

An Empirical Study on the Influencing Factors on the Adoption and Use of E-Commerce by Thailand SMEs

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Abstract: The Information Technology Policy Framework, “Thailand Vision towards a Knowledge-Based Economy (IT2010)”, released in 2002 encourages and supports Thai small and medium enterprises (SMEs) to apply e-commerce technology in order to enable them to compete on the world stage. This paper outlines a proposed study which aims to investigate how to enable the SMEs sector in Thailand to adopt and use e-commerce technologies to improve their operations. There are limited previous studies about the adoption of e-commerce in the Thai SEM sector. Those reports were mainly surveys on the Internet and mostly conducted by government organisations. It is recognized that there is a need to use different approaches to explore the subject. This paper describes the proposed framework and methodology to investigate the factors and customer behaviors which influence the SMEs adoption and use of e-commerce in Thailand. The first 26 factors are captured from the variables which are covered by Wymer and Regan. The variables form the basis for further investigation for other secondary variables. The second class of variables of consumer behaviors which influence e-commerce adoption and use is adapted predominantly from previous studies which related to consumer behaviours.

Keywords: E-Commerce adoption and use, E-Commerce technology, SMEs

1. INTRODUCTION

Small and Medium Enterprises (SMEs) in many nations are playing an increasingly important role in the business sector and contributing to their countries’ economy. In particular, among many developing countries, some of SMEs are planning to expand and to establish in the world market. E-commerce is one of the tools which will enable these SMEs to improve their operations. However, the study of e-commerce adoption and use among the small and medium enterprises (SMEs) has directed mainly at variables which either result in impediments or inducements of e-commerce adoption and use^[56]. It is proposed in this study that the adoption and use e-commerce by SMEs should focus on diverse contexts such as factors of influence, customer behaviours and appropriate theoretical models. For this purpose, a number of theoretical models have been applied. This included: Technology Acceptance Model (TAM)^{[11-13],[19-20],[25],[28],[32],[49-50]}, Theory of Reasoned Action (TRA)/Theory of Planned Behaviour (TPB)^{[1-2],[18],[37],[41],[52]}, Unified Theory of Acceptance and Use of Technology (UTAUT)^{[3],[53]}, etc. In the case of Thailand, the study of e-commerce adoption and use by the SMEs sector is still in an early stage. This initial study aims to investigate the factors and customer behaviours which is suggested to have significant influence on the adoption and use of the e-commerce. It is anticipated that finding from this study will provide more guidelines for the implementation of e-commerce framework and their effective use thereby improving the national economy.

2. BACKGROUND AND RATIONALE

2.1 Theme of the study

In 2002, Thai government has endorsed an information technology policy framework entitled “Thailand Vision towards a Knowledge-Based Economy (IT 2010)”. The policy framework is expected to cover the next decade until 2010. The IT 2010 emphasizes the roles of information technology for the enablement and facilitation of economic and social development. The five areas of information technology development highlighted in the IT 2010 policy are: e-government, e-industry, e-commerce, e-education, and e-society. In addition, the policy framework also aims to develop the information technology industry^[35].

E-commerce is acknowledged by the Thai government that it has the ability to: increase business opportunities, decrease transaction costs, augment competence, build up the quality of life for its people, and assist small and medium enterprises (SMEs) to exploit new opportunities in the new global economy^[24]. Tangkitvanitcha^[51] points out that the Thai government has to support SMEs by contributing their website development without cost. This should also include public web portal for industrial sectors. He recommended that the web portal should be composed of a variety functions such as group discussion, directories, public relations, information provision, and online transaction. Therefore, the government has to develop precise policies for e-commerce and related laws dealing with issues such as transactions, authentication, certification, security, deception, and consumer right. The government should also provide supports for ICT facilitation, finance, transaction of commercial entities, and encouragement of confidence in e-commerce use. One of the Thai government’s objectives is to develop the ability of Thai entrepreneurs to compete in the world market. The emphasis should be placed on e-commerce for exports, trades, services, and domestic consumption. Within the IT 2010 document, the government has already set policies or the ‘E-Commerce Policy Framework’ for the development of e-commerce in Thailand^[35].

