

RESEARCH ARTICLE

The Implementation of E-commerce Application in Bumiputera Small and Medium Enterprises (SMEs) in Malaysia

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Abstract

The proliferation of e-commerce in modern business today is primarily contributed by the global acceptance of Internet and WWW as a commercialization medium. E-commerce generally refers to business communication and transactions over the internet and, selling and buying products or services online. Studies shown that e-commerce not only significant to small businesses and individual consumers; but also reshapes both local and international market. Furthermore, e-commerce provides a mechanism that facilitates businesses to increase productivity, competitiveness, profitability and information management capabilities. This study aims to explore the level of e-commerce usage in Malaysian Bumiputera (indigenous) enterprises. The relationship between e-commerce usage and company's characteristics as well as e-commerce benefits respectively are also studied. A structured interview with 5-point Likert scale questionnaire items was conducted on 423 respondents of small and medium enterprises (SMEs) nationwide. Data collected had been analyzed using descriptive and inferential methods such as percentage, mean, Chi-Square test, and Spearman Correlation Coefficient test. Results revealed that the level of e-commerce application Malaysia Bumiputera SMEs is only at *publish* level. This signifies that Malaysia SMEs are still far away in achieving the level four (*transaction*) and level five (*integration*). Most SMEs are applying only the basic application of e-commerce though they have websites being incorporated into their businesses.

Keywords: *Bumiputera smes, E-commerce application, Malaysia indigenous enterprises, Small and medium enterprises (smes).*

Introduction

The business and commerce in today's world have become more challenging yet exciting with the advancement in information technology and communication. Gerstner [1] asserts this by claiming that today and in the near future, the technology that surrounds us is undergoing a substantial, rapid and universal change that gives significant impact to the world we live in and our daily lifestyle. This development is also visible through the use of e-commerce in Malaysian business, which has changed the business approach used by small and large companies. E-commerce that is also better known as a method to sell products and services through network or Internet is acclaimed to emerge as an important business tool in the 21st century [2]. E-commerce is also frequently described as an opportunity tool for large companies and small medium enterprises (SMEs) to penetrate the global market, thus providing the most appealing way to publicly widespread the products and services. It is expected that SME will then be able to capture the global market, meet the international

consumer's need and requirement besides gaining opportunities to compete with the big, global player companies. Although operated in small scale, SMEs play crucial roles in the economic development and providing job opportunity [3].

In Malaysia, SMEs are important contributors to the national economic growth and in achieving the objective to become an industrial nation by the year 2020 [4]. Until December 2005, there are 518,996 SMEs in Malaysia which makes up the 99.2 percent of overall registered companies in Malaysia. As illustrated in Figure 1, SMEs in the Malaysian services sector is as many as 86.5 percent, manufacturing sector is 7.3 percent and 6.2 percent in the agricultural sector.

Though Malaysia SMEs performances have increased over the years, yet there are still a few vital things that required attention particularly in term of access to export market and technological capability of SMEs business. As such, Malaysian

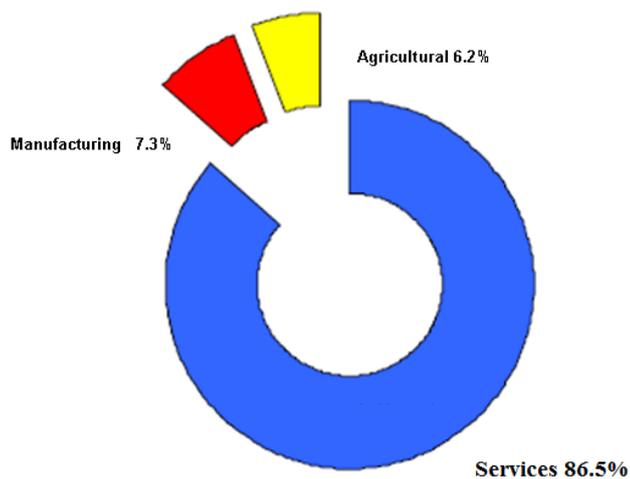


Fig 1: Small medium enterprises (SMEs) distribution in Malaysia based on sector

(Source: Malaysia Small Medium Industries Development Corporation (SMIDEC))

