

A Study On Barriers Of E-Commerce Adoption In Small Enterprises Of Assam

Manoj Khaund^{1*}, Dr. Bimal Deb Nath²

Abstract

The small business sector has been very dynamic and active in developing economies over the past decades. Small enterprises develop and industrialise rural and backward areas and provide employment opportunities for the rural population with low capital expenditure contributing to the country's socio-economic development. Small enterprises have characteristics that differ from large firms in that they are multitasking and independent in nature and vary across countries and cultures. The competitive nature of business requires that organisations, especially small enterprises, develop and sustain any potential competitive advantage. Increasingly, this requires that information technology (IT) tools help transform not just electronic transactions but internal systems and build customer relationships. E-commerce provides these benefits to businesses, improving efficiency and increasing revenue. It helps business by reducing costs, increasing market potential and providing new business opportunities. Despite this, e-commerce benefits are not realised in many developing countries due to low adoption rates. The rate of adoption of e-commerce by small enterprises is much slower than that of large organisations. This is mainly due to various constraints that small enterprises face in their operations. In the case of small enterprises, it is generally found that adoption of e-commerce is less focused due to these barriers. As such, the paper aims to examine the main barriers to e-commerce adoption faced by these small enterprises.

Keywords: Small enterprises, barriers, adoption, e-commerce

Background:

Small business sector is a very vibrant and active sector over last decades in developing economies. Small enterprises not only design and industrialise rural and backward areas but also provide employment opportunities for rural populations with low capital cost, contributing to the country's socio-economic development. Small enterprises hold characteristic that is different from large firms and are multitasking and independent in nature and varies with countries and cultures. Small enterprises are mostly managed by active owners, who are highly personalised and their area of operations is local, with high dependency on internal financial growth (Perrini, Russo and Tencati, 2007; Hanim and Taha, 2010).

Despite this, E-Commerce benefits are not realised due to low adoption rates in many developing countries. The rates of adoption of E-Commerce by Small enterprises in comparison with the large organisations are very slow. In case of small enterprises, usually it is seen that the focus of ECommerce adoption is based on three aspects such as barriers, customer segmentation and ECommerce acceptance modelling (Iglesias et. al, 2013) and to a certain extent adoption of E-Commerce is also limited by resources and technological capabilities (Thong, 2001). However, in spite of the resource constraints, the less complex structures of smaller organisations make them further flexible and easier to fit with the ECommerce application. The adoption of E-Commerce among Small enterprises in India has begun to recognise the potential of E-Commerce and understand

^{1*}Research Scholar, Dept. of Management, NEHU. Email: manojkhaund@yahoo.com

²Assistant Professor, Dept. of Management, NEHU. Email: bimal.dn@gmail.com

that the adoption could play a major role in enabling growth for their business, both in domestic and international markets. However, many small enterprises in India are unaware of the potential benefits of E-Commerce primarily due to Lack of exposure to IT products and services and the E-Commerce ecosystem as a whole. Therefore, adopting e-commerce in small enterprises remains a vital area of research in information technology study.

Assam, the largest state in North-East India, is much ahead of other states of the North Eastern Region in terms of number of small enterprises. Assam is endowed with rich mineral, forest and agricultural resources. Much of this region's wealth lies untapped yet, and these could provide a solid base for industrial development. Despite enormous latent potentialities for setting up various resource-based enterprises, there has been no significant progress in these areas. There are many small enterprises in Assam which need more notice as they play very important roles towards the development of the region as well as the nation. It is an appropriate time for these small enterprises to adopt Internet and E-Commerce considering the competitive nature of business (Bernadas and Verville, 2005)

However, the slow rate of e-commerce adoption among small enterprises and the factors influencing its successful adoption is a major source of concern (Nath and Shillong, 2013; Bortamuli and Goswami, 2015). Earlier it has been shown by various studies that the adoption rate of e-commerce among small enterprises is low, especially in India. This slow adoption of e-commerce technology has been widely documented and researched, with results showing that small enterprises face barriers or obstacles that prevent them from implementing and fully realising the benefits of e-commerce. The literature also points out that small enterprises in developing countries have generally not harnessed the power of the Internet to expand their business beyond traditional borders (Molla and Liker, 2005) except through the use of simple technologies such as electronic mail. Some of the reasons given include cost of acquiring and operating information and communication technology (ICT), lack of ICT and e-commerce knowledge, low level of owner/manager literacy, inability to understand e-commerce benefits, unfriendly regulatory policy and requirements. Dependence on cultural issues and customer or supplier preferences. The pilot study also revealed that very few enterprises have adopted e-commerce technology to directly access world markets and get the best value for their products.