The Electronic Commerce Resource Center (ECRC) of Thailand^[16] states the barriers of e-commerce entrepreneurship in Thailand are in two aspects: customers’ problems and technical problems. The development of e-commerce in Thailand continually faces challenges: a) the number of Internet users in Thailand is only 6.97 millions which is relatively low as compared to the country’s population of 62 million^[34], b) inadequate e-commerce regulations and laws, c) lack of national information infrastructure due to low bandwidth causes major barriers to the expansion of internet services, d) a lack of skilled officials in both information technology, and e) lack of English competency limits the ability of Thai e-commerce sites to reach out to the world.

In the Thai SMEs sector, the economic trend in 2006 is expected to expand continuously. The GDP of SMEs is anticipated to grow up to 4.7 to 5.7% exceeding the national GDP. There are supporting factors internally and externally. The internal factors compose of government investment especially the mega-projects which will start in 2007, and investments from the private sectors. The external factors compose of the growth rate of export products (15.5%) and the world economic situation. The results of business performance within the Free Trade Agreement (FTA) framework is expected to push up the export market continually. In addition, import business will reduce to around 17.5% which causes an increase in domestic manufacturing^[40]. Therefore, it is fair to anticipate that Thai SMEs sector will move towards strong growth in their activities and business performance. However, with respect to the Thai e-commerce framework discussed in the previous sections, e-commerce implementation in SMEs sector is still lingering on the developing stage.

The discussion thus far brings to surface a necessity to investigate a number of factors in depth and in diverse dimensions, and to determine how these factors influence the adoption of e-commerce and use of SMEs in Thailand. In addition, behaviours of Thai online customers need to be explored in order to correlate the behaviours with the adoption of e-commerce technologies and the use of SMEs in Thailand. It is also

necessary to focus on the entrepreneurs in the SMEs sector and online customers in Bangkok and the surrounding provinces. The research will be based on qualitative and quantitative approaches. The study is intended to scrutinize the success or failure of the adoption and use of e-commerce in SMEs sector in Thailand. The project aims to suggest and to create appropriate understanding for business sectors in Thailand which intend: a) to develop and implement e-commerce; b) to engage in global business via e-commerce technologies; and c) to comprehend issues related to e-commerce entrepreneurship in national and international level.

2.2 The theoretical models

According to Wymer and Regan ^[56], “the research on e-commerce/e-business Internet technology (EEIT) innovation and adoption by SMEs applies a variety of theoretical models and foundation from diverse disciplines. No single model or theory dominates.” Therefore, this study is based on a combination of variety of approaches and theoretical frameworks which are as follows: a) Diffusion of Innovation Model ^[43-44], b) Technology Acceptance Model (TAM) ^{[2],[11-13],[19-20],[25],[28],[32],[49-50]}, c) Theory of Reasoned Action (TRA)/Theory of Planned Behaviour (TPB) ^{[1-2],[37],[41],[52]}, d) Social Cognitive Theory (SCT) ^{[4-9],[23],[31],[45],[55]}, and e) Unified Theory of Acceptance and Use of Technology (UTAUT) ^{[3],[53]}.

2.3 The aims of the study

The objectives of this study are as follows:

To investigate, aggregate and determine factors and their influencing e-commerce adoption of small and medium enterprises (SMEs) in Thailand. Furthermore, research questions for this perspective are defined as follows: a) What factors influence the e-commerce adoption and use of SMEs in Thailand? b) What barriers and incentives have significant influences on the adoption and use?, and c) What levels of these influences are determined on the adoption decision in both of positive and negative?

To investigate customer behaviours and correlate the behaviours with the adoption of e-commerce in SMEs in Thailand; after that, the correlated results are interpreted and determined how their behaviours influence the e-commerce adoption of Thai SMEs. The following research questions are defined to explore the behaviours: a) What are the current state of beliefs and attitudes toward e-commerce of Thai customers?, and b) How the beliefs and attitudes influence the e-commerce adoption of Thai SMEs?

