

A Study of Barriers to E-Commerce Adoption among SMEs in Malaysia

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Abstract

The purpose of this study is to examine the barriers that SMEs are experiencing when confronted with the need to implement e-commerce to sustain their competitiveness. E-commerce is the medium that leads to economic growth of a country. Small and Medium Enterprises (SMEs) play an important role in contributing to the Gross Domestic Product and reducing the unemployment. However, there are some specific factors that inhibit the implementation of e-commerce among SMEs. A questionnaire approach was employed in this study and 160 questionnaires have been distributed but only 91 usable questionnaires have been collected from SMEs. Literature found that main barriers to e-commerce adoption among SMEs are organizational barriers, financial barriers, technical barriers, legal and regulatory barriers, and behavioral barriers. It infer that all these barriers carried an average influence on e-commerce adoption. The most important factor barriers of e-commerce adoption are legal and regulatory barriers followed by technical barriers, whereas lack of internet security is the highest barrier factor that inhibits the implementation of e-commerce in SMEs followed by the requirement to undertake additional training and skill development. This paper is useful for the management of SMEs in understanding and gaining insights into the real and potential barriers to e-commerce adoption. This can help the organization to design strategy in taking up barriers tactfully to its advantage.

Keywords: E-commerce, SMEs, Organizational barriers, Financial barriers, Technical barriers
Legal and regulatory barrier, Behavioral barriers

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1. Introduction

Trade between individuals or companies have been around since the beginning of human civilization. It has been an important and productive activity. However, it becomes complicated when the transaction occurred is far in distance between one to another place, especially when the difference between the two involves different time zone. Therefore, electronic commerce or e-commerce is the medium that can be used to solve these problems. E-commerce is an emerging technology nowadays. It exists as a strategic competitive weapon to face the overall competition that exists in the global market. It is a new way of doing business by replacing the traditional way that has long been practiced. E-commerce uses the technology of telecommunication such as the internet to assist sellers and customers for their transaction or trade and creating a better relationship with customers in the process of information exchange. E-commerce allows business to adapt to novels market and trade opportunities to increase their sales, reduce transaction costs (Tan, Chong, and Eze, 2010), and increase the flexibility of communication with business partners (Heung, 2003; Tan et al., 2010). Wong (2013) had identified Southeast Asia tht generally consists of young generation which is an ideal environment for e- commerce growth. According to Malaysian Communication and Multimedia Commission (2013), there are 29.71 million population in Malaysia. Wong (2013) expected the number of internet users in Malaysia will increase to 21 million in 2016 with the average time spend online is 16 hours.

The total number of SMEs in Malaysia is about 662, 939 (Department of Statistics Malaysia, 2011). According to Palma (2005), SMEs are significant to almost every economy in the world, especially to developing countries. SMEs have helped in strengthening the country's economy by reducing unemployment and contributed to Gross Domestic Product (GDP). Due to the dynamic and ever developing technology in the markets, the implementations of e-commerce by SMEs are vitally important. However, 72% of SMEs in Malaysia still does not have their own websites (The Associated Chinese Chambers of Commerce and Industry of Malaysia, 2012). In other words, they are not using e-commerce in their business. Therefore, the purpose of this study is to determine the barriers that SMEs are experiencing when confronted with the need to implement e-commerce to sustain their competitiveness.

While for large companies, the main reason they adopted e-commerce can be to increase the efficiency of their business; small companies may have different motives such as customer demand (Xu and Quaddus, 2009). SMEs that are in the middle process of e-commerce adoption is now experiencing some problems and are also enjoying benefits of the large companies in maximizing their sales volumes. But due to the differences of resources, visions and motives between small and large companies, the obstacles and benefits for both types of companies are expected to be different. In addition, many SMEs in developing countries are not achieving the minimum level of e-commerce adoption (Stockdale and Standing, 2006). Hence, it is important to have a better understanding on the perception of SMEs on e-commerce technology adoption barriers if full potential of e-commerce technologies need to be harnessed.

2. Literature Review

2.1 Barriers of E-commerce Adoption

The term “e-commerce” is described by Chaffey (2011) as all electronically mediated transactions between the company and third party. E-commerce not only provides the companies with huge amount of information and increases the speed of the transactions and decreases costs, but also reshapes their marketing strategies and practices (Ivanov, 2012). According to Currie (2000) e-commerce is

revolutionizing the way that organizations conduct their business operations and is set to have significant socio-technical implications.

