

MEASURING THAI CUSTOMERS GENDER AND BEHAVIOURS INFLUENCE ON THE ADOPTION OF E-COMMERCE TECHNOLOGIES BY SMALL AND MEDIUM ENTERPRISES (SMEs)

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ABSTRACT

Thai SMEs is recognised by the government that it has an important role in the country's development. A number of the government's policies are aimed to strengthen Thai SMEs through the development of e-commerce and sophisticated e-commerce technologies (ECTs). These policies and technologies are intended to bring the country up to the world stage of knowledge-based economy. The key roles of the Thai government and the business sector are to promote the use of e-commerce technologies by SMEs and to encourage the adoption of these technologies in order to upgrade their businesses and their operations. As regard to the significant role of customers, the study of their behaviours influence the adoption of e-commerce by the SMEs is another major stream of scholastic pursue. This paper reports a study on the influence to the adoption of e-commerce technologies by Thai SMEs due to the gender and customer behaviours. The study results showed that the customer behaviours have a slight influence on the adoption of the e-commerce technologies.

KEYWORDS

Thai Customer Behaviours, Thai SMEs, E-commerce Adoption

1. INTRODUCTION

Study of customer behaviours is the one of key areas of interest on SME studies. Many previous studies have considered customer behaviours and their characteristics which may influence e-commerce adoption. For example, Wu (2003) focused on consumer demographics (gender, age, education, occupation, income, interest, and living area) and consumer purchase preferences (time, methods, and delivery). Papers from the 16th annual multi-channel retail conference (eTail2007) have pointed out that customer personalisation, online customer behaviours and buying history are the approaches and strategies for placing an organisation's brand into the hands of the customers (Crum 2007). Customer demands have also been recognised as an important driver for implementing, diffusing and using e-commerce technologies efficiently in SME sector (Beck, Wigand et al. 2005). Moreover, customers are one of the external forces and barriers in information technology adoption (Hallander, Cherrington et al. 2000). Customer power has become a pressure on SMEs as customers tend to look for better quality products and reduction in prices (Levy and Powell 2000).

Since 2001, the Thai government has developed its policy guidelines in accordance to the National Economic and Social Development Plan which emphasises on the development of small and medium enterprises (SMEs). The guidelines aims to a) construct, enhance and improve ICT network in order to support production factor and marketing, and b) encourage SMEs running their business via e-commerce infrastructure (Thailand Investor Service Centre 2004). In addition, the Thailand ICT Master Plan 2002-2006 provided guidelines for utilising ICTs in SMEs. The key guideline is to strengthen SMEs through ICTs. Also the plan aims at promoting the use of basic software applications such as accounting, financing, administrating, production managing, and supply-chain management inter-connecting, etc to the SMEs. (Thailand. National Electronics and Computer Technology Centre 2003). The Office of SME Promotion has also launched strategies for supporting Thai SMEs to achieve sustainable growth. The strategies which

related to ICTs are the development of ICT transfer mechanism to SMEs, and, the development of supply chain linkages between various SME clusters (Thailand. Office of Small and Medium Enterprise Promotion 2007).

Based on the Thai government’s effort and investments, it can be anticipated that Thai SMEs sector will move towards strong growth in their activities and business performance. However, e-commerce implementation in the Thai SMEs sector is still lingering on the developing stage. In addition, behaviours of Thai online customers need to be explored in order to correlate their behaviours with the adoption of e-commerce technologies and use by the SMEs sector in Thailand. Another aspect is to focus on the entrepreneurs in the SMEs sector and online customers (Chooprayoon and Fung 2007). It is expected this study will provide information and insight on the research question on the gender and customer behaviours influence on the adoption of e-commerce technologies by the SMEs.