government provides a policy that is beneficial to SMEs which is included in the Ninth Malaysia Plan. The policy covers SMES overall development that should be supported by technological innovation in order to compete in the global market [5]. Realizing the importance of SMEs in Malaysian economic environment, various proactive measures have been launched by the government in providing initiative to promote the usage of e-commerce in SMEs. According to Mazlina, Yang and Low [6], within the five years from 1997, government has spent RM 40 billion through Multimedia Development Corporation (MDC) to develop Multimedia Super Corridor (MSC). Some of the action plans executed under this MSC are to promote and enhance the Internet banking services and e-business programs among the SMES with the objective of encouraging communication and electronic transaction through a safe online medium between business-to-business (B2B) and business to consumer (B2C). Within Ninth Malaysia Plan also, government has provided several sources of funding through Commercialization of Research and Development Fund (CRDF) that is operated by Malaysia Technology Development Corporation (MTDC) and Small Medium Industries Development Corporation (SMIDEC). Under this scheme, funding and budgeting in relevant to information and communication technology are launched to accelerate the adoption and implementation of technology by SME companies.

However, technological advancement changes too fast causing these SME firms to fall short and left behind in the e-commerce industry. Therefore in order to compete and sustain their existence in

the e-commerce industry, these SMEs are required to be well prepared from the aspect of business capital, sophisticated ICT facility, and world standard of products and services in order to compete with bigger companies and the global player enterprises. This is in parallel with statement by Jerry Jasinowski, the President of American Manufacturing Association who asserted that SMEs should take the opportunity to leverage on the burgeoning e-commerce existence as it not meant to lag or put them in critical situations but more to expose them into the global marketplace that is packed with fierce competition [7].

Although e-commerce benefits are acknowledged by the SMEs, it is not well implemented. This is influenced by the low demand over online products as well as the skeptical perceptions on the Internet security. Malaysian SMEs also believe that market penetration rate is low by using e-commerce rather than the more established and common traditional business medium [8]. The involvement of Malaysian Bumiputera's SMEs in e-commerce is still in the preliminary stage and less encouraging with less than 10 percent of SMEs being researched really put e-commerce in its best usage [9].

Literature Review

For the purpose of this study, e-commerce definition that is formulated by Schneider [10] is used which refers to business activities that are being operated using electronic data transaction technology for example, the Internet and World Wide Web (WWW).

SMEs companies in this study refer to the entrepreneurs who work on or own any small and medium size enterprises all over Malaysia. SMEs definition which is formulated by Malaysia's Small Medium Industries Development Corporation (SMIDEC) is in use which entails the below requirements:

- Small enterprise – company that have the number of full time staff between 5 to 50 people.
- Medium enterprise – company that have the number of full time staff between 51 to 150 people.

Malaysian Bumiputera or indigenous is defined based on the Malaysia Federal Constitution, that classifies Bumiputera as a person who professes the Islamic faith, speaks the Malay language, practices Malay customs and were born in the Malaysian Federal or Singapore before independence [11].

E-commerce is a form of commercial business that is flourishing and improving business in today's market competition [12]. Forrester Research [13] reported that the world's e-commerce income in 2004 will hit 6.8 trillion US dollars, while in Asia Pacific it will reach the value of 992 billion US dollars [14]. Realizing this fact, SMEs are encouraged to implement e-commerce as an efficient marketing channel in order to offer better services and broad product variety to global consumers. Overall, SMEs are the largest contributor of e-commerce activity in the world's business-to-business (B2B) operations, which it contributes more than 80 percent and plays a vital role in the supply chain of most large firms. A study conducted by Quayle [15] for 298 SME companies in the UK discovers the challenges faced by these SMEs in 21st century that involved leadership issues, management support and innovation as important aspects for successful e-commerce implementation. SMEs in Thailand are also anticipating with the e-commerce challenges. Thailand government through its E-commerce Resource Center (ECRC) provides training information and e-commerce programmes that better prepare SMEs in Thailand to face the external competition from outside the country [16].

