Assessing E-Commerce Adoption by Small and Medium Enterprises in Malaysia, Singapore and Thailand

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Abstract: Many publications to date, have describe the various adoption of e-commerce among firms small and large. However, although the e-commerce adoption growth has been significant, the e-commerce adoption rate among SMEs has mainly been among the industrialized countries. First objective of this research is to assess the usefulness and ease of using e-commerce perceived by SMEs in both service and manufacturing industries whether there are significant differences between Malaysia, Singapore and Thailand respectively. The second objective is to assess the important technical competencies in terms of technical knowledge and skills in e-commerce setup in both service and manufacturing industry across and to identify whether are there significant difference between Malaysia, Singapore and Thailand. The relationship among variables has been studied through correlation test. Three dimensions have been analyzed. Technical knowledge related to e-commerce, perceive ease of use of e-commerce and perceive usefulness of e-commerce. From the statistical data analysis output, it is found that technical knowledge related to e-commerce is not significantly different between the countries in both the manufacturing and the service industry but both the manufacturing and service industry reckons that technical knowledge and skill poses to biggest challenge that effect the uptake of e-commerce similarly across the three countries.

Key words: SME (Small and Medium Enterprise) • Business to business (B2B) • Technology Adoption Model (TAM)

INTRODUCTION

SMEs (Small and Medium Enterprise) are the engine of economic growth of many countries, fuelling the economic activities that spur consumption and expenditure. They are essential components of an economy to induce competitive environment and stimulate efficient market. Because of this, SME plays a very important role in many developing countries. It is no surprise that state government is heavily involved to design policies and measures to encourage the creation and development growth of SMEs [1].

In Malaysia, There are in total 552,849 SME establishment and 86% of those are from the service sectors while the rest are from the manufacturing and agriculture sectors [2]. Singapore have a total of about 160,000 SMEs and 84% of them are from the service sectors while the remaining 16% from the manufacturing and other industries [3]. Thailand has a total of 2,161,577 SME establishments with 59% from the service industry and the remaining 41% from the manufacturing and other industry [4]. The evolution of information technology of a nation drives the change and development of productivity capacity in a society and other information related knowledge is the critical factors of an economic...
Today, in order to continue to remain competitive in this challenging environment, SMEs have to circum to new technique particularly information and communication technology based, all of which have become indispensable business management tools. Therefore, the emergences of Internet based businesses have manage to evolve the global social and economic landscape over the years [7].

Previous researches have studied the usage of e-commerce in developing countries particularly on the early adopters thus providing evidence of the e-commerce growth [8]. And such technology adoption has enhanced the business to business (B2B) processes especially in logistic coordination and regional and global communication along the supply chain [9]. And today, there are evidence of a growing number of SMEs applying web based marketing technique to specially target specific market segment worldwide [10]. This new technologies have provided the tool for enterprises to enable them to establish connection with other enterprises throughout the world, this in turn enabling them to participate in the world economy [1]. It also creates strategic alliance between the users as significant digital data are shared and integrated, especially when it comes to relationship marketing and data-based marketing. Such data can be archived and utilized by organizations to build competitive advantage globally [11, 12, 13]. With the benefits of e-commerce becoming very apparent, especially to the development of SMEs across the business community, government of the developing countries are encourage to develop policies and frameworks that will aid SMEs e-commerce adoption and growth by overcoming e-readiness constraints that are known to limit the factors attributing to e-commerce growth, [14, 15].

However, e-readiness constraints at the national level have proven to be neither useful in explaining the individual SME decision on e-commerce adoption nor adequately explain the factors that influence the decision to adopt [16].

MATERIALS AND METHODS

The first objective of present study is to assess the usefulness and ease of using e-commerce perceived by SMEs in both the service and manufacturing industry and to identify whether there are significant difference between Malaysia, Singapore and Thailand. The second objective of this research is to assess the important technical competencies in terms of technical knowledge and skills in e-commerce setup in both service and manufacturing industry across and to identify whether are there significant difference between Malaysia, Singapore and Thailand.

The findings in this study should be able to provide useful insights and understanding for academicians in future as an aid for a more detail research on the e-commerce adoption and development in this part of the region. This study should also address some secondary issues for the extension of the framework proposed which will also able to profile the businesses. The framework of this research is based on a proposed research model (Fig. 1).

In this research, three major variables are considered as sources of influence for supporting the setup of e-commerce for SMEs, “perceive usefulness, perceive benefits and technical knowledge”. On a previous research done by MJ Taylor, the research address the issue of knowledge and skill set for e-commerce and was aiming specifically at the requirement, usage and development of e-commerce knowledge and skills in an SME setting. Hence, the idea is then applied in this research. Based on that research done, the Technical knowledge requirement in e-commerce setup is believed to have an influence in a firm’s decision to adopt the e-commerce technology [17].

