

Model for Electronic Commerce Adoption for Small and Medium Sized Enterprises

Fatima Ajmal and Norizan Mohd Yasin

Abstract—Electronic commerce (E-commerce) plays an important role in growth of Small and medium-sized enterprises (SMEs) as it allow them compete efficiently in both domestic and international markets. This paper aim to develop a conceptual model based on factors that affect the Business-to-Consumer (B2C) e-commerce success. The factors are identified by looking at past 20 year research conducted in this topic area. This model will assist SMEs who currently considering or conducting business using e-commerce. The model consists of seven main factors that fall under internal and external business environment effecting e-commerce success in SMEs. Each factor examines in detail and explains how it will allow business to integrate e-commerce in their businesses.

Index Terms—Electronic commerce, success factors, adoption Model, SMEs.

I. INTRODUCTION

Electronic commerce (E-commerce) is the process of buying selling or exchanging product, services and information using computer networks including internet [1]. The globalization of internet and World Wide Web (WWW) has driven e-commerce to be one of the most effective media for sharing information. It also has revolution effects on business as it allows sharing of information between business partners and within organizations. According to Forrester Research, 2000; it was estimated that by the end of year 2004, the value of worldwide e-commerce will reach US dollar \$6.8 trillion and Electronic commerce revenue for Asia Pacific region will be of US \$992 billion [2].

Tetteh, Burn [3] define SMEs as a firm with less than 500 employees. These are further broken down into the micro-firm with less than 5 employees; small companies those from 5 to 20 employees and medium those are between 20-500 employees. E-commerce has provided a tremendous amount of benefits to Small and Medium-sized enterprise (SMEs), as e-commerce continues to evolve it has provided a number of research opportunities for Information System (IS) community. E-commerce not only helps large business to increase their visibility and increase their profit; it also helps small and medium-sized enterprises in achieving all those benefits. In this economic period of time, SMEs are contributing in economic growth, social structure, employment, as well as regional and local development; consequently, they have become an important sector of economy [4].

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Authors are with the Information System Department, Faculty of Computer Science and Information Technology, University of Malaya, Kuala Lumpur, Malaysia (email: fatima_ajmal@siswa.um.edu.my; norizan@um.edu.my).

Despite these benefits, the actual adoption of e-commerce in SMEs is limited. Therefore, this paper helps to deal with the issue and going from previous studies will come up with model that will allow SMEs to integrate e-commerce in their businesses. This paper will first present the research objective and question in the next section followed by the literature review that is used to develop the research model. The factors for e-commerce success in the model will be presented with its explanation. The paper will conclude with conclusion and acknowledgement.

II. RESEARCH OBJECTIVES

With rapidly growing small business needs and changing business environment there is a need to imply internet, especially for SMEs who want to grow their business and compete in market. Since the emergence of the internet it has allowed SMEs to compete efficiently and effectively in both domestic and international market [5]. The adoption of e-commerce technologies is important for the ongoing survival of SMEs. The e-commerce stripped many of competitive advantages from large firms and provides opportunity to SMEs by providing a cost effective ways to market and promote their business, improve communication and information flow with their customer, introduce new products on market and identify potential partner/suppliers. E-commerce allows SMEs to have the advantage of built-in flexibility, fast decision making, low cost structure, maintenance, and fully dedicated customer service.

The paper will look into factors that affect e-commerce success in SMEs. It provides overview of different success criteria and presents the model that can be used to evaluate e-commerce success. The primary research question this paper trying to seek answer is: What are internal and external success factors that affect success of Business-to-consumer (B2C) e-commerce in SMEs.

III. LITERATURE REVIEW

A. Critical Success Factor of E-commerce

The concept of critical success factors was first presented by D. Ronald Daniel in the 1960s. It was later used by John F. Rockart of MIT's to built and popularize the idea to help the mangers in order to define the key information needed by top level management. [6]. He also concluded his idea of CSF as: "areas of activity that should receive constant and careful attention from management".

