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STRATEGIC USES OF ELECTRONIC COMMERCE FOR THAI TRAVEL SMALL AND MEDIUM ENTERPRISES (SMES)

Abstract:

The purpose of this paper is to examine the current stage of e-commerce usage by Thai small and medium travel enterprises (SMEs) and investigate the effect of technological, organizational, and environmental (TOE) factors on three stages of e-commerce (EC) adoption. An online survey was employed to collect data from Thai travel SMEs that have company websites, are registered with the Thai Department of Business Development and are a member of the Tourism Authority of Thailand. Data from 114 usable cases was analyzed using multiple regression. Results revealed that the use of EC in Thai travel SMEs was in the second stage of EC adoption. This indicates that the majority use the Internet for provision of information and services. Other key findings are: (1) only competition intensity positively affected the first (promotion) stage of EC adoption, (2) relative advantage was found to be the only determinant of EC adoption in the second stage of the provision of information and services, and (3) only organization readiness was found to influence EC adoption in the third (processing) stage. This study can provide Thai travel SMEs with useful findings to further understand EC adoption and help to develop a better strategic vision in adopting advanced EC technologies to gain potential benefits and competitive advantages. In addition, the findings have implications for government agencies and EC consultants and vendors in providing guidance on practical applications of EC adoption in Thai travel SMEs and in supporting the development of EC systems. The findings of this study offer a theoretical extension to e-commerce adoption research by highlighting the role of TOE factors on e-commerce adoption by Thai travel SMEs.

Keywords:

E-Commerce Adoption, TOE framework, Travel and tourism industry, SMEs, Thailand

Introduction

The emergence of Internet technology and the World Wide Web has opened opportunities for companies to conduct their business over the Internet (Nicholls and Watson, 2005). Companies can sell and buy products and services through an electronic network known as electronic commerce or e-commerce (EC) (Turban et al., 2008). The growth of EC businesses has increased gradually in Thailand. The survey of the National Statistical Office in 2010 found that the value of business-to-business EC sales in Thailand increased from 79,726 million Baht in 2007 to 217,458 million Baht in 2010, while business-to-consumer EC sales increased from 47,501 million Baht in 2007 to 67,783 million Baht in 2010 (NSO, 2012).

The tourism industry is one of the sectors that can gain the benefits by adopting the Internet and the Web as a marketing tool to promote company products and/or services, provide information and services to customers, as well as process online sales of souvenirs and online payment (Burgess et al., 2001). In addition, the tourism industry plays a significant role in income generated in Thailand. In 2013, revenue from tourism was approximately 1.71 trillion Baht and will increase to 2 trillion Baht in 2014 (Tourism Council of Thailand, 2013). The majority of businesses in Thailand using EC were in the travel industry (32.8%), and were small (57.9%) and medium enterprises (36.2%); only 5.9% were large enterprises (NSO, 2012). Despite the growing number of EC businesses in Thailand, SMEs are not utilizing EC to its full potential. The majority of SMEs in the trade sector (68.8%), mostly in Bangkok and its vicinity, used the Internet for advertising their stores and products. There was a small number of SME entrepreneurs used the Internet for online buying and selling through the Internet (OSMEP, 2012). The limited use of EC by SMEs may due to several factors.

Factors influencing EC adoption have been examined extensively in the literature (Chen and McQueen, 2008; Eze, 2008; Ghobakhloo et al., 2011; Ghobakhloo and Tang, 2013; Li and Xie, 2012; Lin and Lin, 2008; Lip-Sam and Hock-Eam, 2011; Ramdani et al., 2013; Zhu et al., 2006). However, limited prior studies have focused on the factors that influence various stages of EC adoption and in Thailand. This research, therefore, proposes a stage model for EC adoption and factors affecting each stage of EC adoption among Thai Travel SMEs. Thus, the purpose of this research is to answer the following questions (1) 'What stage of EC adoption are Thai travel SMEs in?' (2) 'What are the factors affecting EC adoption among Thai Travel SMEs?; And (3) 'Are there any differences in each stage of EC adoption?'

The definition of SMEs in this research was categorized by using number of employees in the service sector. That is, a small enterprise refers to an enterprise with employees of up to 50 while a medium enterprise refers to an enterprise with between 51 – and 200 employees (Bank of Thailand, 2011). In addition, the focus of this research was only on tourism businesses, including travel agencies and tour operators, because the Internet offers tourism businesses the potential to make information and booking facilities available to large numbers of tourists at relatively

low cost and it also provides a tool for fast communication between tourism suppliers, intermediaries, as well as end-consumers (Wang and Cheung, 2004).

A Stage Model of EC Adoption

In review of the innovation adoption literature, EC adoption can be considered as series of adoption processes that can be adopted at multiple levels in business processes, e.g. offer information (promotion stage), interaction (provision of information and services), or transactions (processing) (Brand and Huizingh, 2008; Burgess and Cooper, 2000; Zhu et al. 2006). In this research, stages of EC website development followed the theory of the extended Model of Internet Commerce Adoption (eMICA) model developed by Burgess and Cooper (2000). This model is used to evaluate the level of commercial website development. The eMICA model consists of three stages, incorporating three levels of business process – Web-based *promotion*, *provision* of information and services, and transaction *processing*. The eMICA is similar to those that consider EC as a multi-level innovation, with websites that offer information, interaction, or transactions (Dholakia and Kshetri, 2004; Levy and Powell, 2003; Teo and Pian, 2004). EC may first be used to present the company and its offerings, then the company may add some interactive features by which potential customers get access to information and services tailored to their needs, next the company may include a transaction function for standard products or services, and finally the site may be fully integrated with internal systems (Teo and Pian, 2004). The model allows for a company to enter at any stage. In order to accommodate the wide range of e-commerce development evidenced in industries such as tourism. eMICA incorporates a number of additional layers of complexity, ranging from simple to highly sophisticated, within the identified main stages of the model. The stages and characteristics of the eMICA model (Doolin et al., 2002; Larson and Ankomah, 2004) are summarized in Table 1. However, the adoption of EC will vary with the influence of different factors which will be discussed next.