2. RESEARCH FRAMEWORK

The objectives of this study are to investigate customer behaviours and to correlate their behaviours with the adoption of e-commerce technologies by SMEs in Thailand. The gender of the customers was also included in order to measure the influence level of the adoption. The research model and framework is shown as follows:

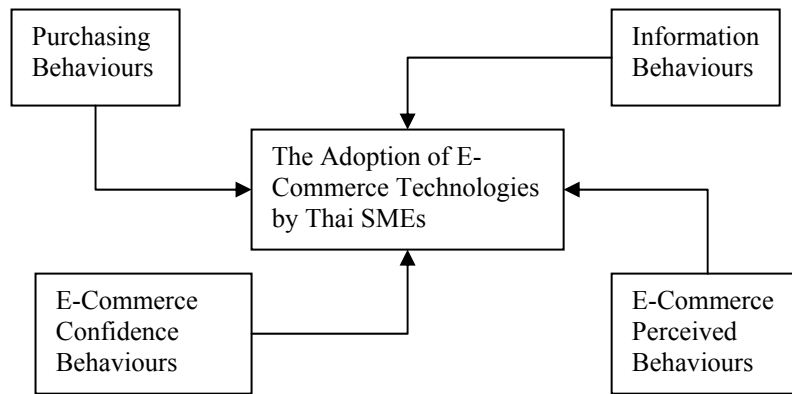


Figure 1. Framework of the Research

The variable, consumer behaviours, is defined in this study under four categories as shown in Figure 1 . The sub-variables are described as follows:

<i>Sub-variables</i>	<i>Adapted from:</i>
a) Effects of sale promotion	a) Degeratu, Rangaswamy, and Wu (2000)
b) Shopping plan before shopping	b) Dahlen and Lange (2002)
c) Effects of brand name, price and search attributes	c) Degeratu, Rangaswamy, and Wu (2000)
d) Atmospheric qualities of e-commerce, relationship between involvement and atmosphere, customer’s affective and cognitive reactions	d) Eroglu, Machleit, and Davis (2001)
e) Web environment (web site lay-out design, information content, etc.)	e) Huang (2000); Menon and Kahn (2002); Iyer, Gupta, and Johri (2005)
f) Complementing channel characteristics and retail information display for customer shopping orientation	f) Mathwick, Malhotra, and Rigdon (2002)
g) Perceived usefulness and ease of use	g) O’Cass and Fenech (2002)
h) Pervious adoption, perceived risk, Internet use and perceived financial	h) Eastin (2002)
i) Pivotal role of trust	i) Reynolds (2000); So and Sculli (2002); Shih, et al. (2004)
j) Influence and impact of security and privacy issues	j) Salisbury, Pearson, and Miller (2000); Liao and Cheung (2001)
k) Other	k) Researcher defined

3. RESEARCH METHODOLOGY

3.1 Demographics and the Sample

Students from Rangsit University, Thailand were selected as samples of this study. Rangsit University is one of the famous private universities in Thailand. There are 13,732 students registered in 2007. Almost all students come from financially well off families and they have many chances to access the Internet including shopping online (Rangsit University. Registration Office 2007). Moreover, higher income customers are known to be more experienced in accessing the cyber world and the Internet (Cyberatlas.com 2000).

The sample size of the research population is drawn from the sample size estimation formula of Taro Yamane (1973). The sample size, 389 samples, was defined at the degree of the precision level of $\pm 5\%$ where confidence level is 95%. However, in order to ensure the sufficient total number of returned questionnaires, the 389 was round-up to 400. These students were therefore used as representative samples of the online customers in Thailand among the younger and well-to-do generation.

3.2 Data Compilation

Quantitative research method was adopted and questionnaires were used for data collection. Respondents were asked to complete the questionnaires themselves, in other words, self-administered questionnaires were adopted. The questionnaire aims to investigate the customers' opinion on what level of their behaviours will influence the adoption of ECT adoption by Thai SMEs. The 20 factors are designed and separated into 4 parts: purchasing behaviours, information behaviours, e-commerce confidence, and perceived behaviours in e-commerce. The questionnaires were distributed to the respondents by manual using accidental sampling method. The respondents are then requested to return the forms anonymously either by mail or dropping at nominated collection boxes.