In Malaysia, the government has worked to popularize the use of the e-commerce among SMEs. Malaysian Industrial Development Finance Berhad offer up to 90% loans to SMEs for the purchase of ICT applications with just 4 percent interest rate to be paid within a period of 5 years. Besides that, in 2009 the Multimedia Development Corporation Ltd., together with the Multimedia Super Corridor (MSC) Malaysia had launched Malaysia Great ICT Sale as part of the effort to enhance the use of local ICT products and services and promote the benefit of e-commerce to the organizations and global markets. However, all the evidences raise the question of that: "If it's so good, then why the system of e-commerce adoption rate is so low among SMEs?". Literatures have found numerous barriers to e-commerce technologies adoption in businesses.

Stockdale and Standing (2004) stated e-commerce adoption barriers are lack of resources and knowledge, skill levels of employee, security concern, and readiness of the small businesses. Hadjimonolis (1999) found that e-commerce barriers are classified into external barriers and internal barriers. External barriers are difficult in obtaining finance and technical information, company products or services are not fitting with the e-commerce, or the way of owner doing their business is not a fit to the use of e-commerce. Internal barriers are lack of management and technical expertise, and e-commerce is not fitting with the current company culture. Khalifa, Irani, and Baldwin (1999) suggested the major barrier is the risks of e-commerce adoption perceived by the small businesses. Abbad, Abbad, and Saleh (2011) categorized the limitations of e-commerce into technical limitations (insufficient system security, reliability, standards and limited telecommunication protocols) and non-technical limitations (high cost of e-commerce in house development, lack of customer confidence in making faceless sales transaction, and lack of sensitivity to government regulations and standards). According to Heung (2003) the barriers to implementing e-commerce are management support, technical issues, knowledge of e-commerce, partners' participation, and security.

2.2 Framework for E-commerce Adoption Barriers in SMEs

This study investigates e-commerce adoption barriers on the basis of study conducted by Zaied (2012). Zaied (2012) categorized the barriers into six groups by interviewing several experts and professionals in helping to group the barriers. We adapted four categories of barrier from his study which are organizational barriers, financial barriers, technical barriers, and legal and regulatory barriers. The remaining two barriers of social-culture barriers and political barriers were changed to behavioral barriers to suit with the context of this study. All the five factors on this study are shown in the conceptual framework in figure 1.

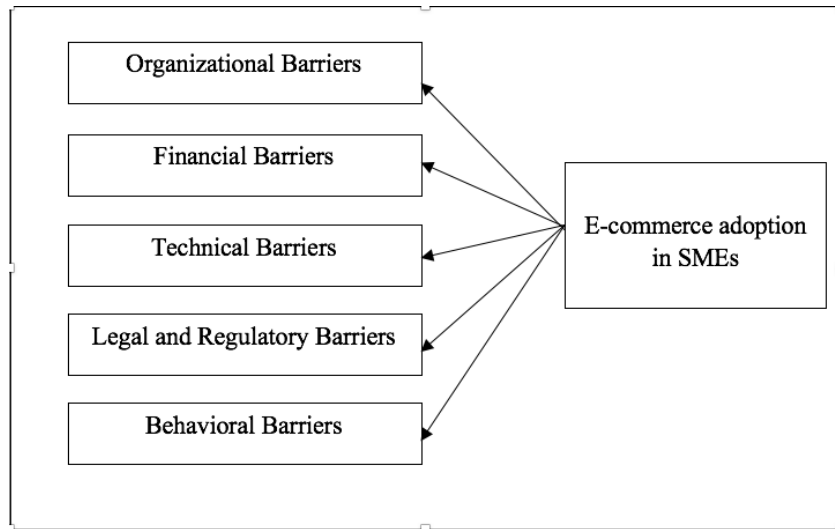


Fig.1. Conceptual Framework

2.2.1 Organizational Barriers

Organizational barriers are results from the organizations attitude towards the implementation of e-commerce system (Flynn and Purchase, 2001). Organizational barriers consist of lack of business models, culture, organization and planning, lack of employee knowledge, lack of infrastructure, reluctance to link to other parties, time taken for implementation, lack of supplier interest, and lack of perceived need on e-commerce. However, Love, Irani, Li, Cheng, and Tse (2001) stated that organizational barriers comprise with indirect or hidden cost, inability to quantify (financially) the impact of e-commerce, inappropriate investment appraisal techniques, myopic strategic planning, lack of employee knowledge, lack of an information technology infrastructure, a reluctance to form collaborative partnerships and a general reluctance to change the way business was undertaken. According to Zaied (2012) organizational barriers such as difficulty in changing the existing working procedure, lack of management support, organizational resistance to change, limited use of internet banking and web portals SMEs are some of the barriers for SMEs adoption on e-commerce. All these are “too difficult” factors or barriers which make e-commerce complicate to implement among SMEs (MacGregor and Vrazalic, 2005).