There are various studies that had been done looking at success factors, issues and requirements for e-commerce. Huff et al. [7] discuss the critical success for e-commerce in term of Add value, focus on the niche then expand, maintain flexibility, segment geographically, get the technology right,

manage critical perception, provide exceptional service and create effective connectedness and understand internet culture. Turban et al [1], define eight critical success factors for SME in order for them to be successful in e-commerce that include product is critical, payment methods must be flexible, e-payment method must be secure, capital investment should be kept at minimum, Inventory control is crucial, Logistical services must be quick and reliable, High visibility on the Internet. Businesses such as click and mortar and virtual businesses are the one mostly succeeded on the internet; they have following strategies in common as shown above.

Six critical success factors mention by Dubrin [8] include are to develop a call centre to allow for the human touch, keep customers informed about order progress, constantly monitor and update the e-business system, mix bricks and clicks, develop a global presence, protect customer against fraud. According to Fox, 2001[9], critical success factors in e-commerce service are targeting the right clients, examining the client relationship from the client's perspectives, streamlining business processes, letting clients help themselves, owning the clients total experience (one-stop shopping), stop shopping), adding value by assisting clients with their jobs, personalizing services to your clients, developing a community that your clients are proud part.

Dholakia, Kshetri [10], discuss the importance of internal and external organization factors that can impact usage of internet among SMEs. The internal factors include if firm size, self-efficiency, past experiences with related technologies and past use of marketing media. The external factors whereas only compromise of the perceived competitive pressure. Molla and Licker [11] has presented the extension of Delone and Mclean [12] model of IS success to e-commerce success. Customer e-commerce satisfaction is proposed as a dependent variable to e-commerce success and its relationship with e-commerce system quality, content quality, use, trust and support are defined and discussed [11].

B. E-commerce for SMEs

SMEs are not scaled-down version of large companies as they possess the characteristic is that distinguish them from larger cooperation. SMEs vary across different countries and cultures, and they are multi-tasks, independent and cash limits as well as based on informality and personal relationship. Additionally, SMEs manage by actively by owners, highly personalize, largely localize within their areas of operation and are largely dependent on internal sources of financial growth [13, 14]

In the past, SMEs are been restricted from participating in the technology revolutionary because of cost and personnel limitation. In the present time and environment, the cost of evolving technology is far less small than with the past changes since most SMEs already have IT infrastructure. SMEs have noted toward adoption of innovation and opportunities more quickly than larger firms [15]. Recent

studies show that more and more SMEs moving toward new internet-based technologies [16].

It is believed that recent emergence of e-commerce in the early 90s could provide different opportunities to SMEs in overcoming their technological, organization, environmental and managerial inadequacies. However, SMEs on the other hand, according to recent research is slow in uptake and use of e-commerce [17]. While most of the firms have internet presence in form of corporate website, but only few used to conduct a transaction with customers and supplier [10] [18] [19]. Early adopter of e-commerce found that customer has been slow to accept e-commerce. Therefore, with few expectations, benefits of early adopter not recognize. Even when benefits are generally available for the e-commerce adopters, few adopt e-commerce early while others take longer time [19].

According to the United States (U.S.) department of commerce, almost half of the U.S. workforce will be employed by the industries that are both major producers and intensive users of IT products and services by 2006. Internet-related jobs grew 29% between the first quarter of 1999 and the first quarter of 2000 compared to 6.9% growth of non-internet-related job during the same period of time. The internet economy generated an estimated US\$830 billion in revenue in 2000, a 58% increase over 1999. The number of U.S. firms engaging in E-commerce has increased from just under 8% in 1999 to over 35% by the end of 2000 [17].

SMEs are interested in e-commerce because it can help them to improve their business process, reduce cost, globalization and achieve close relationship with their clients. E-commerce is defined as a conducting business activity using the website on the Internet [20]. As e-commerce is defined by OCED is all business occurring over network using Transmission Control Protocol/Internet Protocol (TCP/IP) and business is defined as activity that may not result in transaction but can have an important economic impact on cost and customer satisfaction [21]. According to Neergard [22], the four major reasons for accepting IT especially e-commerce in SMEs is as follows 1) it increases input, 2) It improves services to customer and 3) It simplifies the work process and 4) its keeps records.

IV. PROPOSED MODEL

A comprehensive review of literature from last 20 year starting from 1991 to 2011 has done to develop the proposed model of e-commerce adoption in SMEs. The proposed model consists of factors from relevant researches that divided into internal and external factors affecting e-commerce success in SMEs. The proposed model is shown in Fig 1. First Level of a model consists of seven levels within heading of internal and external factors that further divided into sub-factors at second level shown in Table I.