The Internet era in Malaysia started in the year 1995 [9]. A research by IDC [17] indicates that Internet market in Malaysia hit RM 4.8 million in the year 2002 and expected to increase up to 27 percent in the year 2006. This encouraging number of Internet users in Malaysia obviously suggests that e-commerce is well accepted by Malaysian and have the high potential to be developed extensively. In the year 2003, IDC reports that the number of e-commerce business in Malaysia will increase from the year 2001 to 2006 that are valued at US\$ 15.9 billion.

Level of E-Commerce Usage

Based upon the previous study about the level of Internet acceptance [18], the authors have modified and formulated the suitable levels to measure the level of e-commerce usage among Bumiputera SMEs in Malaysia. As illustrated in Figure 2, these levels are becoming more complex but higher in value as they increase from one level to another.

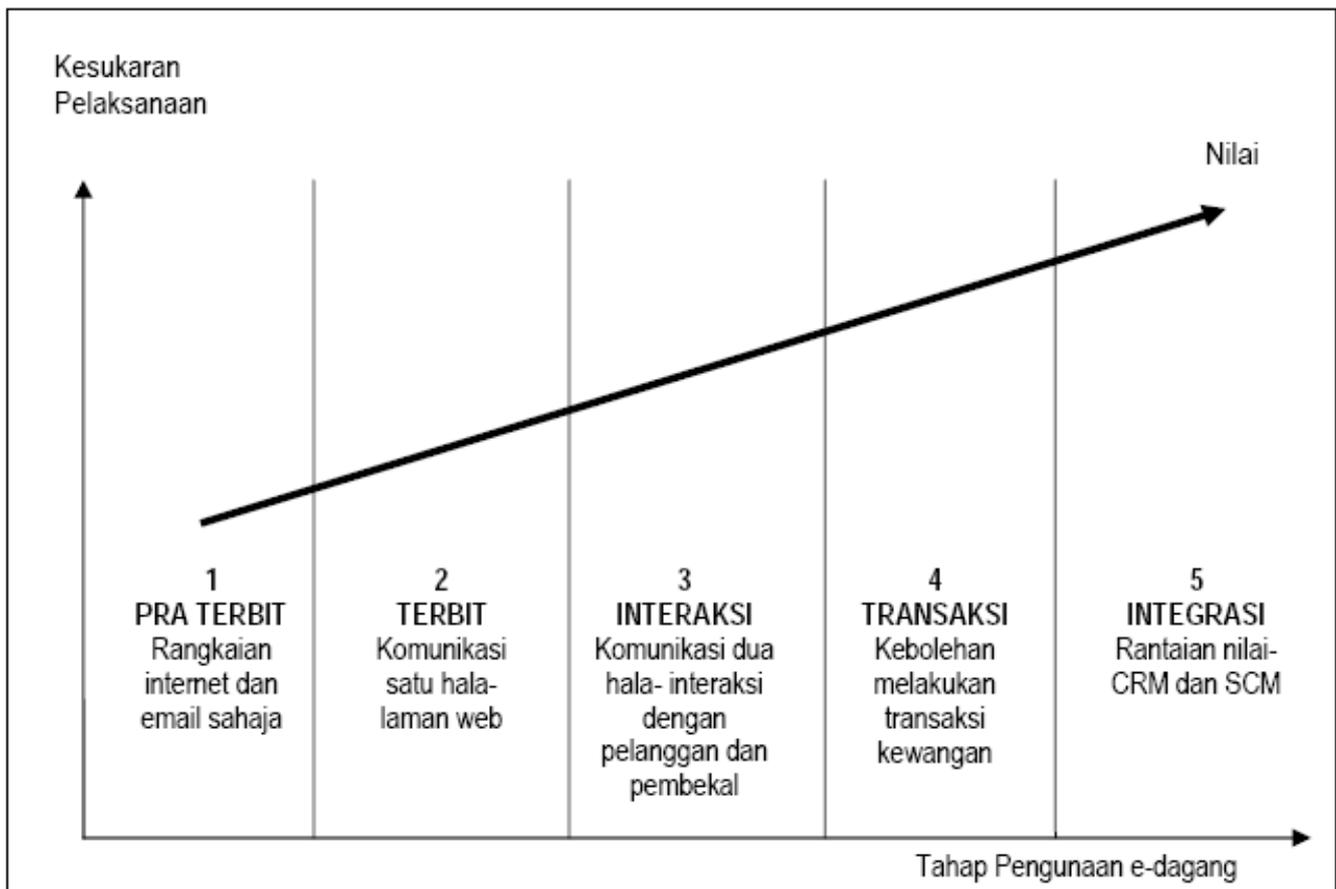


Fig 2: Level of E-commerce usage adopted and modified from the level of internet acceptance study conducted by Malaysia's multimedia development corporation (2003)

Level 1 – Pre-Publish

This level involves the initial step taken by organisations to commit in the digital environment where company have computer networks or Internet access and using email as medium of communication. Hanson [19] asserts that email could improve companies communication and productivity by eliminating the time obstacle and accelerating the decision making process.

Level 2 – Publish

This level involves the one-way communication namely by owning a web site which provides company's profile and information on products and services offered. Most business embarks on their early moves of e-commerce by displaying company's pamphlet and products offered at a website [20]. This stage is regarded as company's primary means to attract new consumers [21]. Big companies in North America, Europe and Asia tend to view e-commerce at this stage as a low cost medium to display marketing information.

Level 3 – Interact

This level is an introduction towards a two-way communication that includes the website and email usage to interact with suppliers and consumers. Websites and emails are used to receive orders from suppliers or consumers. Therefore, they are successful tools to enhance bilateral relationship between business and consumers (B2C) and among businesses to business (B2B) [22]. Other advantages of this level include the ability to connect displayed information with inventory data and the ability search for consumer's information [23]. Although there is a bilateral communication, there is no financial transaction that happens at this stage.

Level 4 – Transaction