3.3 Data Analysis

Statistical approach was used to analyse the data and SPSS was used as the analysis tool. Appropriate statistical techniques have been used to process the data from the returned questionnaires. The statistic scales of measurements are a) nominal scale: frequency distribution, percentage; b) interval scale: arithmetic mean, standard deviation; c) statistical significance test: regression

4. FINDINGS

Out of the 400 questionnaires sent out, 285 were returned. This corresponds to a return rate of about 70%. This figure has been considered as sufficient for the purpose of this study. Most of respondents are female (169, 59.30%) and 116 respondents (40.70%) are male. The findings are showed in the followings:

4.1 Descriptive Statistic Results

The scale lengths for measuring level of influence of the customer behaviours towards electronic commerce technology adoption by Thai SMEs are composed of seven levels which are a) 2.01 to 3.00 represented extremely likely influence; b) 1.01 to 2.00 represented quite likely influence; c) 0.01 to 1.00 represented slightly likely influence; d) 0.00 represented neither likely influence nor unlikely influence, e) -1.00 to -0.99 represented slightly unlikely influence; f) -2.00 to -1.01 represented quite unlikely influence; and g) -3.00 to -2.01 represented extremely unlikely influence

Table 1. Mean, standard deviation and interpretation of the level of customer behaviours which will influence the adoption of ECTs by Thai SMEs

Factors	Level of Influence		
	Mean	SD.	Interpretation
1. Sensitive to price and incline to favor lower price merchandises from online stores.	1.74	1.26	quite
2. Tendency to purchase new items which are different from what was bought previously.	1.43	1.34	quite
3. Tendency to purchase due to sale promotion.	1.39	1.45	quite
4. Loyalty to brand	2.09	1.23	extremely
5. Sensory attributes such as the ability to handle the products physically.	2.32	1.00	extremely
6. Availability of alternative choices prior to decision making.	2.25	1.13	extremely
7. Easy accessibility of information about the items and the online store.	2.13	1.11	extremely
8. Richness of information on the items and other online stores including their competitors.	2.09	1.15	extremely
9. Appearance, layout and structure of the Web site.	2.00	1.18	extremely
10. Having prior knowledge and experience on how to access the Internet and how to carry out online shopping.	2.06	1.02	extremely
11. Having prior knowledge on the web site and about the content of the items.	1.60	1.33	quite
12. Trust and confidence in e-commerce technologies and the online store.	1.91	1.29	quite
13. Plan before you do online shopping	1.68	1.31	quite
14. Perceived value or relevance of ECT to your online shopping.	1.57	1.20	quite
15. Having adequate and variety of communication channels for delivering information about the online shopping.	1.94	1.07	quite
16. Frequency of online shopping.	0.64	1.58	slightly
17. Overall perceived ease of use of e-commerce technologies.	1.38	1.34	Quite
18. Trust in the security of online transactions	2.08	1.30	extremely
19. Concerns about privacy in online transactions.	1.24	1.39	Quite
20. Concerns about risk in online transactions.	1.20	1.60	Quite

Table 1 shows the descriptive statistic results as mean and standard deviation of items as responded by the participants in the survey. Most customers believe that a) sensory attributes such as the ability to handle the products physically (2.32, 1.00), b) Availability of alternative choices prior to decision making (2.25, 1.13), and c) Easy accessibility of information about the items and the online store (2.13, 1.12) are the top three of their behaviours that will have extremely likely influence on the electronic commerce adoption by Thailand SMEs sector. However, they responded that a) frequency of online shopping (0.64, 1.58), b) concerns about risk in online transactions (1.20, 1.60), and c) concerns about privacy in online transactions (1.24, 1.39) have the most slightly likely influence.

4.2 Regression Analysis

In order to measure influence levels of customer behaviours toward the ECT adoption by Thai SMEs, the independent variable, customer gender, is chosen for measuring the levels of influence via linear regression analysis. The following tables show results of the analysis:

Table 2. Coefficients of the customer purchasing behaviours influence the ECT adoption by Thai SMEs measured by gender

Model	Factors (Customer Behaviours)	Unstandardised Coefficients	SE.	Standardised Coefficients	t	Sig.
		B		Beta		
1	(Constant)	.532	.100		5.337	.000
	1. Sensitive to price and incline to favor lower price merchandises from online stores.	.009	.025	.024	.365	.715
	2. Tendency to purchase new items which are different from what was bought previously.	.000	.026	.001	.008	.993
	3. Tendency to purchase due to sale promotion.	.023	.023	.068	.985	.325
	4. Loyalty to brand	-.056	.024	-.142	-2.320	.021
	5. Sensory attributes such as the ability to handle the products physically.	.103	.030	.209	3.469	.001
	6. Availability of alternative choices prior to decision making.	-.068	.027	-.156	-2.540	.012
	7. Plan before you do online shopping	.023	.023	.062	1.001	.318
R		.274				
R Square		.075				
Adjusted R Square		.051				
F		3.168				
Sig.		.003				