2.4 Scope of the study

Variables are used in this study compose of two types:

a) Dependent Variable: State of e-commerce adoption by SMEs in Thailand is defined as dependent variable which is composed of influencing levels of factors, barriers, incentives, and consumer behaviors toward the adoption.

b) Independent Variables: There are two main independent variables defined in the study; firstly, the 26 factors of Wymer and Regan ^[56] are used as the foundation of other factors which will be defined later by the authors. Wymer and Regan ^[56] categorise the 26 factors into the 4 dimensions of environmental factors, knowledge factors, organisational factors, and technological factors. The details are in the following table:

Table 1. Research variables

Code	Factor name	Factor description
Environment Factors		
a	Competitive Pressure	Competitive pressure from other Internet adoption within the SMEs' industry
b	Government	Government rules and regulations
c	Market	Viable market or customer base e-commerce
d	Partners/Vendors	Availability of the right partners with whom to work
e	Supplier Readiness	Readiness of Suppliers for electronic business
Knowledge Factors		
f	Change Experience	Employee experience with making major changes
g	Executive Experience	Experience of top executives with computers and the Internet
h	Innovativeness	The SMEs' willingness to about new technology
i	Models	Models of successful use in the SMEs' industry
j	Need	Perceived need for change or implementation of Web and Internet Technologies
k	Prior Experience	The company's prior experience with new technology implementations
l	Trust	Trust or confidence in Web and Internet Technologies
m	Understanding	Understanding of available opportunities and options with e-commerce
n	Value	Perceived value or relevance to the business
Organisational Factors		
o	Capital	Access to capital for start-up
p	Employee Reduction	Resulting reduction in number of employees
q	Priority	Priority relative to other projects that require existing resource and time
r	Profitability	Projected profitability of e-commerce
s	Technical Expertise	Availability of technical staff or consultants with web-skills
Technological Factors		
t	Cost	Cost of setup and maintain
u	EC Technology	Technology for selling products or service online
v	Infrastructure	Access to network services or infrastructure to support Web and Internet Technologies
w	Reliability	Reliability of Web and Internet Technologies
x	Security	Security issues
y	Technology Availability	Availability or adequacy of existing technology and tools
z	Other	Other

Source: Wymer, Scott A. and Regan, Elizabeth, 2005. Factors Influencing E-Commerce Adoption and Use by Small and Medium Businesses. *Electronic Markets* 15 (4): 438-453.

Secondly, another independent variable, consumer behaviours, is defined for the study. Moreover, the sub-variables are described as follows:

Table 2. Research variables

Sub-variables	Adapted from:
a) Effects of sale promotion	Degeratu, et al. ^[14]
b) Shopping plan before shopping	Dahlen and Lange ^[10]
c) Effects of brand name, price and search attributes	Degeratu, et al. ^[14]
d) Atmospheric qualities of e-commerce, relationship between involvement and atmosphere, customer's affective and cognitive reactions	Eroglu, et al. ^[17]
e) Web environment (web site lay-out design, information content, etc.)	Huang ^[21] ; Menon and Kahn ^[30] ; Iyer, et al. ^[22] Mathwick, et a. ^[29]
f) Complementing channel characteristics and retail information display for customer shopping orientation	O'Cass and Fenech ^[38]
g) Perceived usefulness and ease of use	Eastin ^[15]
h) Pervious adoption, perceived risk, Internet use and perceived financial	Reynolds ^[42] ; So and Sculli ^[48] ; Shih, et al. ^[47]
i) Pivotal role of trust	Salisbury, et al. ^[46] ; Liao and Cheung ^[27]
j) Influence and impact of security and privacy issues	Researcher defines
k) Other	

The study focuses on Thai SME retailing sectors in Bangkok and its surrounding provinces. The retailing industry is the main sector of SMEs in Thailand (30% or 259,310 firms)^[39]. Moreover, customers are limited in Bangkok only.