The difference between transaction level from the interaction level is the presence of financial transaction over Internet. High technical capabilities and sufficient IT infrastructure are needed at this stage. This level also includes the involvement in virtual communities where participant can share information; electronic auction which sellers offer products or services to buyers via websites and negotiating the price; and electronic market space where third party suppliers display the supplier's catalogues online and also offer catalogue search. E-commerce transaction can automatically extract consumer's information and their purchase pattern. This introduces a new mechanism to predict market pattern and targeting repeat sales.

Level 5 – Integration

This level refers to a complete business process integration up to the level which involves high cooperation among users and suppliers. This level includes a full integration between B2B and B2C, value chain integration, consumer relationship management (CRM) and supply chain management (SCM). In other words, integration at this stage occurs between all concerned parties that act as buyers, sellers or service providers. With this method, information exchange and business transaction can operate efficiently without the hassle of filling up the paper forms and bureaucracy.

Company Characteristics

The ownership of the SME companies are categorised into three general types namely private, partnership and private limited. The type of company ownership imposes a direct impact on company's Internet usage as well as indicating the company's desire to implement e-commerce.

In previous research, the type of business sector has also being identified as closely related to e-commerce implementation in a company. Macher et al. [24] explain that the use of the Web in manufacturing sector is very high. Kierzkowski et al. [25] indicate that financial service, insurance, banking and tourism service as sectors that are most potential to adopt e-commerce. This is due to the suitability of interactive media to be implemented and the relationship building capability possessed by these sectors. In other sectors, such as book, software and music industries, the products are mostly accessed through the Internet which suggests e-commerce as a preferable platform to market their products [26].

The size of business also makes a significant dimension to determine the Internet usage and e-commerce adoption in a company. Past research by Poon and Swatman [27] and Fallon and Moran [28] illustrate that e-commerce level of usage have significant relationship with the business size. Macher et al. [24] indicates that large companies are typically keen to implement e-commerce application over small companies. On average, small business size is also identified as the core factor that causes low e-commerce usage in Italy [29].

