworks mainly discussing common general barriers and take technology as a barrier among other factors. This study provided critical review of those available frameworks and construct a new one focusing on IT factors. A research model along with its theoretical and managerial implications is presented. Besides proposing a methodology for future studies, this study also serves to guide practitioners to decide on the key factors to consider when assessing the IT factors effecting the adoption to e-commerce based e-business technologies.

Key words: Information technology, e-commerce, security, know-how, organization performance.

1. Introduction

Small and Medium Scale Enterprises are known as the backbone of the both developed and developing nation's economy [1]. Therefore, it represent a major part of the world economy and play a vital role in both developed and developing counties [2]. SMEs compose of large portion of both developed and developing countries' economies.

Sri Lankan economy is significantly affected by performance of SMEs with its high contribution in many different economic perspectives [3], [4]. But during last few decades contribution from SMEs has not contributed as expected in Sri Lanka as a developing nation. Further Sri Lankan SMEs were not able to expand the businesses and increase the competitiveness with limited access to global information systems though formal sources. This low SME performance business development and entrepreneurship negatively affected to the SME development [5].

According to [1], [6]-[10] one of the common barriers for SME development is lack of using information and communication technologies. This is more critical when local organizations make difficulties to adopt to advance communication technologies with the respective industry. Adoption of Electronic Commerce (E-commerce) significantly improves the SME performance but in the literature, it has identified that due to

many technical barriers are there for the adoption [2]. In this research basically identifying the Information Technology factors influencing the adoption of E-commerce towards the organizational performance in SMEs in Sri Lanka. Further SMEs simulate other economic activities[1]. Therefore, researching those barriers and develop a mechanism to overcome would be a great contribution to economic development.

Among different technological implementations used in business, E-commerce is a powerful concept and process that has fundamentally changed the current human life [8]. According to [11] adoption to E-commerce has many positives for organization performance. There are many different definitions on e-commerce and all those definitions in common discussing the sales and purchase of goods and services through digital infrastructure or called as computer mediated networks. According to [12] as the world 2nd largest economy is the world china playing in vital role in world economy since 2008 world economic crisis. Their using E-commerce as significant solution for developing many different areas including, international economy, global cooperation, energy transfer, promote education, promote health, improving employment and etc. [13].

According to [14] analyzed basic information technology factors effecting to the adoption of e-commerce in Small and medium scale organizations in Sri Lanka. Those are technology perspective, technology know how and information and network security. In this research mainly develop and framework to analyze the Information Technology factors influencing the adoption to E-commerce.

2. Theories and Sources of Ecommerce Adoption in SMEs

Following theoretical models have been used in number of studies focus on information system adoptions and innovations. E-commerce is a considered as innovation technology and those models can be applied to this study [3]. In the following section in depth discussion of theories will be presented.

Diffusion of Innovation (DOI) model is introduce by Everett M. Rogers in 1983 and still one of the popular models to investigation of user behavior in new technology adoption. This model is one of the broad psychological and sociological theory used to describe patters of adoption of an individual in the organizational context [15]. Further this model is used to predict how an invention of new technology will be successful. As this study focus on SMEs which are commonly managed by the individuals with power untimely make innovation decision like adopting new technologies[16]. In this study variable 01 knowledge will be taken as technology know-how and will be tested how it get effected to technology adoption.

Technology Acceptance Model (TAM) is one of those popular models introduced by Fred Davis about quarter century ago in 1986. Which investigating the factors affecting the user's acceptance of technology? The theory of reasoned action (TRA), along with the Theory of Planned Behavior (TPB), represents the origins of TAM [17]. The goal of TAM is to provide and explanation to the determinants of computer acceptance. This gives broad explanation of user behavior of end user computer technologies and user populations. Therefore, the main purpose of TAM is providing basis for tracing the impact on external factors on internal belief, attitudes and intentions [18]. A study[19] conducted with a goal to present research is to extend TAM to include additional key determinants of TAM's perceived usefulness and usage intention constructs, and to understand how the effects of these determinants change with increasing user experience over time with the target system. By using 4 different systems and it is a longitudinal study and it is done at 3 different times in the time domain. The results strongly supported for extended version and then the model is called as TAM2. In this research study focus on TAM and perceived usefulness and perceived ease of use will be considered and tested under technology perspective as relative advantage and simplicity. Therefore, in this research relative advantage and simplicity will be used tested by adding to the theoretical framework.