This provides scope for a study, therefore contemplated to explore the various barriers to e-commerce adoption decisions of small enterprises in Assam.

Review of Literature:

Relevant studies pertaining to E-Commerce adoption in SME have been reviewed thematically on the given heads:-

Concept of Ecommerce:

The term electronic commerce or e-commerce was first used in the early 1990s, when the Internet was commercialised and the World Wide Web (WWW) was introduced. Since 1995, there have been many innovations in the development of e-commerce, such as the use of innovative applications, direct online sales, learning through online applications, and the adoption of websites. In 1999, e-commerce saw a shift from business to consumer (B2C) to business to business (B2B), while in 2001 e-government, e-learning and m-commerce were adopted. Last but not least, 2005 was the year when social network sites began to grow with wireless applications. Some researchers (Rathode, 2013) define e-commerce as the transaction of buying and selling goods and services or with the help of telecommunications and telecommunication-based equipment. The potential expansion of Internet use and the WWW (World Wide Web) has shaped a new form of commerce, namely, electronic commerce (e-commerce). E-commerce is changing the market and how businesses are conducted these days. It restructures the business process to deliver high-quality products and services more efficiently and effectively (Chapman, Soose & Kandampuli, 2002). E-commerce has grown in developed countries

and plays an important role in people's daily lives and national economies. Unlike traditional commerce, which is physically conducted with the effort of an individual to acquire products, e-commerce reduces physical work and saves time (Karakeh-Shalhoub and Al Qasimi, 2007). Ecommerce, which started in the early 1990s, has taken a giant leap in the computer world. The main advantage of e-commerce over traditional commerce is that users can browse online shops, compare prices and order goods from the comfort of their homes. As a result, global expansion on the Internet can guarantee greater buyer reach and profits. However, although the adoption rate of e-commerce is slightly higher in the West, it is still unpopular in the East (Lipton et. al, 1990). Turban et. al, 2008 suggest that e-commerce will transform the way in which organisations cooperate with customers, employees, suppliers and partners.

E- Commerce Adoption:

E-Commerce promises a number of benefits in developing countries such as cheap communication and administrative expenses and improved accuracy and speedy response to a transaction (Chwelos et. al, 2001). It is a belief that E-Commerce contributes to the progress of trade in these countries by the potential of the internet and communication technology (Hempel and Kwong, 2001; Molla and Licker, 2005).

The rate of adoption of E-Commerce among Small enterprises in India is very low. India has just begun to recognise the potential of E-Commerce and understand that its adoption could play a major role in enabling growth for their business, both in domestic and international markets. However, a large number of small enterprises in India are unaware of the potential benefits of ECommerce primarily due to Lack of exposure to IT products and services, Lack of trust and knowledge about the E-Commerce and the E-Commerce ecosystem as a whole. These limitations vary region wise and create a gap in the adoption of E-Commerce in diversified India. However, the factors that influence the adoption of E-Commerce are information communication technology (ICT) infrastructures along with the adoption of computers and development of Internet broadband, accessibility of online services such as online payment services, policy and legislation and safety (Saxena et. al, 2014). The recent development also witnessed that the trend of E-Commerce is growing in different Northern Eastern states, including Assam. People buying and selling through online medium is increasing with time (Nath and Shillong, 2013; Bortamuly and Goswami, 2015).