E-Commerce Perceived Benefits

International Data Corporation reported that e-commerce applications are potential to generate increase in turnover up to US\$15.9 billion in the year 2001 to 2006 [17]. This statistic shows that

most businesses have regarded e-commerce as a prospective and profitable platform with desirable features like easy to access and fast feedback attributes. This also indicates the preferences pattern of e-commerce usage over traditional trading.

In general, the substantial benefits gained through e-commerce are regarded as the motivating factor for companies to apply e-commerce in their respective businesses. Among the perceived e-commerce benefits are the ability for SMEs to survive in the dynamic business environment. Sculley and Woods [30], Timmers [23] and Tumolo [31] assert that e-commerce common benefits that influence business owners include easy access to the global market, improve on communication, lower transaction cost and increase in competitiveness. Time and cost reduction in overall business process enables companies to obtain competitive advantages in prices, product and service innovation [32]. With the ICT knowledge and skills, SMEs are able to benefit from e-commerce such as reducing the distribution cost by eliminating the role of intermediary parties and increasing the number of new potential customers thus increasing productivity [33].

Research Methodology

This study concentrates on e-commerce implementation in Bumiputera SMEs in manufacturing, services and construction sectors all over Malaysia. As such, the scope of the study covers only the companies that have the Internet network and utilizing e-commerce.

Objectives, Model and Hypotheses

Given the fact of low Bumiputera's SMEs involvement in e-commerce, some questions arise that further set the objective of this study as enumerated below:

- To measure the level of e-commerce usage among Malaysia Bumiputera's SMEs.
- To assess the perception e-commerce benefits by Malaysia Bumiputera's SMEs.
- To determine the relationship between level of e-commerce usage and company's characteristics such as type of ownership, sector of business and size of business.
- To identify the relationship between level of e-commerce usage and e-commerce perceived benefit.

Descriptive Analysis is used to explain the level of e-commerce usage and the perception of e-commerce benefits while for the other two

following objectives, Inferential Analysis such as Chi-Square test and Spearman Correlation Coefficients test are used to measure the relationships. In order to fulfill the third and fourth objective above, our work was driven by the hypotheses that are formulated as below:

- H1: There is a significant relationship between level of e-commerce usage and type of ownership.
- H2: There is a significant relationship between level of e-commerce usage and sector of business.
- H3: There is a significant relationship between level of e-commerce usage and size of business.
- H4: There is a significant relationship between level of e-commerce usage and e-commerce perceived benefit.

The existing relationships above are expressed in our research model as illustrated below in Figure 3:

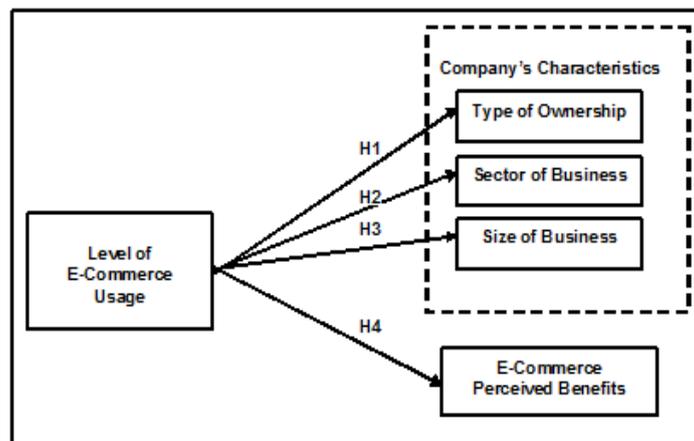


Fig 3: Research model for evaluating the relationships between level of e-commerce usage and the company's characteristics and e-commerce perceived benefits

Research Design, Population and Sampling

A descriptive study with cross sectional method has been used as the research strategy to explain and answer all research questions. Listing method and simple random sampling method are used in this study. Listing method is applied where researchers use the list of respondent names given by the authority as an initial guide. From the general list of SME companies, their respective addresses and phone numbers, the researchers made phone calls to each company to identify the companies with Bumiputera SME status. After almost two and a half months, the researchers managed to enlist all Bumiputera SMEs as many as 1,876 companies and this is regarded as the research population. This list is

then used as the sampling frame for simple random sampling method.