According to [20] compared and tested eight variables in eight different models of use's acceptance and

proposed a model called Unified Theory of Acceptance and Use of Technology (UTAUT). The studies done with following models: Theory of Reasoned Actions (TRA), Technology Acceptance Model (with TAM2), Theory of Planned Behavior (TPB), Combined TAM and TPB, Model for PC utilization, Innovation Diffusion Theory and Social Cognitive theory. UTAUT model is used repeatedly in E-commerce adoption in SMEs in many different research studies.

Therefore, it is evident that TAM and UTAUT models used to find the factors influencing technology acceptance. With further research studies [21] proposed an extension to UTAUT, and called as UTAUT2. UTAUT2 is fused with 3 key constructs. Hedonic motivation, price value and habit also effect the behavioral intention. As moderators they used gender, age and experience. In UTAUT2 improvement of behavioral intention to adoption is identified significantly. A study done with UTAUT2 model to analyze the mobile payment adoption found that this is most appropriate for mobile payments, mobile banking and mobile commerce. The main reasons behind the success of it for above mentioned applications is UTAUT2 extended by UTAUT with self-efficacy, innovativeness, trialability, perceived risk and trust[22]. Therefore, this model is subjective to the model and cannot be directly applied to any given subject without constrains. However, in this research study part of the UTAUT model will be evaluated while adding subjective independent variables to the framework. Perceived benefits will be evaluated in this research study under the variable called relative advantage. With UTAUT2 added with trust but it will be discussed under information and network security variable.

Technology Organization Environmental (TOE) Model, Tornatzky and Fleischer's "The Processes of Technological Innovation" book in 1990 introduced the technology-organization-environment framework. This model describes the entire process of innovation starting from engineers and entrepreneurs to the adoption and implementation of those innovations at the user level. This framework is used at the organizational level influence on the adoption. It explains three (3) different elements. Those are Technology, Organization, Environment[23]. TOE is one of the best frameworks to use in technology adoption among theories discussed above paragraphs and TOE is widely used framework for E-commerce adoption in both SMEs and Larger organizations[24]. Further TOE is heavily used in Customer Relationship Management studies [25], [26] and in Electronic Data Interchange studies in SMEs [27]. As this study focus on technology adoption and considering only the factors in information technology organizational and environmental factors discussed in the TOE model will be idle in the study and focus only on technology factor.

The Resource Based View (RBV) theory is based on the economic rent concept. Further it considers main categories: Financial, Buildings, equipment and technology. This basically discuss the fundamental source and drivers of competitive advantage to organizations[28].

3. Proposed Source for IT Factors Including the Adoption to Ecommerce

Prior studies proposed different testable frameworks to analyze the factors effecting to the adoption of E-commerce and how it is affected to improve business performance [29]-[33]. Although those frameworks discuss the factors in general but discussing information technology factors are rare. The available litterer focusses on Information Technology as a barrier and not explained it in detail.

According to [14] Information Technology factors can be affected heavily in E-commerce adoption and it can be explained in main three different dimensions.

3.1. Technology Perspective

Technology perspective can be explained as users view of the technology in terms of relative advantage of adoption and using technology [34]-[36], Compatibility as the ease of adopting to new technologies and compatibility among existing technologies in the organization [24], [36]. Finally, simplicity of adoption and

ease of use of the technology adopted [37], [38]. Having knowledge in innovative perspective and advantages of using technologies in business finally able to boost the business via getting cost advantages and innovation [39]. Therefore, technology perspective has positive influence in e-commerce like technology adoption and finally organizational performance. Having these concerns from literature main hypothesis can be developed as Technology perspective has significant effect on E-commerce adoption in SMEs in Sri Lanka.

Further it can be developed:

H1a: Relative advantage of Information Technology effects e-commerce adoption in SMEs in Sri Lanka.

H1b: Compatibility effects E-commerce adoption in SMEs in Sri Lanka.

H1c: Simplicity effects E-commerce adoption in SMEs in Sri Lanka.