Table 1 Stages and Layers of the eMICA Model

eMICA	Examples of functionality
Stage 1-Promotion (Inception Phase)	
Layer 1- basic information	Sites consist of a simple home page providing basic information such as company name, physical address and other contact information details (phone and fax numbers) and area of business.
Layer 2- rich information	Sites contain the information listed in Layer 1 sites plus other extensive information about the company in the form of annual reports, e-mail contact, detailed information on the company's products/service offerings.
Stage 2-Provision of information and services	
Layer 1- low interactivity	Sites involve lower levels of interactivity and include a basic product catalogues, hyperlink to further information, and online inquiry.

Layer 2- medium interactivity	Sites involve medium interactivity characterized by higher-level product catalogues, customer support (e.g., FAQs, site maps), and industry-specific value-added features.
Layer 3- high interactivity	Sites involve higher interactivity and include features such as chat rooms, discussion forums, multimedia, newsletters or updates by e-mail. Other characteristics at these sites include a travel planner, passport/visa requirements, safety information, online tourism magazines, currency converters and language options.
Stage 3-Processing	In this phase, the web site has reached maturity and become a "fully-fledged" site. At this stage, the sites are more transaction-based and are characterized by secure on-line transactions, order status and tracking, interaction with corporate servers.

Source: Doolin et al. (2002); Larson and Ankomah (2004)

Factors Affecting EC Adoption

Factors affecting EC adoption in this study follow the technological-organizational-environmental (TOE) framework developed by Tornatzky and Fleischer (1990) since this framework has been widely used to examine the factors that influence the propensity to adopt and use innovation (Eze, 2008; Ghobakhloo et al., 2011; Ghobakhloo and Tang, 2013; Li and Xie, 2012; Lin and Lin, 2008; Lip-Sam and Hock-Eam, 2011; Ramdani et al., 2013; Zhu et al., 2006). The Tornatzky and Fleischer' (1990) TOE framework is argued to be an integrative framework that provides a holistic and guiding theoretical basis since research in the adoption/diffusion of ICT typically evaluates various technological, organizational, and environmental factors that facilitate or inhibit adoption/diffusion (Ramdani et al., 2013). The TOE framework is consistent with Rogers' (1995, pp. 376-383) theory of innovation diffusion in which he identified individual characteristics, and both the internal and external characteristics of the organization (Zhu et al., 2006), as antecedents of innovation adoption. The TOE framework has been claimed to be a generic theory of technology adoption/diffusion (Zhu et al., 2003) that can be used to study EC adoption by SMEs. Each context of TOE can be defined following Tornatzky and Fleischer (1990, pp. 152–154) as follows:

(a) *Technological context* describes both the internal and external technologies relevant to the firm. This includes existing technologies inside the firm, as well as the pool of available technologies in the market. As revealed from reviewing the literature (Al-Qirim, 2007; Lin, 2006; Ramdani et al., 2013), two factors that seem to be the primary focus in this context in SMEs are relative advantage and compatibility. Thus, they were employed as factors that influence the decision of innovation adoption in the technological context.

(b) *Organizational context* is typically referred to as descriptive measures about the organization such as size and scope; the centralization, formalization, and complexity of its managerial structure; the quality of its human resources; and the amount of slack resources available internally. Due to characteristics of SMEs that are small scale of operations and insufficient resources, organizational readiness factor is used to examine its relationship to innovation adoption in several studies (Ramdani et al.,

2013; Wang and Ahmed, 2009). In addition, roles of top managers were frequently seen as a key determinant factor that influences innovation adoption in SMEs (Al-Qirim, 2007; Ghobakhloo and Tang, 2013; Ramdani et al., 2013). In SMEs, the organizational structure is less complex and simpler to manage. Top managers in SMEs usually refer to the CEO, who makes most of the critical decision (Mintzberg, 1979). This study, therefore, examined organizational readiness and CEOs' characteristics, including CEO's innovativeness and CEO's involvement as the determinants in the organizational context of EC adoption.

(c) *Environmental context* is the arena in which a firm conducts its business – its industry, competitors, access to resources supplied by others, and dealings with government (Ghobakhloo and Tang, 2011). Several studies (Al-Qirim, 2007; Lin, 2006; Ramdani et al., 2013; Zhu et al., 2006) suggest that competition intensity and external support from technology vendors were used as the determinants in the environmental context of EC adoption.

Therefore, seven TOE factors, relative advantage, compatibility, CEO's innovativeness, CEO's involvement, competition intensity, and external support from technology vendors are considered to be determinant of EC adoption in the promotion, provision, and processing stages by Thai travel SMEs in this study. In the next section the conceptual framework and proposed hypotheses will be discussed.

Conceptual Framework

The conceptual framework and its proposed hypotheses have been developed to answer the research questions. In this framework, seven TOE independent factors are associated with three stages of EC adoption. The hypotheses derived examine the relationship among these factors and the three stages of EC adoption are discussed below.