2.2.2 Financial Barriers

E-business technologies involve high implementation cost (Heung, 2003; Love et al., 2001; Zaied, 2012). Financial barriers are costs required for investment, maintenance and risk of implementing the e-commerce system (Love et al., 2001). In addition, lack of financial infrastructure (Zaied, 2012), inability to develop return on investment (Flynn and Purchase, 2001), uncertainty of payment methods (Organization for Economic Cooperation and Development, 2004) will influence businesses decision to implement the e-commerce as well. There are some organizations which are not aware of the appropriate techniques that could be used to evaluate the investment potential of e-commerce. It was generally found that the decision to invest in information technology was based on a gut feeling due to the lack of understanding on the releasable benefits of e-commerce (Goode, 2002; Poon, 2000). If organization evaluated their investments with complete information in a rigorous and systematic manner by taking into account the direct and indirect benefits and costs of implementation then they may be able to gain the financial and nonfinancial benefits offered by e-commerce (Love et al., 2001).

2.2.3 Technical Barriers

One of the main issues in technical barriers is the type of technologies or software adopted does not match with the current organizational business requirements (Love et al., 2001). Incompatible with technologies in business will affect business loss and increase the operational costs. Due to this issue, organization needs to have an external consultant to provide their expertise in technology to make sure that the technologies being implemented was aligned with the organizational business requirement. This problem occurs during the implementing stage of e-commerce; hence it can be costly and become an on-going cost to the organization. However, if organization manages to overcome this problem, more benefits can be gained from the e-commerce in the future marketplace. Lack of education and knowledge about e-commerce (Darch and Lucas, 2002; Duan, Mullins, Hamblin, and Stanek, 2002) has created the attitude of distrust towards the information technology industry (Bode and Burn, 2002). In other words, they do not trust on internet security. In this respect, problems appear at various levels starting with the doubts of computer viruses in the internet, through the danger of business data theft including theft of money during electronic transactions, to the lack of suitable laws and regulations that would facilitate e-commerce. Hence trust and security look to be most important among the challenges to be overcome if e-commerce is to be facilitated (Arendt, 2008). Due to increasing innovation and new technologies, e-commerce implementations have become complicated (Kaynak, Tatoglu, and Kula, 2005; Zaied, 2012). Large range of e-commerce options has caused concerns for businesses to choose a system that is compatible with the suppliers and customers (MacGregor and Vrazalic, 2005).

2.2.4 Legal and Regulatory Barriers

Recent survey conducted among Brazilian consumers showed the low rate of e-commerce adoption was related to government regulations such as anxiety about privacy and security, lack of business laws for e-commerce, insufficient legal protection for internet purchases and concern over internet taxation (Tigre and Dedrick, 2004). Similarly in China, consumers are lack of 'transactional and institutional trust' that related to the weak rule of laws that was a major impediment to e-commerce (Efendioglu and Yip, 2004). According to Munir and Yasin (2009), Malaysia had facilitated and removed the barriers of e-commerce adoption by enacting several pieces of legislation, namely, Electronic Commerce Act, 2006 (ECA), Electronic Government Activities Act, 2007 (EGAA), and Digital Signature Act, 1997 (DSA). Malaysian Government has committed itself to providing a comprehensive regulatory framework of cyber laws and intellectual property laws to facilitate and assist the development of information technology and e-commerce (Kaur, 2005). In addition, Mambetalieva and Beklemishev (2005) stated that assuring security and draft laws on e-digital signature can strive to combat crimes in the area of computer information. Countries that do not concern on the computer crime or secure online transaction will prevent organization to adopt e-commerce.