In Table 2, value of R Square is closed to 1 (.075). It is implied that purchasing behaviours in both of male and female customers influence the ECT adoption by Thai SMEs at 7.5% without statistical significance. The test of hypothesis about β_j is in two tails:

$H_0 : \beta_j = 0$ (has no linear correlation between purchasing behaviours and ECT adoption when measured by customer gender)

$H_1 : \beta_j \neq 0$ (has linear correlation between purchasing behaviours and ECT adoption when measured by customer gender)

β_j represents the coefficients of 7 factors (purchasing behaviours) which are able to correlate with the customer gender. The hypothesis test found that H_0 is rejected because significant value is less than 0.05 (sig.value = .003) meanwhile H_1 is accepted. Therefore, influence of customer purchasing behaviours to the ECT adoption has linear correlation when measured by customer gender.

Table 3. Coefficients of the customer's information behaviours influence the ECT adoption by Thai SMEs measured by gender

Model	Factors (Customer Behaviours)	Unstandardised Coefficients	SE.	Standardized Coefficients	t	Sig.
		B		Beta		
1	(Constant)	.618	.098		6.318	.000
	1. Easy accessibility of information about the items and the online store.	-.022	.029	-.049	-.770	.442
	2. Richness of information on the items and other online stores including their competitors.	.015	.029	.035	.515	.607
	3. Appearance, layout and structure of the Web site.	-.037	.027	-.088	-1.378	.169
	4. Having prior knowledge and experience on how to access the Internet and how to carry out online shopping.	.027	.031	.057	.882	.378
	5. Having prior knowledge on the web site and about the content of the items.	.009	.023	.026	.403	.688

Model	Factors (Customer Behaviours)	Unstandardised Coefficients	SE.	Standardized Coefficients	t	Sig.
		B		Beta		
	6. Having adequate and variety of communication channels for delivering information about the online shopping.	.000	.029	-.001	-.016	.987
R		.113				
R Square		.013				
Adjusted R Square		-.009				
F		.588				
Sig.		.739				

In Table 3, value of R Square is not closed to 1 (.013). It is implied that information behaviours in both of male and female customers influence the ECT adoption by Thai SMEs at only 1.3% without statistical significance. The test of hypothesis about β_j is in two tails:

$H_0 : \beta_j = 0$ (has no linear correlation between information behaviours and ECT adoption when measured by customer gender)

$H_1 : \beta_j \neq 0$ (has linear correlation between information behaviours and ECT adoption when measured by customer gender)

The hypothesis test found that H_0 is accepted because significant value is more than 0.05 (sig.value = .739) meanwhile H_1 is rejected. Therefore, influence of customers' information behaviours to the e-commerce adoption has no linear correlation when measured by customer gender.

Table 4. Coefficients of the customer's e-commerce confidence influence the ECT adoption by Thai SMEs measured by gender

Model	Factors (Customer Behaviours)	Unstandardized Coefficients	SE.	Standardized Coefficients	t	Sig.
		B		Beta		
1	(Constant)	.549	.082		6.703	.000
	1. Trust and confidence in e-commerce technologies and the online store.	.002	.027	.006	.086	.931
	2. Trust in the security of online transactions	.025	.027	.067	.943	.347
	3. Concerns about privacy in online transactions.	-.004	.027	-.010	-.137	.891
	4. Concerns about risk in online transactions.	-.009	.024	-.028	-.362	.717
R		.070				
R Square		.005				
Adjusted R Square		-.014				
F		.251				
Sig.		.909				

In Table 4, value of R Square is not closed to 1 (.005) means that e-commerce confidence of customers influence the ECT adoption by Thai SMEs at only 0.5% without statistical significance. The test of hypothesis about β_j is in two tails:

$H_0 : \beta_j = 0$ (has no linear correlation between e-commerce confidence and ECT adoption when measured by customer gender)

$H_1 : \beta_j \neq 0$ (has linear correlation between e-commerce confidence and ECT adoption when measured by customer gender)

The hypothesis test found that H_0 is accepted because significant value is more than 0.05 (sig.value = .909) meanwhile H_1 is rejected. Therefore, influence of customers' confidence in e-commerce to the ECT adoption has no linear correlation when measured by customer gender.