Relative advantage. Relative advantage is defined as "the degree to which an innovation is perceived as being better than the idea it supersedes" (Rogers, 2003, p. 229). Relative advantage can be viewed as perceived benefits (Iacovou et al., 1995) and potential value (Brand and Huizingh, 2008). Several studies found evidence of a positive influence of relative advantage of EC on EC adoption by SMEs (e.g. Brand and Huizingh, 2008; Ghobakhloo and Tang, 2013; Wang and Ahmed, 2009). Further, relative advantage was found to be a significant factor in determining enterprise applications adoption (Ramdani et al., 2013). The benefits from EC (EC) for the companies are numerous such as, expanding markets, reducing costs, increasing operational efficiency, and increasing relationships with customers (Baltzan and Phillips, 2009). In a highly competitive environment, these benefits provide significant motivations for EC adoption. Therefore, it is hypothesized that:

H1: Relative advantage is positively related to (a) promotion, (b) provision, and (c) processing stages of EC adoption.

Compatibility. Compatibility also can be defined as compatibility between EC and firm's culture, values, and exiting business processes (Grandon and Pearson, 2004).

Prior studies on EC adoption found that EC adoption is significantly affected by EC compatibility. For example, Ghobakhloo and Tang (2013) found a positive relationship between EC compatibility and EC application adoption by Iranian small businesses. Further, Zhu et al. (2006) found that technology integration is positively related to e-business initiation, adoption, and routinization as well as a key determinant of e-businesses assimilation, especially in developed countries. Similarly, Hong and Zhu (2006) found that technology integration was a significant EC adoption predictor. Thus, it is hypothesized that:

H2: Compatible EC with the current systems is positively related to (a) promotion, (b) provision, and (c) processing stages of EC adoption.

Organizational readiness. Organizational readiness was one of the most frequently examined determinants in the studies of innovation adoption. Iacovou et al. (1995) consider organizational readiness in two dimensions, financial and technological readiness. Financial readiness refers to whether an organization has sufficient financial resources to invest on new technologies, whilst technological readiness is concerned with the level of technology sophistication. In the small business realm, organizational readiness plays a significant role in new technology adoption (Wang and Ahmed, 2009). The study of Ramdani et al. (2013) confirms the significant role of organizational readiness in determining enterprise applications adoption by SMEs in the northwest of England. Further, technology readiness (infrastructure, relevant systems, technical skills) was found to be an important factor for successful IS adoption and e-business assimilation (Zhu and Kraemer, 2005; Zhu et al., 2006). Thus, it is hypothesized that:

H3: Organizational readiness is positively related to (a) promotion, (b) provision, and (c) processing stages of EC adoption.

Innovativeness. Innovativeness is defined as "the degree to which an individual is relatively earlier in adopting new ideas than other members of a system" (Rogers 2003, p. 267). In SMEs, CEOs make most of the critical decisions (Mintzberg, 1979) and determine the innovative attitude of the business (Rizzoni, 1991). Al-Qirim (2007) investigated the impact of ten factors on the adoption of different EC communication and application technologies in small businesses in New Zealand. He found that CEOs' innovativeness influence external email and website adoption significantly and positively. This result was similar to Ghobakhloo and Tang (2013) who also found that manager's innovativeness is a significant determinant of Web site adoption. Innovative CEOs would take a risk to change the current organizational structure to solve problems radically (Lin, 2006). Thus, it is hypothesized that:

H4: Manager's (CEO) innovativeness is positively related to (a) promotion, (b) provision, and (c) processing stages of EC adoption.

Managerial involvement. Managerial involvement can be viewed as top management support (Premkumar and Roberts, 1999) or enthusiasm (Mirchandani and Motwani, 2001). Top management support can stimulate change by communicating and reinforcing values through an articulated vision for the organization (Thong, 1999).

Previous studies on SMEs innovation adoption revealed that top management support/managerial involvement is crucial in adoption of EC (Kenneth et al., 2012), enterprise applications adoption (Ramdani et al., 2013), and Intranet adoption (Al-Qirim, 2007). In addition, managerial enthusiasm towards EC, a positive attitude towards EC, and being closely involved in EC implementation leads to a higher level of EC adoption (Chen and McQueen, 2008). It can be concluded that CEO's involvement was perceived as a necessary determinant to the adoption of innovation adoption (Al-Qirim, 2007). Thus, it is hypothesized that:

H5: Manager's (CEO) involvement is positively related to (a) promotion, (b) provision, and (c) processing stages of EC adoption.