Simple random sampling method is chosen for this study to ensure that every Bumiputera SME company in the research population has the equal chance to be chosen as sample and this method could reduce sample bias. As a result, 510 samples are acquired which comprise of Bumiputera SME companies in different sectors throughout Malaysia. From those 510 companies, only 423 Bumiputera SMEs responded positively to participate in the study until the end.

As such, during data collection phase, a structured interview session was conducted on 423 respondents consisting of business owners or the management staff of each company being studied. There are also 5-point Likert scale questionnaire items being used during the interview to gauge respondent's perceptions toward the e-commerce issues under research.

Results and Discussion

The results and discussions are organized as follows: Section 4.1 discuss on data analysis and

results for Descriptive Analysis while this is followed by the data analysis and results for Inferential Analysis in Section 4.2.

Descriptive Analysis

Level of e-commerce usage among Malaysia Bumiputera's SMEs

Table 1 below illustrates the level of e-commerce usage based on the different sectors of business in Malaysia Bumiputera's SMEs. The sectors being studied are divided into 3 types namely the manufacturing, services and constructions. In the manufacturing and services sector, the highest percentage for level of e-commerce usage is at the *Publish* level with 36.6% and 35.9% respectively. However, in the services sector, the *Interact* level is also quite dominant with second largest respondent that makes up 32.8% of the total respondents. These results are in contrast to the construction sector where the level of e-commerce usage is only at the *Pre-Publish* 39.7% respondent.

Table 1: Level of e-commerce usage in Bumiputera's SMEs distributed based on sectors of business

Level	Description	Sectors of business			Total
		Manufacturing	Services	Construction	
1	Pre-Publish	69 (30.4%)	23 (18.0%)	27 (39.7%)	119 (28.1%)
2	Publish	83 (36.6%)	46 (35.9%)	23 (33.8%)	152 (35.9%)
3	Interact	51 (22.5%)	42 (32.8%)	9 (13.2%)	102 (24.1%)
4	Transact	23 (10.1%)	12 (9.4%)	8 (11.8%)	43 (10.2%)
5	Integrate	1 (0.4%)	5 (3.9%)	1 (1.5%)	7 (1.07%)
	Total	227 (100%)	128 (100%)	68 (100%)	423 (100%)

In overall, this finding reveals that the level of e-commerce usage is by average at the second level, the *Publish* stage with 35.9%. Indirectly, this indicates that e-commerce usage among Malaysia Bumiputera's SMEs is still low. The result is parallel with a research finding by Hor [34] describing that although 90% SMEs in Malaysia are using personal computers in their businesses, the IT implementations are still at the fundamental stage. Hor [34] further asserts that computers are only utilized when dealing with simple matters such as accounting, financial data and document preparation. Companies that are on this *Publish* stage do have websites in their business. However, the application is limited to

one-way communication that those websites are only used to display company profile as well as to promote and advertise the products offered. Websites are also regarded as a low cost medium to disseminate information. This finding is also in line with several other findings of the past such as by Abu Bakar and Rohaizat [35] and Riquialme [36].

E-commerce benefits perceived by Malaysia Bumiputera's SMEs

Mean score is used to gauge the e-commerce benefits perceived by the SMEs as shown in

Figure 4 below. The mean score is acquired from the measurement of respondent's agreement level towards item statements that is classified by 1=Strongly disagree, 2=Disagree, 3=Less Agree, 4=Agree or 5=Strongly Agree. The findings reveal that the ability to reduce advertising cost as the highest e-commerce benefit perceived by the Bumiputera's SMEs with the highest mean score of 4.06, while using e-commerce to reduce bureaucracy is believed as the lowest e-commerce benefit with 3.39 mean score. According to Le and

Koh [22], the benefits perceived by Malaysia Bumiputera's SMEs do not differ much from those perceived by their counterparts in other countries. Findings in this study is supported by the analysis carried out by several other research by Gottschalk and Abrahamsen [37]; Bhatt and Emdad [38]; as well as Pawar and Driva [39]. Reduce in advertising cost is believed as the most prominent perceived benefits of e-commerce as it is proven to reduce in large scale the cost of paper printing previously used in promotion and advertising [40].