2.2.5 Behavioral Barriers

Behavioral barriers concentrate on issues such as fear that jobs would be lost, reluctance to make changes in working habits, the requirement to undertake additional training and skill development, and the degree of uncertainty that technology instills in people (Love et al., 2001). All these are barriers that relating to people and their resistance to change. Humans naturally resist change and may need gentle persuasion to overcome the fear of the unknown, especially if it is related to technology. If fear towards technology causes the barrier on e-commerce adoption, it is important to identify and use appropriate channels of communication to ensure that workforce is informed on changes and how e-commerce will impact on their job functions. In addition, Arendt (2008) stated that the reluctance of business to invest into e-commerce

training for employees arise out of the fact that the owners are afraid the completion of such training and having improved their qualifications their employees will leave and find employment in large companies that offer better salaries.

3. Research Design and Methods

The present study focuses on SMEs in the retail trade sector which located in JohorBahru, Malaysia. In determining the sample size, schedule by Krejcie and Morgan (1970) shows that for a given population of 139, a sample size of 91 would be needed to represent a cross-section of the population.

3.1 Research Instruments

To investigate the barriers of e-commerce adoption, questionnaires was used to collect the primary data information. Questionnaire was developed from the adaption of previous study by Zaied (2012). Contents of questionnaire are divided into three sections. Part A includes the basic information of respondents such as gender, position, and education. Part B is to measure owners/managers perception towards the importance of e-commerce barriers that affects their business on a five-point Likert-scale. Part C is to know the type of e-commerce applications used by the respondents. Questionnaires are prepared in Malay and English languages in order to facilitate understanding of respondents to answer all the questions.

3.2 Data Collection

All participating SMEs' owner or managers in this cross-sectional study received a questionnaire and their participation was voluntary. The questionnaire had a cover letter describing the study and assuring anonymity and confidentiality. The owners or managers were assured that individual test results would not be reported. Of the 108 questionnaires distributed, 91 sets of questionnaire were returned from owner or managers of SMEs which representing a response rate of 84.26 percent.

4. Data Analysis

4.1 KMO and Bartlett's Test

Kaiser-Meyer-Olkin (KMO) and Bartlett's test of sphericity are two frequently used measures to assess the correlation matrix for the factor solution. Principal Component Analysis for the five variables single model results indicated that KMO was 0.794 and the Bartlett's test of sphericity was significant at $p < 0.001$ (Approx. Chi-Square 1518.188, $df = 425$). This testing indicated that the sample was appropriate for factor analysis.

4.2 Reliability Analysis

There are five variables in this study that had undergone several reliability tests in a row. Statistical information for the five variables is showed in Table 1. All of the constructs are considered to have adequate reliability.

Table 1
Reliability Analysis

| Item | Variable | Cronbach's α |
|------|----------|---------------------|
|------|----------|---------------------|

| | | |
|----|-------------------------------|-------|
| 1. | Organizational Barriers | 0.665 |
| 2. | Financial Barriers | 0.848 |
| 3. | Technical Barriers | 0.789 |
| 4. | Legal and Regulatory Barriers | 0.917 |
| 5. | Behavioral Barriers | 0.633 |

4.3 The Mean Rating of Barriers in E-commerce Adoption

The rating that used to assess the degree of importance for each factor of barriers or single barrier is ranked according to Table 2. Only the group of barriers or single barrier that receives strong or medium rating will be accepted as an effective barrier on e-commerce adoption in SMEs. Based on the analysis, the mean rating for e-commerce barrier adoption showed in Table 3 was from 3.4038 to 3.7582. Result showed that overall factor barriers of e-commerce have medium effect.

Table 2

Rating on the Degree of Importance for Factor of Barriers

| No. | Criteria | Rating |
|-----|---|--------|
| 1. | If the amount of sample mean is greater than or equal 4.00, group of barriers or single barrier has strong effect | +++ |
| 2. | If the amount of sample mean is greater than or equal 3.00 and less than 4.00, group of barriers or single barrier has medium effect. | ++ |
| 3. | If the amount of sample mean is less than 3.00, group of barriers or single barrier has low effect. | + |

Table 3

The Degree of Importance for Factor of Barriers

| Factor of Barriers | Mean | Std. Deviation | T-Test | Rating |
|-------------------------|--------|----------------|--------|--------|
| Organizational Barriers | 3.4038 | 0.6829 | 47.548 | ++ |
| Financial Barriers | 3.6923 | 0.8898 | 39.584 | ++ |
| Technical Barriers | 3.7077 | 0.7679 | 46.062 | ++ |

| | | | | |
|-------------------------------|--------|--------|--------|----|
| Legal and Regulatory Barriers | 3.7582 | 0.7962 | 45.027 | ++ |
| Behavioral Barriers | 3.5330 | 0.6371 | 52.903 | ++ |