Competition Intensity. Competition intensity refers to "the degree that the company is affected by competitors in the market" (Zhu et al., 2004). Most empirical studies indicated that higher competition intensity is associated with higher adoption rates. For example, the study of Ramdani et al. (2013) found support for the influence of competition pressure on enterprise applications adoption by SMEs in the northwest of England. Moreover, Lin and Lin (2008) examined factors influencing e-business diffusion in Taiwan. Results showed that the emergence of competitive pressure was a key determinant of integration and diffusion of e-business. Similarly, Zhu et al. (2006) explored innovation assimilation in e-business in different countries and found that competition positively affected initiation and adoption of e-business. Additionally, Lertwongsatein and Wongpinunwatana (2003) investigated EC adoption for SMEs in Thailand. Results showed that EC adopters' were more likely to operate in a highly competitive environment. Thus, it is hypothesized that:
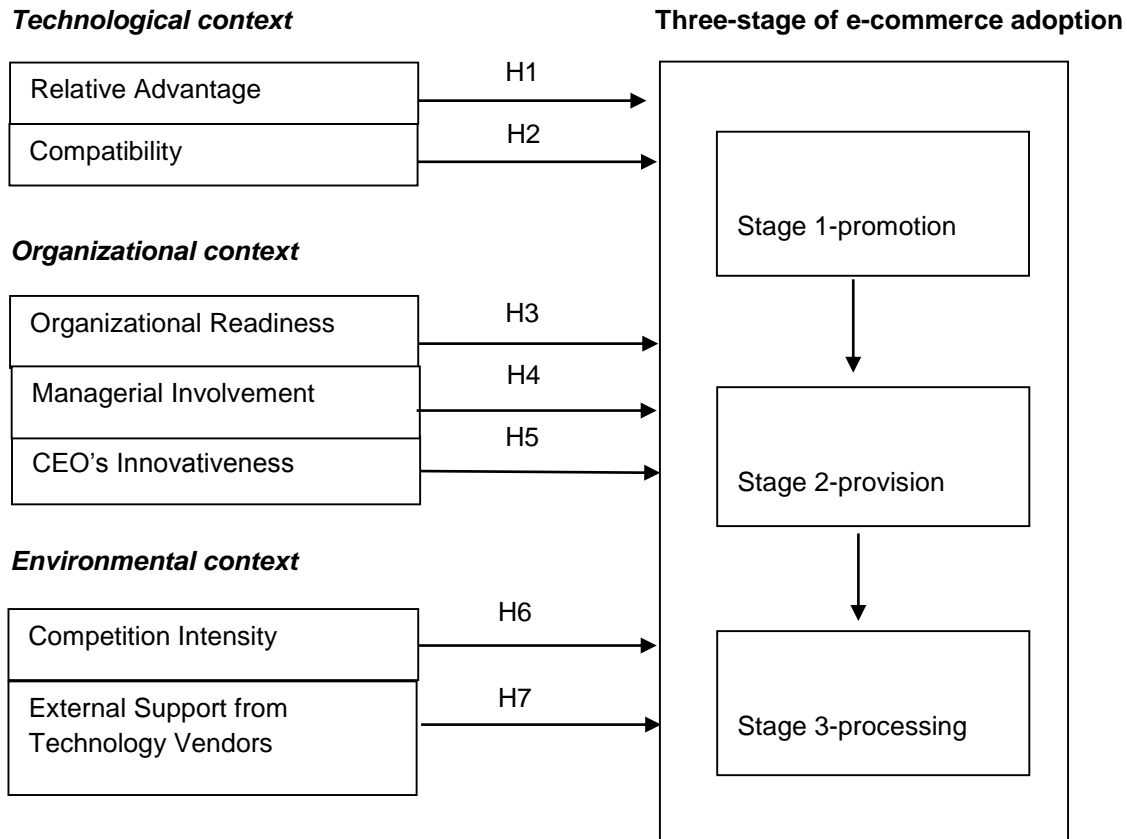
H6: Intensity of competition is positively related to (a) promotion, (b) provision, and (c) processing stages of EC adoption.

External support from technology vendors. External support from technology vendors or external ICT (information and communication technology) support refers to the availability of support for implementing and using ICT (Premkumar and Roberts, 1999). External support from technology vendors can facilitate the adoption of advanced telecommunication by SMEs in making them aware of the potential of the new technology (Sadowski et al., 2002). Firms are more willing to adopt new ICT if they feel there is adequate third-party' support (Premkumar and Roberts, 1999). Doolin et al. (2003) studied five New Zealand companies to gain an understanding of their development towards integrated electronic business. They found that the unsolicited availability of a third-party provider as a partner developing an Internet retailing channel was one of the factors that were influential in their decision to develop an Internet retailing presence. While Doolin et al. (2003) focused their study on electronic business; Al-Qirim (2007) focused on the adoption of different EC communication and application technologies in small businesses in New Zealand. He found that support from technology vendors influences extranet/VPN adoption significantly. In addition, the study of Lip-Sam and Hock-Eam (2011) in Malaysia found that the external support has a positive and significant effect across all EC adoption levels. Thus, it is hypothesized that:

H7: External support from technology vendors for EC is positively related to (a) promotion, (b) provision, and (c) processing stages of EC adoption.

The proposed hypothetical links guiding this study are shown in Figure 1.

Figure 1 The Conceptual Model of EC Adoption in Thai Travel SMEs

Technological context   **Three-stage of e-commerce adoption**

| Relative Advantage |
| Compatibility |

H1
H2

Organizational context

| Organizational Readiness |
| Managerial Involvement |
| CEO's Innovativeness |

H3
H4
H5

Environmental context

| Competition Intensity |
| External Support from Technology Vendors |

H6
H7

Stage 1-promotion

Stage 2-provision

Stage 3-processing

To test the hypotheses proposed in this research, an online survey was employed in collecting data. The questionnaire was translated into Thai by an expert in English-Thai translation in the University. The questionnaire was tested for content validity with three lecturers in the University. The population in this study comprises of 405 of travel and tourism companies that were registered at the Thai Department of Business Development and the Tourism Authority of Thailand, have an active website, and were Thai SMEs. Sine there are a small number of firms in the population, all of them (405 firms) were included in this study. The questionnaire was sent to managers or CEOs of travel and tourism companies included in this study via email including link connect to the survey website during 1 September – 30 November 2012. A total of 120 questionnaires were returned and 114 were usable for data analysis and would be reasonable for multiple regression technique as suggested by Green (1991), yielding a response rate of 28%. Data was analyzed using descriptive statistics, *F*-tests, and regression analysis.

Measurement
EC adoption in each stage was assessed with the use of 30 website functionalities, as shown in Appendix A, Table AI, following the eMICA model. Participants were asked

to select the EC functionality items that their organization adopted for their businesses. They were able to choose as many items as applied. The operational definitions and criteria to classify the stage of EC adoption are shown in Table 2. The three stages of EC adoption were not examined for the reliability/validity tests as they were not multidimensional variables. Then, the items were aggregated to form each stage of dependent variables.