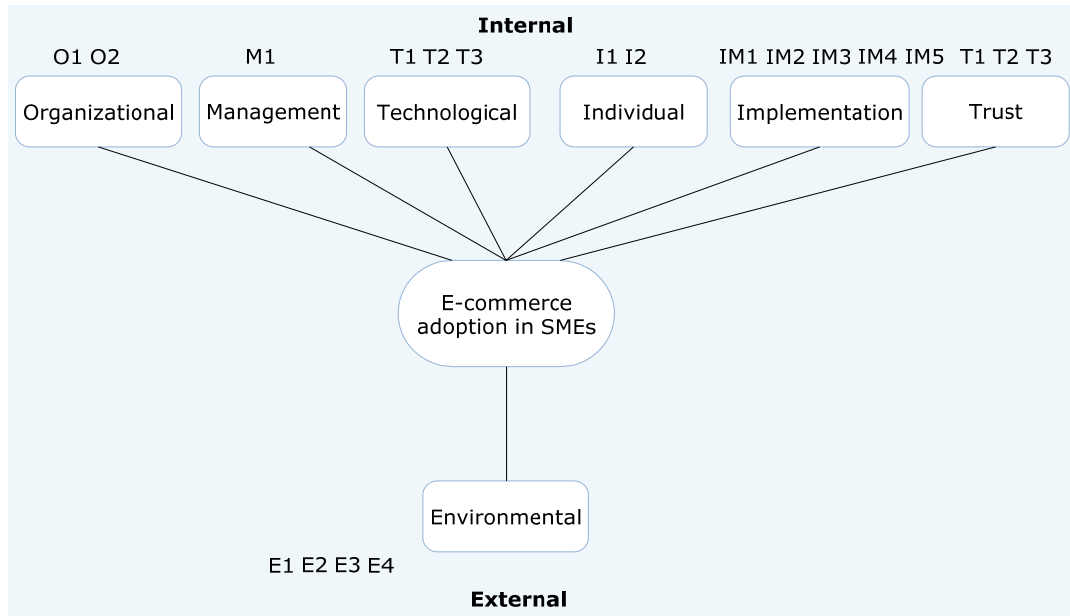


Fig. 1. Proposed model for assessing e-commerce success in SMEs.

TABLE I: SUCCESS FACTORS FOR SMEs.

Organizational	Management	Technological	Individual	Implementation	Environmental	Trust
(O1) Enterprise resources (O2) Firm size	(M1)Resources commitment (international web use) (M2) good Project Management team	(T1) Technical infrastructure (T2) Business infrastructure (T3) Communication	(I1) IT Skill & Expertise (I2) Education & awareness ()	(IM1) Product & services (IM2) Delivery & payment (IM3) Usefulness (IM4) Ease of use IM5 Customer-Service / Client interface	(E1) Government Support (E2) Industry (E3) National (E4) Competitive pressure	(T1) Security (T2) Privacy (T3) Loyalty

A. Organizational

Organization factors also known as firm internal factors, in general represented by size, quality of Information System, Management support and resources of enterprise [23]. According to [19, 23, 24] the firm size greatly influence the firm decision toward adoption of e-commerce and few businesses things they are too small to adopt e-commerce in their companies. The same goes for enterprise resources as small business tend to believe they do not have enough resources to support the e-commerce implementation in the company. Enterprise resources consist of human, financial and technology (computer, telephone lines, cable etc) [23, 25, 26]. The organization some time feels that it will be irrelevant for business and will cost too much to implement and the cost will increase with time to maintain the system.

B. Management

The support and enthusiasm of management is very important for SMEs in successful adoption of e-commerce. Poon and Swatman [5] and [23] found that manager or CEO’s innovativeness and IT knowledge has positive effect toward adoption of e-commerce. Individual characteristics

such as age, education, experience, and physiological traits of CEO are essential part toward adoption of internet technology in SMEs. International web use consist of language, feature should follow the according to rules, regulation and culture that can’t be offensive to any web user.