Among all the five factors of barriers, legal and regulatory barriers are the most important barrier. This finding is consistent with Kapurubandara and Lawson (2007), and Zaied (2012). Legal framework is needed for the growth and development of new technologies such as e-commerce. As e-commerce has given rise to a number of legal issues, it has become important for every country to have e-commerce regulations. However, regulations that are weak, not updated, and lack in the enforcement mechanisms in protecting networked information can give opportunity to create an inhospitable environment towards businesses that wish to conduct e-commerce within a country and across the national boundaries. This creates a barrier in e-commerce adoption and stunt the growth of e-commerce. As businesses expand globally, there is a need for a strong and consistent way to protect the network. Hence, government should assert more in depth legal and regulation in e-commerce to reinforce existing laws.

Findings from Table 4 indicated that lack of internet security ($\bar{x} = 4.0440$) and the requirement to undertake additional training and skill development ($\bar{x} = 4.0330$) are two most important items that inhibit the implementation of e-commerce in SMEs. This findings matched the results of previous studies (Alamro and Tarawneh, 2011; Alshehri and Drew, 2010; Fathian, Akhavan, &Hoorali, 2008; Kapurubandara and Lawson, 2007; Kartiwi and McGregor, 2007; Kshetri, 2007). SMEs are concerned with the safety features when using the internet for transaction such as threats from viruses, targeted attacks/hackers and keystroke logging. Security risk and authentication problem can cause a loss of revenues and hackers easily access proprietary information. According to Gartner (2005), increasing reports on lost consumer data files and disclosures of unauthorized access to sensitive personal data will affect the confidence of customers in e-commerce. Successful adoption of e-commerce in business requires qualified staffs that are knowledgeable on technical aspects of e-commerce. However, some employees lack education and knowledge on e-commerce system requirement. Therefore, there is a need for employees to undertake additional training. Unfortunately, SMEs attempt to save training costs by putting a stop on e-commerce adoption. In fact, there are some SMEs that hold that employees will leave once they gained knowledge or skills in e-commerce.

Table 4
The Highest Barrier Items in the Factor of Barriers

| Barriers | Number of Respondents | | | | | Mean | T-Test | Rating |
|--|-----------------------|---|---|----|----|--------|--------|--------|
| | SD | D | N | A | SA | | | |
| Lack of Internet Security | 0 | 9 | 8 | 44 | 30 | 4.0440 | 42.594 | +++ |
| The requirement to undertake additional training and skill development | 0 | 6 | 9 | 52 | 24 | 4.0330 | 48.385 | +++ |

SD = Strongly Disagree, D = Disagree, N = Neutral, A = Agree, SA = Strongly Agree

Table 5
The Lowest Barrier Items in the Factor of Barriers

| Barriers | Number of Respondents | | | | | Mean | T-Test | Rating |
|------------------|-----------------------|----|----|----|----|--------|--------|--------|
| | SD | D | N | A | SA | | | |
| Fear of job loss | 4 | 43 | 22 | 16 | 6 | 2.7473 | 25.755 | + |

The lowest importance and lowest effect towards the barriers of e-commerce adoption are the fear of job loss ($\bar{x} = 2.7473$) and business prefer on face to face communication ($\bar{x} = 2.8571$). A few years ago the only way of transaction is via face to face communication. Given the advancement of technology, most of the SMEs are now conducting all communication via phone, voice mail, fax, and e-mail. Traditional "brick and mortar" stores are already being replaced by the virtual office. The transition of technology into the business is a normal and natural way of life. Many businesses have realized the role of technology in improving efficiency and increasing the quality of their business. Hence, SMEs do not fear on the power of technology in causing job losses. The barrier items that give medium effect in implementing the e-commerce among SMEs are ranged from $\bar{x} = 3.8426$ to $\bar{x} = 3.0330$ in Table 6. All these barrier items are not too important to be emphasized by SMEs. However, these barrier items still need to be reduced to make e-commerce adoption more easily in the future.