Table 2 Constructs of the E-Commerce Adoption (eMICA)

Stage	Operationalization	Item(s) Provided	Minimum Item(s) to Achieve These Stage
Stage 1- Promotion Stage of EC Adoption			
	Layer 1- basic information	1	1
	Layer 2- rich information	2	1
Stage 2- Provision Stage of EC Adoption			
	Layer 1- low interactivity	3	2
	Layer 2- medium interactivity	7	5
	Layer 3- high interactivity	14	7
Stage 3-Processing Stage of EC Adoption		3	2

Source: Adapted from Larson and Ankomah (2004)

The seven technological, organizational, and environmental factors were assessed with 35 items, as shown in Appendix A, Table AII, that appeared in a random manner. Respondents were asked to rate each item using a seven-point Likert scale where (1) corresponds to 'Strongly Disagree' and (7) corresponds to 'Strongly Agree'.

Construct reliability of the seven TOE factors was assessed using Cronbach's *alpha* coefficient (Cronbach 1951). The results are reported in Table 3 and revealed that there were four variables with coefficient alphas higher than the acceptable cut-off point of 0.70 (Peterson, 1994), ranging from 0.8562 to 0.9074. For these four variables, relative advantage, compatibility, managerial involvement, and CEO's innovativeness, internal consistency appeared to be high. However, another three variables, external support from technology vendors, organizational readiness, and competition intensity, had reliability coefficients of 0.6077, 0.6196, and 0.6509 respectively, which were lower than the acceptable cut-off point of 0.70. However, Robinson et al. (1991) suggest that alpha may decrease to 0.60 in exploratory research. Thus, these three variables were included in this study but were treated with caution.

Construct validity of the seven TOE factors was performed using exploratory factor analysis (EFA) with principal components analysis and varimax rotation. The results indicated that factor loadings were all positive and above the cut-off value of 0.4 (Gefen and Straub, 2000), which represented acceptable construct validity. However, some items cross-loaded with another factor and were dropped as suggested by Churchill (1979), which is reported in Table 3. The average values of these seven independent variables were then used for hypothesis testing.

Table 3 Results of Cronbach's Reliability Coefficients and Factor Loadings for the Constructs

Constructs	Cronbach's Alpha	Range of Factor Loading
(1) Relative advantage	0.8922	0.511-0.773
(2) Compatibility	0.8562	0.547-0.825
(3) Organizational readiness	0.6196	0.777-0.824[c]
(4) Managerial involvement	0.9074	0.637-0.861
(5) CEO's innovativeness	0.8604[a]	0.629-0.789
(6) Competition intensity	0.6509[b]	0.600-0.724
(7) External support from technology vendors	0.6077	0.723-0.862

Note: [a] Item 1 was deleted. After this item was deleted, the alpha was increased from .8289 to .8604.
    [b] Item 3 of *competition intensity* was deleted. After this item was deleted, the alpha was increased from .5746 to .6509.
    [c] Item 3 was dropped as it was cross-loaded with relative advantage.

Findings

Demographic Profiles of Respondents

Of the 114 respondents, the majority (about 40%) employed between one and five employees; 84% were located in Bangkok; and 36% had implemented EC for more than eight years. Almost 45% of respondents were at chief executive officer (CEO) level. Table 4 summarizes the demographic details of the respondents.

Table 4 Demographic Characteristics of the Respondents (*n* = 114)

Category		Frequency	Per cent (%)
Number of Employee	1- 5	45	39.5
	6-15	36	31.6
	16-50	25	21.9
	51-100	7	6.1
	101-200	1	0.9
Organization Location	Bangkok	96	84.2
	Eastern region	2	1.8
	Southern region	12	10.5
	Northern region	2	1.8
	North-Eastern region	0	0
	Central region	2	1.8
Years of implementing EC	Less than a year	8	7.0
	1-2 years	19	16.7
	3-5 years	31	27.2
	6-8 years	20	17.5
	More than 8 years	36	36.1
Current Position	CEO	51	44.7
	General Manager	29	25.4
	IS Manager and planner	12	10.5
	Web and EC systems maintenance	4	3.5
	Sales and Marketing Staff	18	15.8

Strategic Uses of EC

Results revealed that more than half (54%) of Thai Travel SMEs websites in this research were developed to stage 2 of EC adoption (eMICA). Approximately 25% of them were in Stage 2 Level 3, around 22% were in Stage 2 Level 1 and around 8% were in Stage 2 Level 2. For Stage 1 and Stage 3 of EC adoption, they were almost equal at around 22% and 24% respectively. Results of EC adoption in each stage are summarized in Table 5.

Table 5 Stage of E-Commerce Adoption (eMICA)

Stage	Frequency	Per cent (%)
Stage 1- Promotion		
Level 1	*2*	*1.8*
Level 2	*23*	*20.2*
Sub-Total	25	21.9
Stage 2- Provision		
Level 1	*25*	*21.9*
Level 2	*9*	*7.9*
Level 3	*28*	*24.6*
Sub-Total	62	54.4
Stage 3-Processing	27	23.7
Grand Total	114	100.0