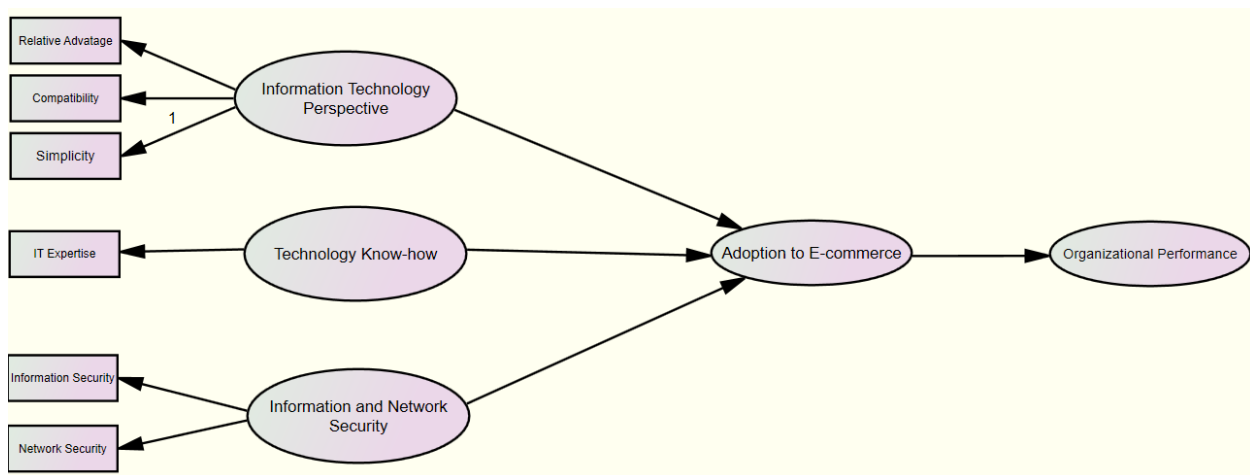


Fig. 1. Theoretical framework.

3.2. IT Know How

IT know-how or expertise is one of the direct influences in E-commerce adoption (Kuruwitaarachchi 2018) adoption. Without having IT expertise organizations may unaware of net technologies and may not like to take the risk of adoption[40]. Further owner’s IT know-how and ability is also determine the adoption to E-commerce [24].Therefore maintain knowledge and skill inside the organization is significant for e-commerce like technology adoption. Having these concerns from literature main hypothesis can be developed

H2a: There is a relationship between Information Technology know-how and E-commerce adoption.

3.3. Information and Network Security

Security is an important component for financial health of every organization. Applications like E-commerce required mission-critical networks that accommodate all different types of information formats (Voice, Video, Data). Scalability of network also a required characteristic of this application [41]. According to [8] is identified as a barrier to e-commerce setup. According to [42] security is a broader context of internet-based E-commerce systems. Which included with confidentiality, authentication, message integrity, privacy. This is more and more concerned in web transaction payments. Using different techniques like cryptography, encryption researchers tries to protect information from above issue but still the lack of identical concerns it has inhibits the E-commerce adoption. According to [10] security is one of the latest issues in E-commerce adoption in SMEs. In a study done in online shopping and E-commerce in developing countries found that security is affect the confidence in e-commerce [43]. Need of security is

explained in terms of carried out the business with privacy, correctly and timely [44]. According to [45] success or failure of e-commerce based businesses are depends on security and privacy issues. Therefore, there is a considerable effect from security in terms of Information and Network Security to e-commerce adoption. Hence, hypothesis can be developed as Information and Network Security has significant effect on E-commerce adoption in SMEs in Sri Lanka.

H3a: Information security has positive influence of e-commerce adoption.

H3b: Network security ha a positive influence on e-commerce adoption.

After analyzing different aspects of adopting to e-commerce in SME, most significant effacing factors were identified as mentioned in above tables and summary tables for effecting factors are shown in Table 1.

Table 1. Summary of Influencing Factors

Constructs	Measurement Items	Source
Information Technology perspective	Relative Advantage	[2], [33]-[36]
	Compatibility	[2], [24], [29], [36], [46]
	Simplicity	[3], [37], [38].
Information Technology Know-how	Know-how	[24], [36], [40], [44], [47]-]52]
Information and Network Security	Information and Network Security	[10], [43], [53]-[56]

4. Information Technology Governance

As the result expectation of organizational performance via adopting to new technologies, further studies were conducted to analyze how organizations improve performance. According to [49], [57]-[59] it can be analysed the performance moderated via Information technology governance. IT governance effect to EC adoption towards organizational performance [60]. Therefore, it is added to the framework and testing the hypothesis.

H4a: Information technology governance moderate the relationship between E-commerce adoption and organizational performance.

5. Conclusion and Future Research Directions

The adoption to e-commerce and related technologies improve the SME performance. The identification of the E-commerce adoption influencing factors in fact become a major area of study in SME strategy and management. The SME sector there is no exception where growing demands for their products across the world require this sector to be continuously competitive. Hence, there is a need for the sector and its firms to respond to environmental changes through the identification of sources of competitive advantage. Further from many SME industries the influence to the giant industries is relatively significant. As a contribution to the area of study, above mentioned contracts can be tested through a pilot test and provide insight in to researched to come up with a plan to get rid of information technology barriers in implementing the e-commerce solution in business.

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