C. Technological

Technological components involve of the various internet technologies such as COBRA, software agents, mobile agents and mark-up languages such as HTML, XML, HTML and programming language like java, ASP and web development tools such dream viewer, Photoshop, multimedia etc. Network Technology that is lower level include TCP/IP is a protocol that is used to create and transfer information packet across the internet, HTTP that is set of rules for transferring files over internet, and POP, SMTP, IMAP that manages emails and network management issues like quality of service (QOS). Support systems include decisions support system and distributed application and algorithm/methodology that assist, enhance or improve EC application [27].

A good infrastructure creates economy value for SMEs and also reduces operating costs [28]. There are several

studies have been done looking at basic infrastructure requirements for e-commerce in small business. According to Jennex and Amoroso, [29] have done the research on e-commerce infrastructure success factors for small companies in developing economies and find out there are five success factors people factors, technical infrastructure client interface, business infrastructure and regulatory interface. Alternative models for organization infrastructure have been proposed by Zwass [30] and Kampas [31] describe framework for the internet into three main levels that are Infrastructure, Services and Product and services.

- Infrastructure: The hardware, software, database and telecommunications.
- Services: Software-based services such as search engines, digital money and security systems.
- Products and services: the websites of individual companies and market places.

D. Individual

People consider most important part toward adoption of e-commerce in SMEs. The individual factors consist of customer, staff, and management of business as they are the one greatly affected by the adoption of e-commerce. The education and awareness of these people consider being most important, before and after implementation of e-commerce. Many organization delay the adoption of e-commerce because lack of internal enterprise [24]. Therefore education and awareness along with IT skill and expertise is necessary for any organization toward adoption of e-commerce as implementation of new techniques may need change employees work attitude, qualification, performance, knowledge of e-commerce. If employees already know about the e-commerce, the organization will be more disposed to adopt e-commerce [25].

E. Implementation

There is a need of good functioning website as key to successful business is professional website that can target niche market and attract the right customer to company products and services. There are several things that are needed to consider when developing website e.g. website should be attractive with easy to use features, with right amount of graphic and text (size, color, background) and, appropriate/clear information on product and services, less website download time. Customers can able to register and communicate with business to order product and services and can pay from credit card or other payment system all from website. There also need to have forum on website that can be fill-up by customers to perform these functions or can able to send e-mails.

F. Environmental

Competitive pressure has positive influence toward adoption of technologies [10]. As more and more firm using internet for marketing and customer service will impact the competitive and accelerate the SMEs toward adoption of e-commerce. Government support is necessary toward adoption of e-commerce as government can simplify rules and regulation; provide technical infrastructural toward adoption of e-commerce in SMEs. Level of government support and infrastructural vary from country to country together with the culture. Cultural differences that exist

between different countries may affect the organization ability to utilise and adopt e-commerce. [32]

G. Trust

One of the most severe restraining factors for proliferation of e-commerce is lacked of trust between customers and sellers, consumer privacy concerns and the lack of security measure requires to assure both business and customer that their business relationship and transaction will be carried out in privacy, correctly and timely [33]. Trust is defined by Grandison and Sloman [34] as the firm believes in the competence of an entity to act dependably, securely and reliably within a specified context (assuming dependability covers reliability and timeliness). Similarly, they defined as distrust as "the lack of firm belief in the competence of an entity to act dependably, securely and reliably within a specific context.

Beside quality of the site and its contents; e-commerce use and satisfaction could be affected by customer disposition toward security and privacy issues [11]. Customer trust on website use and its product & services is important for successful e-commerce system. E-loyalty is economic and competitive necessity as acquiring new customer is extremely expensive and unless those customers sticks around and make a lot of purchases over the year profits will remain elusive [35].

V. CONCLUSION

E-commerce is still new area therefore there is not many model, framework to assess the success to it in SMEs. This paper looks into the literature to develop the model that evaluates the success of B2C e-commerce in SMEs. The model consists of factors that can be used by SMEs to evaluate the success of e-commerce. This model will be proven of interest and value practicing manager, SMEs owners and those who are seeing to adopt and implement e-commerce strategies. Further research will be done for validating and empirically testing the model. On further note the model will implemented in various SMEs to calculate the success of factors and its sub-factors. Based on the analyses and opinion of those SMEs the model will be further modified.

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