Hypotheses Tests

Table 6 shows the results of the multiple regression analysis of the three stages and seven TOE factors only for the factors that appeared as significant in the tests. In addition, the multicollinearity problem for the different independent variables was examined using VIF. The highest VIF values of the different independent variables were all acceptable, being less than five (Hossain Academy, 2012). Thus, there is no collinearity associated with the independent variables. Likewise, auto correlation problems were tested using Durbin-Watson. As shown in Table 6, the Durbin-Watson value of 2.255 for determinants of stage 1 of EC adoption, 2.187 for determinants of stage 2 of EC adoption, and 1.950 for determinants of stage 3 of EC adoption are between 1.5 and 2.5, which demonstrates that there are no auto correlation problems in the data used in this study (Hairs et al., 2006). The model tested and the estimated coefficients on the adoption in each stage are also shown in Table 6 (for excluded variables see Appendix B). Details in each stage are discussed below:

Table 6 Results of the Regression Model in Each Stage

Variables	F (1,112)	Sig.	Adjusted R^2	Durbin-Watson	Beta	Sig.
1. Promotion Stage						
a. Competition intensity	11.747	0.001	0.087	2.240	0.308**	0.001
2. Provision Stage						

a. Relative advantage	10.892	0.001	0.080	2.241	0.298**	0.001
3. Processing Stage						
a. Organizational readiness	13.673	0.000	0.101	1.963	0.33**	0.000

** Significant at the 0.01 level

Promotion Stage of EC Adoption

The predictor of the promotion stage of EC adoption was competition intensity only, $F(1,112) = 11.747$, $p = 0.001$. The adjusted R^2 value was 0.087, which meant that 8.7% of the variance in promotion stage of EC adoption was explained by competition intensity. The effect size of this model was quite small (Leech et al. 2005). The results also indicated that competition intensity had statistical significance at the 0.01 level *(p = 0.001)* on predicting the promotion stage of EC adoption with positive influence (beta = 0.308). Other factors did not significantly contribute to the model for predicting the promotion stage of EC adoption. Therefore, only Hypothesis 6(a) was supported.

Provision Stage of EC Adoption

The results of the provision stage of EC adoption indicated that only the factor relative advantage significantly predicted the provision stage of EC adoption, $F(1,112) = 10.892$, $p = 0.001$. The adjusted R^2 value was .080, which meant that 8% of the variance in the provision stage of EC adoption was explained by relative advantage. The effect size of this model was also quite small (Leech et al. 2005). The results also indicated that relative advantage was statistically significant in predicting the provision stage of EC adoption at the 0.01 level *(p = 0.001)* with a positive influence (beta = 0.298). Other factors did not significantly contribute to the model for predicting the provision stage of EC adoption. Therefore, only Hypothesis 1(b) was supported.

Processing Stage of EC Adoption

The results of the processing stage of EC adoption indicated that organizational readiness significantly predicted Stage 3 of EC adoption, $F(1,112) = 13.673$, $p < 0.001$. The adjusted R2 value was .101, which meant that 10.1% of the variance in the processing stage of EC adoption was explained by organizational readiness. The effect size of this model was also small (Leech et al. 2005). The results indicated that organizational readiness was statistically significant on predicting the processing stage of ecommerce adoption at the .01 level *(p < 0.000)* with positive influence (beta = 0.33). Other factors did not significantly contribute to the model for predicting Stage 3 of EC adoption. Therefore, only Hypothesis 3(c) was supported.

Results of hypotheses testing are summarized in Table 7.

Table 7 Summary Results of Multiple Regression Analysis

Hypothesis	Result
H1: Relative advantage is positively related to (a) promotion, (b) provision, and (c) processing stages of EC adoption.	The H1(b) is supported.

H2: Compatible EC with the current systems is positively related to (a) promotion, (b) provision, and (c) processing stages of EC adoption.	This hypothesis is not supported.
H3: Organizational readiness is positively related to (a) promotion, (b) provision, and (c) processing stages of EC adoption.	The H3(c) is supported.
H4: Manager's (CEO) involvement is positively related to (a) promotion, (b) provision, and (c) processing stages of EC adoption.	This hypothesis is not supported.
H5: Manager's (CEO) innovativeness is positively related to (a) promotion, (b) provision, and (c) processing stages of EC adoption.	This hypothesis is not supported.
H6: Intensity of competition is positively related to (a) promotion, (b) provision, and (c) processing stages of EC adoption.	The H6(a) is supported.
H7: External support from technology vendors for EC is positively related to (a) promotion, (b) provision, and (c) processing stages of EC adoption.	This hypothesis is not supported.

Discussion

This research revealed that the majority of the Thai travel SMEs that participated in this research used the Web for provision of information and services by using the Web for interacting with customers and including product catalogues, hyper-linking to further information, online inquiries, customer support (e.g., FAQs, site maps), and industry-specific value-added features. In addition, firms can include more features such as chat rooms, discussion forums, multimedia, newsletters or updates by e-mail as well as other characteristics on the sites that could include a travel planner, passport/visa requirements, safety information, online tourism magazines, currency converters and language options. The majority of Thai travel SMEs that participated in this research were moving from a static Internet presence through increasing levels of interactivity but were not fully utilizing the Internet to its full potential as part of its business value chain. This is consistent with the focus of travel industry sector which adopted the Internet and Web technologies for the promotion and provision of information and services that enable potential tourists to make informed travel decisions and choices (Burgess et al., 2001). In addition, in Thailand, a study of Kao-Sadd et al. (2001) also found that despite there being several benefits of EC solutions, many Thai small and medium tourism enterprises were not ready to develop a complete EC solution. They still face several obstacles such as lack of knowledge and technique for improving websites, high costs, insufficient competence of IT people, lack of confidence in online payment, legal problems, and difficulties with language and communication.