Table 5. Coefficients of the customer perceived behaviours in e-commerce influence the ECT adoption by Thai SMEs measured by gender

Model	Factors (Customer Behaviours)	Unstandardized Coefficients	SE.	Standardized Coefficients	t	Sig.
		B		Beta		
1	(Constant)	.532	.053		10.046	.000
	1. Perceived value or relevance of ECT to your online shopping.	.056	.025	.136	2.243	.026
	2. Overall perceived ease of use of e-commerce technologies.	-.020	.023	-.053	-.875	.383
R				.134		
R Square				.018		
Adjusted R Square				.011		
F				2.587		
Sig.				.077		

In Table 5, value of R Square is not closed to 1 (.018) means that perceived behaviours in e-commerce of customers influence the ECT adoption by Thai SMEs at only 1.8% without statistical significance. The test of hypothesis about β_j is in two tails:

$H_0 : \beta_j = 0$ (has no linear correlation between perceived behaviours in e-commerce of customers and ECT adoption when measured by customer gender)

$H_1 : \beta_j \neq 0$ (has linear correlation between perceived behaviours in e-commerce of customers and ECT adoption when measured by customer gender)

The hypothesis test found that H_0 is accepted because significant value is more than 0.05 (sig.value = .077) meanwhile H_1 is rejected. Therefore, influence of perceived behaviours in e-commerce of customers to ECT adoption has no linear correlation when measured by customer gender.

5. DISCUSSION AND CONCLUSION

Customer behaviours have been known as the dependence with the others in businesses (Rice 1997). This study aims to investigate influence of the customer behaviours on their adoption of e-commerce technologies by Thai SMEs. Four categories of the customer behaviours were assigned as factor variable which are expected to have an influence on their adoption. The categories are 1) general purchasing behaviours, 2) information behaviours, 3) confidence in e-commerce, and 4) perceived behaviours in e-commerce. The study found that there are slightly influences of the four categories to the adoption when measured by customer gender. Most of null hypotheses are accepted and there is only one alternative hypotheses is accepted. The results imply that the ECT adoption by Thai SMEs is influenced by the customer behaviours slightly including effects from the customer gender. Some of those customers hold their opinions that a) they are the last point of e-commerce; b) they have no choice because the e-commerce functions are designed by the SMEs; c) the SMEs have never studied the customers' demand; d) a number of SMEs across the country have not paid intention to the e-commerce development. However, the customers are expecting that their roles should be more important in SME sector. This is only the first stage of the study; however, the qualitative approach will be used for proving this discovering and extend the scale of research population to other groups. Moreover, the study should be extended to other variables such as experience in e-commerce, culture, taste, ICT skill, etc. The research results show that the roles of customer behaviours still effect the adoption of e-commerce technologies. Although it effect slightly to the adoption, but it can indicate that Thai customers do not pay intention on how their roles will influence to the adoption. Thus, it is fair to summarise that there are many other factors have more influences to the adoption. However, the Thai SMEs should adopt and implement the e-commerce technologies in order to facilitate online customers, increase distribution channel for products and services, eliminate middle-traders, encounter with customers closely via the e-commerce website channel as expressed by the customers. Finally, trust and confidence in e-commerce implemented by the Thai SMEs sector will be increasing continually.