| Barriers | Number of Respondents | | | | | Mean | T-Test | Rating |
|---|-----------------------|----|----|----|----|--------|--------|--------|
| | SD | D | N | A | SA | | | |
| No simple procedures and guidelines | 2 | 4 | 17 | 51 | 17 | 3.8462 | 42.895 | ++ |
| Lack of secure payment infrastructures | 3 | 8 | 14 | 41 | 25 | 3.8462 | 35.553 | ++ |
| Lack of digital and electronic signature laws | 2 | 6 | 15 | 50 | 18 | 3.8352 | 40.754 | ++ |
| lack of qualified staff | 3 | 11 | 11 | 40 | 26 | 3.8242 | 33.744 | ++ |
| absence of legal and regulatory systems | 1 | 8 | 15 | 51 | 16 | 3.8022 | 41.593 | ++ |
| change in government policy and change regulations with each government | 0 | 8 | 18 | 49 | 16 | 3.8022 | 43.546 | ++ |
| difficulty in changing the existing working procedures | 3 | 5 | 18 | 51 | 14 | 3.7473 | 39.640 | ++ |

| | | | | | | | | |
|---|---|----|----|----|----|--------|--------|----|
| reluctance to make changes in working habits | 1 | 11 | 14 | 49 | 16 | 3.7473 | 38.600 | ++ |
| cost too high | 4 | 12 | 11 | 43 | 21 | 3.7143 | 32.260 | ++ |
| lack of e-trading legislations | 1 | 10 | 20 | 44 | 16 | 3.7033 | 38.196 | ++ |
| lack of e-commerce standards | 2 | 7 | 23 | 45 | 14 | 3.6813 | 38.792 | ++ |
| organizational resistance to change | 5 | 7 | 18 | 44 | 17 | 3.6703 | 33.534 | ++ |
| lack of financial infrastructure | 5 | 8 | 16 | 46 | 16 | 3.6593 | 33.378 | ++ |
| inadequate quality and speed of lines | 3 | 14 | 16 | 38 | 20 | 3.6374 | 31.818 | ++ |
| the degree of uncertainty and change that technology instills in people | 3 | 11 | 14 | 54 | 9 | 3.6044 | 36.525 | ++ |
| unclear benefits from e-commerce adoption | 4 | 15 | 17 | 37 | 18 | 3.5495 | 30.281 | ++ |
| increase innovations and new technologies | 3 | 24 | 14 | 36 | 14 | 3.3736 | 28.434 | ++ |
| lack of popularity for online marketing and sales | 2 | 34 | 11 | 29 | 15 | 3.2308 | 26.031 | ++ |
| lack of management support | 2 | 27 | 20 | 38 | 4 | 3.1648 | 30.790 | ++ |
| more priority on established personal relationship | 2 | 35 | 14 | 28 | 12 | 3.1429 | 26.279 | ++ |
| limited use of Internet banking and web portals | 4 | 25 | 27 | 34 | 1 | 3.0330 | 30.901 | ++ |

5. Conclusion

The purpose of this study is to investigate the barriers to e-commerce adoption among SMEs focusing on retail trade. The theoretical contribution of this study is to explain the degree of importance on the barriers of e-commerce adoption. To conclude, legal and regulatory barriers and technical barriers are two most important factors that affect the adoption of e-commerce in SMEs. In addition, the highest barrier items in the barrier factors are lack of internet security and the requirement to undertake training and skill development. Based on the findings of this study, some recommendations could help the successful adoption of e-commerce among SMEs. Firstly, the government needs to be more assertive in the poorly prepared legislation by improving the legal structure such as online privacy law and e-signature. In addition, organizational should improve the technical infrastructures that are necessary for the operation of e-commerce and internal systems that support e-commerce to make it more effective and efficient.

Appropriate levels of e-commerce training programs can be designed by SMEs to develop employees' knowledge on e-commerce as well.

Besides that, the media publicity should promote the advantages and benefits of e-commerce towards public especially to the business owners to increase their awareness to push customers and employees to make use of e-commerce. The government should invests in basic and higher education to reap the real benefits of e-commerce by giving talk, motivation and training classes about e-commerce such as online transaction, electronic advertising, and electronic marketing. Brand and Huizingh (2008) found that intention and innovation improvement are connected with the awareness of companies about e-commerce. Therefore, the more aware the companies have about e-commerce, the more companies willing to adopt e-commerce.

While every effort has been made to complete this study, there are still some limitations that should be considered. First, due to time and cost constraints, this study was only limited to retail sector and within one state of Malaysia. Thus, the findings must be interpreted with caution and cannot be conclusively used to generalise to all SMEs sector. Future, research on other sectors will be necessary if any definite conclusion is to be made. Second, the current study focuses on the use of survey data to collection information. Future research, that utilising qualitative method such as interview can be adopted.

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