Further, this research found that TOE factors played different roles on EC adoption according to the stage of EC adoption. The adoption of EC by Thai travel SMEs in the promotion stage (Stage 1) was found to depend only on their perceived greater competition environment amongst their competitors. This means that Thai travel SMEs adopted EC because they perceived greater competition amongst their competitors. They are more likely to adopt EC for promotion their businesses by using the Internet as a new channel to commercialize their products and maintain a competitive advantages. The result of this study supports previous research that EC adoption in SMEs is significantly and positively affected by competitiveness of the environment (Ghobakhloo et al., 2011; Lertwongsatein and Wongpinunwatana, 2003; Lin and Lin, 2008; Zhu et al., 2006). Since the travel industry has a high level of competition among organizations (NSO, 2013), EC can be used as a strategic tool to respond to competitors (Lertwongsatein and Wongpinunwatana, 2003) in order to remain competitive advantage and survival. By creating a website at this stage, a Thai travel SME can introduce its products, reach new markets, and provide contact points through this new sales channel at anytime and anywhere (Laudon and Laudon 2009).

In addition, the results of this research indicated that relative advantage was a significant predictor of stage 2 of EC adoption. This means that when Thai travel SMEs perceived greater relative advantages of the Internet and EC technologies they then moved to the provision stage of EC adoption (Stage 2). This suggests that Thai travel SMEs are more likely to adopt EC for provision of information and services to increase sales, enlarge market, reduce costs, and develop new business models. The results of this research confirmed prior empirical studies which found that relative advantage was a significant predictor of EC adoption (Brand and Huizingh, 2008; Lin, 2006; Ghobakhloo and Tang, 2013; Wang and Ahmed, 2009). Ramsey et al. (2003) argue that growing awareness and understanding of the benefits of e-commerce among SMEs can positively influence their desire and interest in adopting e-commerce.

Lastly, this research found that organizational readiness was a significant predictor of stage 3 of EC adoption. This means that Thai travel SMEs are more likely to be advanced in the processing stage (Stage 3) in adopting online transactions, e.g. to make secure online payment, order tracking and online sales of souvenirs, etc. when their organization had sufficient financial and technological resources. The result of this research was in line with Rashid and Al-Qirim (2001) who state that financial, human, and technology resources play a vital role in the adoption of EC. Likewise, Zhu et al. (2006) suggested that in developing countries, technology readiness is the most critical factor for e-business assimilation. In addition, in later stages of EC adoption costs, technological demands, and complexity increases (Rao et al., 2003). Thus, only those organizations with sufficient resources would consider expanding by EC adoption (Wang and Ahmed, 2009).

However, this research failed to reveal the effects of compatibility, CEO's involvement, CEO's innovativeness, and external support from technology vendors. These factors

did not appear to play any significant role in EC adoption in this research which will be discussed next.

Compatibility. Compatibility of EC with the current system was insignificant to EC adoption. This means that Thai travel SMEs did not perceive that the compatibility of EC systems and current buying and selling processes, customers, security, and EC legal issues are important issues in their EC adoption. This finding did not confirm prior empirical studies as presented by Zhu et al. (2006). A plausible explanation could be that EC/IS implementation in the Thai travel SMEs may require significant organizational and structural changes (Levy et al., 2002), change in existing work practices, and/or in culture of organizations (Nguyen, 2009). However, these SMEs face the difficulty in changing the existing systems to match the EC systems (Khan, 2004). Thus, compatibility can be considered as a barrier to adopting EC in travel SMEs.

CEO's innovativeness. CEO's innovativeness was found to be insignificant to EC adoption in this research. This finding was inconsistent with prior empirical studies which indicated that CEO's innovativeness influence website and EC adoption significantly and positively (Al-Qirim, 2007; Ghobakhloo and Tang, 2013; Ghobakhloo et al., 2011). This might occur because CEOs of Thai Travel SMEs may consider that EC implementation is a risky investment in terms of a low return on investment (Vilaseca-Requena et. al., 2007; Chen and McQueen, 2008), insufficiency customer' access to the Internet (Chen and McQueen, 2008), and privacy risks and lack of trust and security (Molla and Licker, 2005; Tan et al., 2009). Thus, CEO's of SMEs in developing countries, including Thailand, are generally reluctant to adopt and use EC (Ghobakhloo and Tang, 2013). If the CEO perceives that the benefits of the new system outweighs the costs of developing and maintaining the system as well as the risks, then the business is more likely to adopt them (Thong and Yap, 1995).

CEO's Involvement. CEO's involvement was shown to be insignificant factor for EC adoption in this research. This finding was inconsistent with prior empirical studies that CEO's involvement was perceived as a necessary determinant to the adoption of innovation adoption (Al-Qirim, 2007; Ramdani et al., 2013). This might occur because, even though CEOs have high involvement and perceive that adoption of new technologies and EC is important, they often do not have sufficient resources to adopt them (Thong and Yap, 1995), e.g. limited knowledge of EC models and methodologies (Cloete, 2002). As suggested by Thong and Yap (1995), EC was considered as a new technology for organizations and needs technologically skilled employees to operate and maintain those EC systems. Hence, CEO's involvement did not have an influence on the EC adoption in Thai travel SMEs.

External Support from Technology Vendors. Results of this study showed that external support from technology vendors was not statistically significant at any stage of EC adoption. This finding was consistent with Sadowski et al. (2002) who found that external support has not been a factor in strategic Internet adoption for SMEs. Similarly, Ramdani et al. (2013) found that external ICT support was insignificant in

the adoption of enterprise applications by SMEs in the Northwest of England. However, this finding did not confirm prior empirical studies by Doolin et al. (2003) and Ghobakhloo et al. (2011). A plausible explanation could be that external support from technology vendors in providing technical advice and support for EC was limited. In addition, SMEs might perceive technology support to be an ongoing expense that they would not like to incur (Premkumar and Roberts, 1999). Hence, external support from technology vendors was not considered as a critical factor in the adoption of EC adoption for Thai travel SMEs.