Inferential Analysis

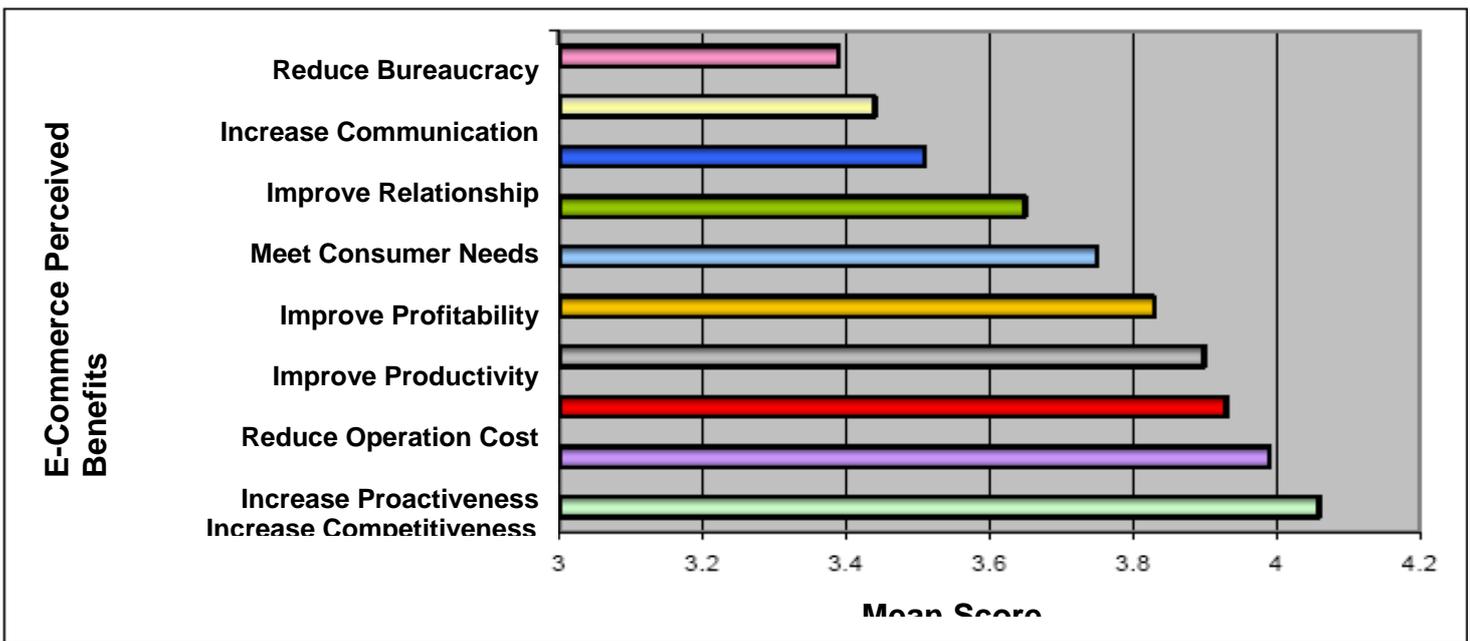


Fig 4: Mean Score for e-commerce benefits perceived by Malaysia Bumiputera's SMEs

This section describes the findings for inferential analysis that are divided into two parts: (1) Relationship between level of e-commerce usage and company's characteristics such as type of ownership, sector of business and size of business. Chi-Square test is used to understand the relationships that exist between level of e-commerce usage with type of ownership and sector of business, while Spearman Correlation Coefficient test is used to study the relationship between level of e-commerce usage and size of business. (2) Relationship between level of e-commerce usage and e-commerce perceived benefits. For this part, Spearman Correlation Coefficient test is once again used to study the relationship.