2.5 Research Model

The research model of this study is composed of two sides, Independent Variables and Dependent Variable, which are showed in the following diagrams:

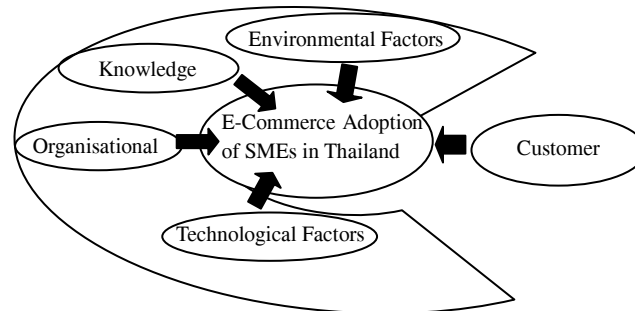


Figure 1. Research model

3. RESEARCH METHODOLOGY

The study will be conducted using both of quantitative and qualitative methodology. Data collection will be carried out in Thailand. The methodologies are described as follows:

3.1 Quantitative methodology

(1) Population: The first group of research population is composed of 845,064 SMEs entrepreneurs in Thailand; however, the study focuses on retailing SMEs entrepreneurs which are 30% of the total of SMEs firms (259,310 retailing firms)^[39]. The second group, 7,084,201 of Thai people who use the Internet in daily life and 1,630,752 are the Internet users in Bangkok^[33] which is population for studying individual/customer.

(2) Samples: The samples of this research are derived from the stratified random sampling approach because of the diversity of the population. The Stratified Random Sampling approach is also known as *proportional* or *quota* random sampling. It is required to divide the population into homogeneous subgroups and then random sample will be taken from each subgroup. Typical features which determine the strata are income, number of employees, fiscal budget, IT capacity, etc. Due to the fact that some strata may consist of thousands of population while other strata may consist of hundreds of population, it is impossible to apply the rule of three-mathematics to estimate the sample. Thus, the non-proportional stratified random sampling approach will be used to estimate the samples.

(3) Sample Size: The sample size of the first group population will be drawn from the sample size estimation formula of Taro Yamane^[57]. The sample size will be defined at the degree of the precision level of $\pm 5\%$ where confidence level is 95%. By this, 400 firms will be used as representative samples for the retailing SMEs entrepreneurs in Thailand. However, Yamane^[57] compromises the sample size for the over 100,000 population to be 400 samples, so the sample size of the second group of the research population, individual/customer, for this study is 400 as well.

(4) Data Compilation: Questionnaires will be used for data collection. Respondents will be asked to complete the questionnaires themselves, in other words, self-administered questionnaires are adopted. The questionnaires will be distributed to the respondents by post. Interviews with top management and decision makers who are directly involved with Thailand's e-commerce initiatives from the government departments and the industry will also be conducted. They will provide primary source data for in depth review and qualitative

assessment of the e-commerce practices in Thailand. Approval from the Research Ethics Committee will be sought prior to the execution of the above activities.

(5) Data Analysis: SPSS application and appropriate statistical techniques will be used to process the data from returned questionnaires. Statistic Scales of Measurements are as follows:

- a. Nominal Scale: frequency distribution, percentage
- b. Interval Scale: arithmetic mean, standard deviation
- c. Ordinal Scale: percentile, rank correlation
- d. Statistical Significance Test: parametric statistic test (ANOVA), Multi-regression, and Partial Least Squares (PLS)

3.2 Qualitative methodology

Content analysis approach will be used for analysing the scenario of electronic commerce entrepreneurship in Thailand. Information sources are primary sources, secondary sources, and tertiary sources including electronic media in both offline and online. Interviews with top management and decision makers who are directly involved with Thailand's e-commerce initiatives from the government departments and the industry will also be conducted.

4. CONCLUSION

Results from this project are expected to contribute towards scholarly knowledge in the field. The following contributions will be made. Firstly, further research should investigate and categorize additional variables and incorporate them into the model of e-commerce adoption in order to construct a superior embodiment of the procedures directing to e-commerce adoption. Secondly, other SMEs clusters in Thailand such as manufacturing, services, wholesales, etc. should be studied in-depth involving with e-commerce adoption. Results from this study could be compared against results of other studies in order to develop vision and guidelines for SMEs, customers and e-commerce entrepreneurship for sustainable e-commerce development in the country. Thirdly, the results of this study will lead to wider acceptance of e-commerce adoption in SMEs sector in Thailand. The results will provide better understanding and execution of e-commerce planning, managing, collaborating, and marketing of e-commerce activities of private and government sectors. Finally, the study will contribute to the appreciation and improved e-commerce practices for competitiveness related to decision-making on e-commerce issues in the government, business and customer sectors.

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