REFERENCES

- Beck, R., R. T. Wigand, et al. (2005). "The Diffusion and Efficient Use of Electronic Commerce among Small and Medium-size Enterprises: An International Three-Industry Survey." Electronic Markets 15(1): 38-52.
- Chooprayoon, V. and C. C. Fung (2007). An Empirical Study on the Influencing Factors on the Adoption and Use of E-Commerce by Thailand SMEs. The Sixth Wuhan International Conference on E-Business (WICEB)-E-business Track: Management Challenges in a Global World Wuhan, China, May 26-17, Alfred University Press.
- Crum, R. (2007, 28 February). "eTail 2007: Online Retailers Get Personal." E-Commerce Times Retrieved 10 October, 2007, from <http://www.ecommercetimes.com/story/ebiz/55808.html>.
- Cyberatlas.com. (2000). "Lower Income Households Moving Online." Retrieved 23 October, 2007, from http://cyberatlas.internet.com/big_picture/demographics/article/0,1323,5901_42041,00.html.
- Dahlen, M. and F. Lange (2002). "Real Customers in the Virtual Store." Scandinavian Journal of Management 18: 341-363.
- Degeratu, A., A. Rangaswamy, et al. (2000). "Consumer Choice Behaviour in Online and Traditional Supermarkets: the Effects of Brand Name, Price, and Other search Attributes." International Journal of Research in Marketing 17: 55-78.
- Eastin, M. S. (2002). "Diffusion of E-Commerce: an Analysis of the Adoption of Four E-Commerce Activities." Telematics and Informatics 19(251-267).
- Eroglu, S. A., K. A. Machleit, et al. (2001). "Atmospheric Qualities of Online Retailing - a Conceptual Model and Implications." Journal of Business Research 54: 177-184.
- Hallander, A. S., J. Q. Cherrington, et al. (2000). Accounting, Information Technology, and Business Solutions. Boston, Irwin/McGraw-hill.
- Huang, M. H. (2000). "Information Load: Its Relationship to Online Exploratory and Shopping Behaviour." International Journal of Information Management 20(5): 337-347.
- Iyer, L. S., B. Gupta, et al. (2005). "Performance, Scalability and Reliability Issues in Web Applications." Industrial Management & Data Systems 105(5): 561-575.
- Levy, M. and P. Powell (2000). "Information Systems Strategy for Small and Medium Sized Enterprises: an Organisational Perspective." Journal of Strategic Information Systems 9: 63-84.
- Liao, Z. and M. T. Cheung (2001). "Internet-Based E-Shopping and Consumer Attitudes: an Empirical Study." Information & Management 38: 299-306.
- Mathwick, C., N. K. Malhotra, et al. (2002). "The Effect of Dynamic Retail Experiences on Experiential Perceptions of Value: an Internet and Catalogue Comparison." Journal of Retailing 78(1): 51-60.
- Menon, S. and B. Kahn (2002). "Cross-Category Effects of Induced Arousal and Pleasure on the Internet Shopping Experience." Journal of Retailing 78(1): 31-40.
- O'Cass, A. and T. Fenech (2002). "Web Retailing Adoption: Exploring the Nature of Internet Users Web Retailing Behaviour." Journal of Retailing and Consumer Services 10(2): 81-94.
- Reynolds, J. (2000). "E-Commerce: a Critical Review." International Journal of Retail & Distribution Management 28(10): 416-444.
- Rice, C. (1997). Understanding Customers. Oxford, Butterworth-Heinemann.
- Salisbury, W. D., R. A. Pearson, et al. (2000). "Perceived Security and World Wide Web Purchase Intention." Industrial Management & Data Systems 101(4): 165-176.
- Shih, D., H. Chiang, et al. (2004). "Internet Security: Malicious E-Mails Detection and Protection." Industrial Management and Data System 104(7): 613-623.
- So, W. C. and D. Sculli (2002). "The Role of Trust, Quality, Value and Risk in Conduction E-Business." Industrial Management & Data Systems 102(9): 503-512.
- Thailand Investor Service Centre. (2004). "SMEs Policy." Retrieved 28 October, 2007, from <http://www.thailanoutlook.com/thailandoutlook1/overnment+policy/Government+Update/SMEs+Policy.htm>.
- Thailand. National Electronics and Computer Technology Centre (2003). Thailand Information and Communication Technology (ICT) Master Plan (2002-2006). Bangkok, NECTEC.
- Thailand. Office of Small and Medium Enterprise Promotion (2007). Report on Situation of Small and Medium Enterprises (2007-2008). Bangkok, OSMEP.
- Wu, S. I. (2003). "The Relationship between Consumer Characteristics and Attitude Toward Online Shopping." Marketing Intelligence and Planning 21(1): 37-44.