Relationship between Level of E-commerce Usage and Company's Characteristics

With reference to Table 2 below, the results of the test demonstrate the value of Chi-Square for the

relationship between level of e-commerce usage and type of ownership is 11.970. The p-value (sig.) appears to be 0.153 which exceeds 0.05. This indicates that we would reject the hypotheses (H1) and conclude that there is no significant relationship between level of e-commerce usage and type of ownership namely the private, partnership and private limited ownership. The value of Chi-Square for the relationship between

level of e-commerce usage and type of ownership is 22.277 while the p-value (sig.) is 0.004, which is less than 0.05. This states that hypotheses (H2) is supported thus, we could infer that there is a significant relationship between level of e-commerce usage and sector of business. The result concludes that the different sector of business, namely the manufacturing, services or construction, plays a vital role in influencing the level of e-commerce usage among Bumiputera SMEs. The result from the Spearman Correlation test in Table 3 indicates that the p-value (sig.) is

0.211, which exceeds the 0.01 level for two-tailed analysis. As such, the hypothesis (H3) is rejected and it is concluded that there is no significant relationship between level of e-commerce usage and size of business.

Table 2: Relationship between level of e-commerce usage with type of ownership and sector of Business

Company's characteristics	X ²	Sig.	Analysis
Type of Ownership	11.970	0.153	Not significant
Sector of Business	22.277	0.004*	Significant

N = Total of Respondent = 423

*significant at the 0.05 level

Table 3: Relationship between level of e-commerce usage with size of business

Company's Characteristic	Correlation coefficient (rs)	Sig.	Analysis
Size of Business	0.061	0.211	Not significant

N = Total of Respondent = 423

Relationship between level of e-commerce usage and e-commerce perceived benefits

Table 4 below illustrates the relationship between level of e-commerce usage and e-commerce perceived benefits. The result from the Spearman Correlation test states the p-value (sig.) as 0.000, which is less than 0.01 level for two-tailed analysis. As such, the hypothesis (H4) is supported and we could infer that there is a significant relationship between level of e-commerce usage and e-commerce perceived benefits. However, the result also indicates that the correlation coefficient value is 0.307. This further signifies the strength of the relationship between level of e-commerce usage and e-commerce perceived benefits as weak correlation. Based on this result, the authors conclude that the different level of e-commerce usage in each company imposes different e-commerce perceived benefits by the Bumiputera's SMEs.

Conclusion

This section concludes the paper by describing the specific outcomes of the study and describes their importance. On the whole, all four objectives that

were set forth have been achieved with the findings obtained from this study. The first

objective is met with the identification of e-commerce usage by Bumiputera SMEs that is only at *publish* level.

Table 4: Relationship between level of e-commerce usage with size of business

Level of E-Commerce Usage	E-Commerce perceived benefits		
	Correlation coefficient (rs)	Sig.	Analysis
	0.307*	0.000	Significant

N = Total of Respondent = 423

*significant at the 0.01 level (2-tailed)

This further postulates that Malaysia SMEs are still far away in achieving the level four (*transaction*) and level five (*integration*). This is rather a worrying state as the nation plans to be a developed country by the year 2020.

As such, this study hopes to act as a guide for relevant and affected parties to understand the real issues and factors influencing e-commerce implementation in Malaysia. Bumiputera SMEs should then realize the huge positive impacts and benefits that e-commerce will bring which should enable them to survive in the fierce market competition and to gain acceptance globally. The SMEs should be more sensitive towards the dynamic changing of business environment, thus making every possible effort to accept new technology implementation. Besides that, the authority parties being responsible to the Malaysia SMEs development such as Small Medium Industries Development Corporation (SMIDEC), other various government bodies and private agencies should act accordingly by preparing a strategic planning or draft that focuses on increasing the e-commerce awareness and usage among these SMEs. They should relate their efforts to the excellent works carried out by the Multimedia Development Corporation [18], that has proposed some guidelines in promoting e-commerce as well as providing special funds and grants to develop e-commerce applications. Trainings and regular monitoring by certain agencies are also believed to enhance the implementation of e-commerce in Malaysia Bumiputera's SMEs.

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