Both the Perceive usefulness and perceive benefits are considered a subset of Davis’ instrument to measure perceived ease of use as modified to make them relevant to be applied in an e-commerce context. This adapted subset from the TAM framework is a powerful, robust and very commonly employed model for predicting and explaining user’s behavior and IT usage [18, 19, 20].

Based on the framework suggest above, this research will only scope in to understand the relationship between e-commerce setup and perceive usefulness, perceive benefits and technical knowledge related to e-commerce in the service and manufacturing industry across Malaysia, Singapore and Thailand. While the other portion of the framework will be briefly discussed, allowing other research to expand and study the framework.

Hypothesis:

$H_1$: There is significant difference in the technical knowledge required for e-commerce setup between Thailand, Malaysia and Singapore in the service industry;
H1: There is significant difference in the perceive usefulness of e-commerce between Thailand, Malaysia and Singapore in the service industry;

H2: There is significant difference in the perceive benefits of e-commerce between Thailand, Malaysia and Singapore in the service industry;

H3: There is significant difference in the technical knowledge required for e-commerce setup between Thailand, Malaysia and Singapore in the manufacturing industry;

H4: There is significant difference in the perceive usefulness of e-commerce between Thailand, Malaysia and Singapore in the manufacturing industry;

H5: There is significant difference in the perceive benefits of e-commerce between Thailand, Malaysia and Singapore in the manufacturing industry.

Research Method: After reviewing the literatures, a holistic view of the research parameters was obtained, examining the factors that influence the e-commerce adoption processes among the SMEs, in particular the technical knowledge requirement and the perceived usefulness and ease of use. The next step was the development of a data collection instrument containing the parameters needed to observe the variables of adoption influences [21].

A pre-test was carried out to ensure the quality of the instrument developed. The data are then collected and tested for its accuracy. The data analyses are both quantitative and interpretive in nature. The data analyses are done using Statistical Package for Social Sciences Version 19 (SPSS). A pilot test was done in each country to determine the respondent’s responses to the questionnaire and the understanding of the questionnaire instructions.

The feedback from the pilot test resulted in minor changes to the survey instructions and questions. Sampling method selected for this research was selective sampling. There are screeners question administered to the respondent that would select respondent base on the required criteria. This method of sampling would allow respondent that are relevant to the research to a part of the data sample. The study targeted owners or top managers of small and medium size business from a variety of industries to cover two main categories, namely the service industry and manufacturing industry.

This study will have a geographical coverage of the centre region of South East Asia covering Thailand, Malaysia and Singapore. Each of this country will have a sample size of n=300, which will bring the total respondent for this research to n=900. Number of employee was used as a principle criterion in determining whether a firm qualified as an SME firm, since other categorizations involving revenue, total capital and other types are more complex, difficult to apply and can result in misleading classifications especially for regional studies. For this study, we targeted SME with employee or staffs of 5 to 150 people per firm [22].

Another important criterion for this research is that participating SME must have already been using Internet for business activities with or without an existing e-commerce site. This is to eliminate SMEs that are not able or do not have the opportunity of adopting e-commerce due to lack of basic Internet infrastructure. Respondent for this research would only be comprises of business owners, decision-makers or managers with financial authority or influence in the organizations. Validity refers to the extent of a test measured claims to measure the valid measurement in order for the results acquired to be accurately applied. However, for this particular research, the sample was adopted from a well establish market research firm.

Therefore the research instrument was pre-validated by the firm. An accuracy test was done on a pilot test sample of 31 respondents using the Cronbach alpha coefficient. An acceptable value of 0.7 indicates the accuracy of the questionnaire [23]. And from the test done on the sample, all of the variables have Cronbach alpha coefficient of more than 0.7, hence the questionnaire used have relatively high reliability. The data obtain from the fieldwork are all computed using the Statistical Package for Social Science (SPSS) version 19. Crosstabs is a statistical analysis tool in SPSS that enable research to cross-tabulate two variables and displaying their relationship between the variables in a table format.

Unlike Frequencies Distribution in SPSS, which summarizes information of a single variable, crosstabs generates information about vicariate relationships. In this research, crosstabs tables were used to look at the relationship of variables measured between Malaysia, Singapore and Thailand. The statistical analysis tool Analysis of Variance (ANOVA) in SPSS, is used for examining and compare the differences in the mean values of the dependent variable with controlled independent variables.