Conclusion and implication

Theoretical implications

The major contribution of this study to the research in EC adoption is that this research might be one of the first studies that investigated the use of EC by Thai travel SMEs using the eMICA three-stage model and examined factors affecting EC adoption in each stage following the TOE framework. The results of this study showed that the use of EC by Thai travel SMES in this study is in stage 2, provision of information and services. Moreover, this research provides support for the TOE framework by suggesting that competition intensity, perceived relative advantage of EC, and organizational readiness are significant influential factors of EC adoption by Thai travel SMEs more than others but in different stages. In addition, the significant impact of certain factor on each stage of EC adoption suggested the uniqueness of the adoption phenomenon of EC in Thai travel SMEs on their adoption decision in each stage. From the first stage, promotion stage, the influence factor to adopt EC came from external threat, competition intensity. In order to survive in the competitive environment, Thai travel SMEs forced to adopt EC in the first stage. In addition, organizations chose to proceed to the next stage when they recognized the potential benefits of EC over traditional methods. In addition, organizations have moved to more advanced stages of the EC, the processing stage, when their organization had sufficient financial and technological resources.

Practical Implications

The findings provide several implications for managers, government agencies, and EC consultants and vendors in providing guidance on practical applications of EC adoption in Thai travel SMEs and in developing EC adoption models. First, this study suggests that managers need to adjust management practices according to the stage model. Understanding the level of EC adoption will have an important impact on the competitive positioning of Thai travel SMEs depending on the purpose of the adoption. E-commerce may be first used only to provide products and services information of the company. After that, more functionality may be added to the website to interact with customers and provide information and services they need. In the next step, the company may add online transactions function for products or services. Finally, the site maybe fully integrated with the system by considering influencing factors in each stage. To ensure the use of the Web into the maturity and become a "fully-fledged" site, organizations need to build up organizational readiness. Top managers should put a high priority on investing in the EC technology and linking the systems across

the organization to support information flow across the value chain (Zhu et al. 2006). In addition, managers need to enhance their employees' knowledge on ICT proficiency and ICT trends (Law et al., 2009) for the efficient usage and adoption of innovations by working closely with EC vendors in providing more technical support, training, and peer information (Zhu et al. 2006).Thai travel SMEs can take this information into account in the implementation and use of electronic commerce to help improve business performance and managerial decision making (Leung and Law, 2005) to create a competitive advantage in the global market.

This study also offers implication for government agencies. Firstly, according to UNCTAD (2004), in order to stimulate the use of EC in SMEs in Thailand, government agencies should play an important role in facilitating the use of EC for the tourism industry and in increasing their ability to reap the benefits (Kenneth et al., 2012). In Thailand, the government agencies, e.g. Department of Business Development and Department of Industry Promotion, have provided several EC training programs and workshops to support and enhance SMEs competitiveness. However, Thai SMEs might be unaware or are ignorant of the support provided by the government agencies. Therefore, the government agencies and EC consultants should put more effort into promoting the use of EC by raising the awareness of EC advantages on their businesses (Ghobakhloo and Tang, 2013) and expanding the knowledge of EC by providing continuing EC training programs and workshops as well as providing flexible learning opportunities for owner/managers who are busy in managing daily business and seeking new business opportunities (Xu et al., 2007).

Additionally, the government agencies could provide financial support programs (e.g. low interest loans) targeted to SMEs that would like to migrate to EC systems. SMEs in Thailand may be concerned with the tax issues of EC operations. The government, therefore, could accelerate EC diffusion by modifying current tax laws to stimulate EC adoption by SMEs (Lin, 2006). Moreover, one of the main barriers of EC adoption faced by SMEs in Thailand is security of online transactions. Thus, government agencies should focus their supporting activities on lowering perceived risks of EC by improving secure order processing and payment systems by establishing a legal and institutional framework that supports EC and online transactions (Ghobakhloo and Tang, 2013; Kraemer et al., 2006).

Finally, EC vendors could play a significant role in enhancing the widespread adoption of EC among Thai SMEs who have a lack of IT expertise, specialist knowledge, and resources. EC vendors and technology providers are advised to provide EC solutions that add value to owner/managers by offering tailor-made EC solutions to suit the unique needs of Thai travel SMEs. In addition, vendors' support and training should be prioritized to SMEs clients (Xu et al., 2007) and enhancing user satisfaction and innovation effectiveness (Ghobakhloo and Tang, 2013; Zhu et al., 2006).

Limitations and future research directions
There are some limitations of this study. First, the selective choice of independent variables tends to pose certain limitation to the study. Second, the study's sample size

of 114 travel and tour SMEs is not large enough sample to better detect relationships due to low statistical power (Hairs et al., 2006). Third, the research was limited to the Thai travel SMEs including only travel and tour operators and are from two sources, DBD and TAT. This could be a limitation about the generalizability of the results.

The results of this study serve as a preliminary step towards a better understanding of strategic uses of EC in Thai travel SMEs as well as factors affecting EC and adoption. For future research, there are several directions that may be developed from this study. First, in order to generalize the concepts, future research should be extended to incorporate other sectors of the travel industry such as accommodation so that the unique needs and problems related to the travel industry in adopting EC technology can be appropriately addressed and the findings generated from different sectors can be compared in the context of developing an EC adoption model. Second, future research may replicate this study by including other sources of population to verify the research findings. Finally, future research should further explore impacts of other factors that were not included in this study, e.g. government support, consultant effectiveness, cost of EC implementation, in order to improve the effect size of the model.

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