E-Commerce Adoption in Small Enterprises:

Small enterprises hold the characteristic that is different from large firms. This enterprise is multitasking, independent, and varies with countries and cultures. Active owners mostly manage small enterprises, it's highly personalised and their areas of operations are local, with a high dependency on internal financial growth (Perrini, Russo and Tencati, 2007; Hanim and Taha, 2010). Small enterprises in the past were limited from participating in technological revolution because of the cost and personal limitations. With time small enterprises also evolved for technology infrastructure, as most of them already have adopted IT infrastructure. Small enterprises are seen to have adopted innovations and opportunities quicker than large firms (Lomerson et. al, 2004). Conducted by (Poon , 2002; Him and Subramaniam, 2004) already have evidence that small enterprises are moving towards new technologies. With the emergence of E-Commerce in the early 90s, have provided small enterprises with opportunities in overcoming the technological, organisational, environmental and administrative inadequacies. A good infrastructure of the small enterprises increases the economic value and reduces the firm's operating cost.

Barriers to E-Commerce Adoption:

Several studies have attempted to describe the factors influencing e-commerce adoption in SMEs. From these studies, it is quite clear that the main constraint affecting the performance of these small enterprises is related to technological constraints. Another group of major barriers includes organisational, technical, environmental, economic, social and political. Some researchers (Nath and Shillong, 2013; Molla and Heeks, 2007) have observed some key barriers that result in low adoption

rates. For this study, we considered organisational, technical and provincial barriers as major barriers to IT adoption by small enterprises in Assam and these are highlighted in the following sections:-

Technological Barriers:

Application Security: E-commerce application security is the principle that protects electronic transactions. Security for the customer is an essential part of e-business. A settlement made on the payment/transaction part may lose his/her trust. Thus, web application security is important for e-commerce adoption (Molla and Heeks, 2007).

Lack of IT infrastructure: A sound infrastructure and maintained technical support led to a positive environment for adoption (Kenneth et. al, 2012). Communication infrastructure is an important topic for an organisation's electronic commerce manager because the Internet is the basis of the e-commerce process. When an organisation adopts electronic commerce, it requires several essential capabilities within the organisation itself. On the other hand, the market also plays an important role in developing these capabilities. Therefore, the availability of infrastructure drives the adoption of electronic commerce, as the processes and activities of electronic commerce are supported by infrastructure (Kenneth, et al, 2012).

Organisational Barriers:

Financial Constraints: To a large extent, the growth of SMEs is affected by financial constraints. Previous studies (Reid, 2003) reported that SMEs always have to go through difficult consequences for external financing because of the possibility of bankruptcy in SMEs and easy change in SMEs assets. Researchers (Cooley and Quadrini, 2001; Honjo and Harada, 2006) suggested that growth is highly dependent on internal finance in the case of young SMEs. In other words, limited finance hinders the growth of SMEs.

IT skill development programs: Baird and Turner, (2001) suggest that IT knowledge is essential to compete and achieve in the field of technology as well as e-commerce technology, firm policy should have important training programs on ICT. It is seen that attitude towards computer is the result of training and learning.

Connectivity costs: E-commerce technology costs a lot to set up, staff with technical knowledge to use this additional technology is also required, as well as maintenance costs of websites and other infrastructure, payment of consultancy fees and staff training (Kwadwo et al, 2016).

Risk factors: According to (Teo, 2007; Tan, et al., 2007), uncertainty and risk are generally barriers to e-commerce adoption. E-commerce creates a lot of confusion, doubt and uncertainty among entrepreneurs in India. Compared to large corporations, small firms cannot easily mobilise resources and bear the risk and uncertainty associated with the adoption and installation of new technology within the firm. Thus, creating barriers to e-commerce adoption among SMEs.

IT Infrastructure Costs: Setting up e-commerce technology is costly, requiring staff with technical knowledge to use this additional technology, as well as maintenance costs of websites and other infrastructure, payment of consultancy fees and staff training (Kwadwo et. al, 2016).

Evaluation of the existing system: Difficulty in changing the existing work process is a barrier that affects SMEs in adoption, because the work environment of the place is satisfactory and the fear of change makes it less flexible (Zaied, 2012).