Essentially, ANOVA in SPSS is used as the test of means for two or more populations. In this research, ANOVA is used to examine the difference of mean values of the dependent variables across Malaysia, Singapore and Thailand.
RESULT AND DISCUSSION

In the sample of SMEs gathered for this research, Male gender dominated the SMEs owners or managerial role in 3 of the countries, particularly in Malaysia. This could be an indication of gender preferences in the 3 countries when assigning a managerial post to an individual or entrepreneurship quality is more prominent in the male gender.

Wholesale and retail sector are the biggest sector across Malaysia, Singapore and Thailand. 31% of the SMEs in Thailand are SMEs that has been operating not more than two years. Payment services and online marketing are the two most important attributes of e-commerce perceive by the SMEs in Malaysia, Singapore and Thailand. From the findings of this research, three dimension we analyzed. Technical knowledge related to e-commerce, perceive ease of use of e-commerce and perceive usefulness of e-commerce.

From the statistical data analysis output, it is found that technical knowledge related to e-commerce is not significantly different between the countries in both the manufacturing and the service industry but both the manufacturing and service industry reckons that technical knowledge and skill poses to biggest challenge that effect the uptake of e-commerce similarly across the three countries. Both the manufacturing and service sector SME perception towards the usefulness of e-commerce are relatively similar across the three countries.

However, for the service sector SME, between Singapore and Malaysia, display a strong difference although statically it is not significant enough. Malaysian service sector SME perceive e-commerce to be more useful in relative to how the Singapore SME perceived. Finally, for the Perceive ease of use dimension, Singapore SMEs are significantly different from the SME in Malaysia and Thailand. This is most likely due to the national information technology policy undertaken by Singapore and the e-readiness policy, which the government of Singapore implemented much earlier.

The implementation of such policy is further made easy with the geographical advantage Singapore has as a small country. Therefore, Singaporeans are more information technology incline in relative to the other countries (Information Development Authority of Singapore). This research provides a very important perspective to the business community and national government. At a national level, governments can now structure Information technology policy that facilitates growth for SME. Therefore, in this context, policy structure should be then directed to the technical knowledge exposure of e-commerce to the SME. In the business society, this research suggests that development of knowledge base human capital would be crucial to overcome the technical knowledge barriers and the ease of using e-commerce.

Therefore e-commerce champions might be the determining change agent for a successful adoption of ecommerce, although more research should be directed to this cause. The obvious advantage of this research is the size of the sample data drawn. And at 900 respondents, the data will provide a strong and healthy sample size that will better represent the real population of SME in Malaysia Singapore and Thailand with 300 respondents for each country. However there are numerous limitations and assumption that have to be made in this research. First of all, the data are drawn from a list of respondent registered as member of an online panel responsible to answer most internet survey.

This panel is maintained by a fieldwork agency specially to provide market research companies data to engage their market research processes. Therefore the profiles of the online respondent might differ from the actually population. But nonetheless, since Malaysia, Singapore and Thailand have relatively high percentage of internet penetration as compared to other countries, we assume that the online panel data would provide a sample closely if not similar to the actual population. Second limitation of the research is the research instrument developed for this study. The questionnaire was developed with primary purpose of accessing the SME across Malaysia, Singapore and Thailand but catering to a market research perspective. Although much compromise has been negotiated with the market research company whom voluntarily provide this research with the necessary data, the changes done to the questionnaire could not contradict with the main objective of the questionnaire as a market research purposes. Therefore the changes allowed are very limited. However, the fundamental essence and the important parameters of this research were sufficiently captured in this sample.

The sampling was considered done at random despite the selective nature of the screener question. This is because there were no quotas set for the type of industries. This is to capture the real proportion of the SME industries in these countries based on the selected criteria. The manufacturing industry sample is slightly smaller than expected making the comparison within industry slightly compromised. However, the number of manufacturing SME in this sample, although small but still manage to surpass the minimum number of sample to be considered for statistical analysis (n=30).
The suggested framework for this research can be extended to include portions not discussed in this particular research, referring to grey areas in (Figure 1). In this particular research, SMEs were segmented according to its industry, which are the manufacturing and the service industry. Therefore, further research should then focuses on the e-commerce adopters and non-adopters looking more into the dimension of barriers and challenges of e-commerce adoption, the importance of e-commerce attributes and the firm’s business goals and approach.

This would further extend the framework to include the mental model perspective into the adoption process as illustrated in Figure 1. Quota sampling method would also be more suitable to gather sufficient amount of respondent in the segments. This would address the limitation this study had on the random sampling method. Since the SME profiles are already obtain in this study, random sampling would be less useful for further research.

REFERENCES