Provincial Barriers:

Certain regional or provincial barriers also hampers adoption of IT in these small businesses. The same are identified and explained as follows:

Insufficient Knowledge: A firm's policy should contain a vital knowledge of ICT to enhance the technology upgradation, to compete and achieve in the technological field. The adoption of e-business is enlightened with the availability of human resources with specific awareness and knowledge. On the other hand, technological management expert works on how and where ICT can be implemented to attend effective and beneficial organisational strategic goals (Damanpour, 1996; Kindström et. al, 2013).

Lack of technological support: The technological support of SMEs is a vital element for growth. Further, choosing the right set of technology out of various software and hardware available that best suits its activities is another challenge to SMEs (Laudon and Laudon, 2004; Bingi et. al, 2000).

Lack of experience: According to (Bingi et al., 2000) one of the major barriers of SMEs on adopting E-Commerce is Lack of experience. Due to a lack of experience in setting up an E-Commerce website, advanced advertisement, better customer services and an advantageous competitive environment, unfamiliarity with online transactions and the non-existence of laws for online business transactions makes it fearful of adopting E-Commerce in SMEs.

IT Infrastructure: In developing countries, poor and outdated telecommunication for internet and Lack of electric power connectivity creates an infrastructural hindrance for E-Commerce adoption. Technology adoptions in developing countries are mostly concentrated in and around urban areas, with the rural areas suffering from poor connectivity, thereby making it more difficult for technology (Lawrence and Tar, 2010)

Geographical Proximity and Topography: Technological infrastructure can be a barrier or be an encouragement due to the geographical location of a country. For instance, setting up technological infrastructure in a country with small islands tends to be difficult due to geographical location (Minges, 2002). Thus, several technical and non-technical limitations associated with E-Commerce limit or prevent SMEs from adopting information technology and E-Commerce operations in India in general and in the North-Eastern Region of India in particular. Because many of these SMEs cannot cope with these limitations, such as technical, economic and legal barriers by themselves, they need additional public and private support.

Research Gap and Objective of the Study:

Literature has found that despite the high growth of e-commerce market, very few SMEs are adopting e-commerce and even SMEs using e-commerce are facing problems in day-to-day business. In Assam, the situation is worst as few SMEs have started adopting e-commerce. The reviewed literature also helps in understanding the various barriers affecting the adoption of e-commerce among small enterprises in Assam. Significant barriers include technical, organisational and provincial barriers, and it is important to understand the sub-barriers within them. Proper identification of these barriers is expected to reduce the high rate of IT adoption failure among small enterprises in Assam. As such, keeping these important aspects in mind, the present study has been undertaken with the following main objectives in mind.

A. To identify the major barriers to E-Commerce adoption in small enterprises of Assam

Methodology of the Study:

During the present research, answers were sought by framing relevant questions on each research question. Later data were collected, analysed and interpreted. The research questionnaire, which was previously used during the pilot study, was reviewed and revised based on the comments received from the respondents involved.

The main sources of registered SMEs were from District Industries Center (DIC) and Micro, Small and Medium Enterprises (MSME), Office of Govt. of Assam. The units for the study are mainly Small and Medium Enterprises (SMEs) of various categories (service and manufacturing units) of Assam registered with District Industries Centers (DICs). The samples have come from two strata with a view to equal representation from all the two districts. Respondents included owners and managers of the sample enterprises. Different variables of constraints have been considered and are highlighted below:

Technology: Application security, lack of information technology.

Organisational: Financial costs, IT skill enhancement programs, connectivity costs, risk factors, IT infrastructure costs, current system assessment.

Provincial: Inadequate knowledge, lack of technical support, lack of experience, IT infrastructure, geographical proximity and locality.

To obtain a high degree of reliability of the collected data, Cronbach's alpha was used. Generally, it is considered reliable when the value is >0.7 (Malhotra, 2004). The results of the reliability analysis are shown in Table 1 below:

Barriers	Reliability Statistics		
	Cronbach's Alpha	Cronbach's Alpha Based on Standardised Items	N
Technological	.770	.770	2
Organisational	.741	.731	6
Provincial	.871	.897	5

Analysis and Discussion:

In this section, an attempt has been made to understand the different factors which had a negative effect in adopting E-Commerce by small enterprises. To explore the major barriers on SMEs in E-Commerce adoption decisions, Exploratory Factor Analysis is run to simplify the data and reduce many individual variables into a fewer number of dimensions and variables. The analysis is conducted in two stages. Initially, factorability of the collected data is tested with Bartlett test and Kaiser-Meyer-Olkin test and then finally, factor analysis is carried out.

The result of the Bartlett Test is shown below in the following table 2:

X-squared value	P value	Degree of freedom	significance
3700.002	0	219	yes

The above table shows that P-value of the Bartlett Test on Barriers Variables is less than 0.5 and therefore, the test is statistically significant. In other words, Bartlett's test suggests that there is a correlation between some variables.

Similarly, the test result of KMO test is also shown below in the below table 3:

Barriers	MSA	Overall
Application security	0.92	0.930
Lack of IT	0.93	
Financial costs	0.97	
IT skill enhancement	0.93	
Connectivity costs	0.96	
Risk factors	0.91	
IT infrastructure costs	0.93	
Existing system evaluation	0.91	
Insufficient knowledge	0.92	
Lack of technological support	0.93	
Lack of experience	0.95	
IT infrastructure	0.92	
Geographical proximity and topography	0.92	

The overall KMO Test result shows a value of 0.930 which is acceptable for carrying out the factor analysis. Likewise, in the following table 3, the results of the factor loadings are shown below:

Barriers	Factor Loading	Proportion Variance
Application security	0.921	0.795
Lack of IT	0.472	
Financial costs	0.791	
IT skill enhancement	0.921	
Connectivity costs	0.871	
Risk factors	0.821	
IT infrastructure costs	0.832	
Existing system evaluation	0.374	
Insufficient knowledge	0.921	
Lack of technological support	0.891	
Lack of experience	0.786	
IT infrastructure	0.872	
Geographical proximity and topography	0.873	

The table highlights that Lack of IT and Existing system evaluation have a value which is less than 0.6 as such, the factors Lack of IT and Existing system evaluation has been omitted from the study. To find the most and least important barrier variable, ranking of the variables is done, shown in below.

The same has been shown and discussed below:

Barriers	Mean	SD	Rank
Application security	3.38	1.53	5
Financial costs	3.52	1.55	1
IT Skill enhancement	2.87	1.65	11
Connectivity costs	3.36	1.37	6
Risk factors	3.40	1.43	3
IT Infrastructure costs	3.41	1.61	2
Insufficient knowledge	3.39	1.43	4
Lack of technological support	3.24	1.40	7
Lack of experience	3.22	1.41	8
IT Infrastructure	3.16	1.40	9
Geographical proximity and topography	2.82	1.62	10

According to these findings, the most critical factors, hindering the Assam small enterprises' adoption of E-Commerce are huge financial cost, followed by IT Infrastructure costs, risks factors, insufficient knowledge on the part of small enterprise owners, application of security, connectivity costs, Lack of tech support, Lack of experience, IT Infrastructure and geographical proximity and topography.

The findings that application security and financial support are vital for the adoption of E-commerce are also suggested by many earlier studies. (Cooley and Quadrini, 2001; Cabrai and Mata, 2003; Honjo and Harada; 2006). The findings related to other variables are in line with other sides (Al-Qirim and Corbit, 2002; Harbi, Amamou and Anderson, 2009; Scupola, 2003; Molla and Heeks, 2007). The obstacles which are resulting in low adoption rate are Computer anxiety among the employees, Lack of internet connectivity, Lack of Power connectivity and Geographical Location. These findings indicated that more efforts were needed to help and stimulate Assam's small enterprises. E-Commerce helped firms to have new customers, suppliers, distributors, and enabled retailers to enlarge the circle of business contacts without difficulty since it was easy to reach many markets and, also, to build up new business partners. However, in the case of Assam, the huge financial costs hinder the adoption of E-commerce due to infrastructural readiness. Therefore, E-Commerce's performance and adoption depends not only on individual decisions and trends but also on the availability of a low-cost finance mechanism with an appropriate environment that can encourage IT usage and minimise the obstacles.

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