EXPLORING THE DETERMINANTS OF E-COMMERCE USAGE IN THE HOTEL INDUSTRY IN THAILAND: AN EMPIRICAL STUDY

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Abstract: The use of the Internet for communicating and transacting with customers has been growing rapidly in the worldwide tourism industry. However, there is a large variation in the intensity of use of e-commerce in the travel and tourism industry. While the Internet usage varies across countries, even within a country there are large variations amongst enterprises. These variations are mainly due to the impact of several factors associated with the internal and external environment of the enterprise. This study attempts to explore the impact of various factors on the Internet usage rate. The factors are classified into three broad groups: viz. factors associated with the location of the enterprise, internal factors of the enterprise and technological factors. An empirical study conducted with 95 hotels in seven locations in Thailand is used to assess the impact of the factors.

Key words: e-commerce usage, ICT and tourism, locational factors, organizational factors, hotel industry, Thailand

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Introduction

As the tourism industry expands globally, the need for expanding the communication networks to connect the customers and the service providers has increased. The world wide web has been utilized as a means for communication widely over the past decade in the travel and tourism industry. It has been instrumental in helping the tourism sector to expand its markets across the continents and has played a major role in helping the growth of the industry. The world wide web is a cost effective means for enterprises in the travel and tourism sector to directly market their offerings to a large customer population across the globe. It is also a very convenient means for the customers to gather information and compare between alternatives in an interactive manner.

According to O'connor (1999), the main advantages that the internet provides as a marketing medium for travel and tourism sector are: (i) the global market reach, (ii) the customers who access the web-sites are much more interested rather than in a conventional marketing communication where, the message is targeted indiscriminately, (iii) the web-sites are not affected by capacity constraints, and (iv) the possibility of two-way communication offered by the internet. The UNCTAD (2000) background paper on e-commerce and tourism states that " the internet and its inherent interactivity empowers people to find information quickly and precisely on any destination or recreation that is capturing their interest". The internet has also presented the travel and tourism sector with the possibility of both connecting as well as transacting with global customers on a real time basis. The extent of the use of e-commerce by the tourism industry has increased considerably over the years. Forrester (2004) estimates that in 2004, in the United States alone the travel and tourism transaction through the world wide web will be worth US\$ 53 billion. The growth in the adoption of e-commerce in the travel and tourism sector has been facilitated by a number of factors including technological advancements, greater internet penetration among households, heightened competition in the travel and tourism sector etc.

The adoption and usage of e-commerce in the travel and tourism sector however has not been very uniform. The extent of adoption and usage has varied across countries as well as amongst enterprises within a country. It has been observed that the adoption of e-commerce is determined by factors like the size of the enterprise and the target market of the enterprise. A limited number of studies have focused on this aspect in the travel and tourism related literature [eg. Wei et al (2001), Ozturan and Roney (2004), Buhalis and Deimezi (2004)]. The present study looks at the factors that influence the adoption and usage of e-commerce among the enterprises in the hotel industry. The hotel industry in Thailand is selected as a setting to explore the relative influence of factors in determining the adoption of e-commerce.

Thailand has developed into a major destination for tourists from around the world, attracting about 9.31 million tourists in the year 2003 (TAT, 2003). The majority of the tourists come from East Asia and Europe. The tourism industry is expected to directly contribute about 5.4% of the GDP which translates into about US\$ 29.4 billions. Thailand has been ranked 28th globally by the World Travel and Tourism Council in their annual research report (WTTC 2004). Thailand has also been ranked amongst the first three tourist destinations in Asia in terms of the number of tourist's arrivals. The e-commerce sector is also witnessing a substantial growth in Thailand, and the total transaction size is expected to be in the region of about US\$ 651 million in 2003 (NECTEC 2003). Thailand is a growing market in terms of the e-commerce usage in travel and tourism. However the travel and tourism enterprises in the country are at different stages of utilization of the internet in their business activities.

FACTORS DETERMINING THE INTENSITY OF E-COMMERCE USAGE IN HOTELS

E-commerce mainly helps in the generation of leads, presenting information about the tourism product to the customers, and facilitating the transaction process electronically mainly using the world wide web. Thus the travel and tourism based enterprises are expected to achieve significant benefits by way of growth in sales and profits through the increasing utilization of the internet. Both external and internal factors affect the utility of the internet in providing these benefits in the hotel industry. A hotel's actual usage of the internet therefore varies on the basis of the internet's ability to help the hotel in connecting to more customers and thereby increasing the sales and profits. Due to various reasons, if the internet cannot contribute significantly in this direction, the hotel would rely more on other sources like travel agents or telephone enquiries for attracting customers. For instance, the viability of the internet as a medium for marketing is severely affected by the extent of use of the internet by the hotel's target customers. Therefore if the hotel mainly caters to a population where the internet penetration is very low, its dependence on e-commerce is also expected to be low. Other contextual factors relating to the competitive environment and the organization would also affect a hotel's intensity of usage of e-commerce. Environmental factors like the level of competition between existing players, organizational factors like the scope of the activities in which the hotel is involved in etc. are also expected to impact a hotel's usage of the internet.

The technology-organization-environment framework introduced by Tornatzky and Fleischer (1990) provides a convincing theoretical rationale for considering the importance of contextual factors in the adoption of e-commerce based technologies. The framework groups the significant contexts into three classes: (i) the organizational context (ii) the technological context and (iii) the environmental context. This framework has been applied across several Information technology domains over the past decade (Zhu et al, 2002). Several authors have found considerable support for the framework in their studies. Notable ones amongst them are Mukhopadhyay et al. (1995), laccovou et al. (1995), Kuan and Chau (2001), Zhu et al (2002). In most of these empirical studies, the specific factors identified within the three contexts have varied. These variations were reflective of the organizational or market contexts in which these studies were conducted. In this study, certain variables unique to the tourism industry are chosen to represent contextual factors that are thought to be influencing the usage rate for e-commerce. Based on the technology-organization-environment framework, the intensity of use of e-commerce in a hotel is expected to be determined by a set of factors associated with the hotel, and the location where the hotel exists.

The adoption and usage of information technology and other associated technologies has received significant attention in the travel and tourism related literature in recent years. Studies have considered information technology related variables both as a dependent as well as an independent variable. For instance Ozturan and Roney (2004) and Wei et al (2001) look at the application of internet in the travel and hospitality industry by looking at the critical factors that lead to greater adoption. Martorell (2002), Connolly and Olsen (2000) and Bloch and Segev (1996) on the other hand consider e-commerce adoption as an independent variable that could affect and transform hospitality industry in the future. The main focus of these studies is to analyze and explain the main outcomes of rapid use of e-commerce in the travel and tourism industry. Both these streams have highlighted the variations in the use of internet across destinations and across enterprises, and tried to explain these variations from different perspectives. In the present study, a similar framework is adopted to assess the importance of certain contextual factors in the intensity of usage of ecommerce in the hotel industry in Thailand. The factors considered in this study have been mentioned in several other studies as possible influencers of ecommerce or IT adoption in the travel and tourism sector. The factors considered are classified into three major groups: (i) the location related factors (ii) the firm related factors and (iii) the technological resources of the firm. The study attempts to see the impact of these factors on the intensity of e-commerce usage in the hotel industry in Thailand.

The location related factors considered are the characteristics of the hotel's location which could influence its intensity of use of e-commerce. The location related factors considered are: (i) the percentage of consumers who visit the hotel's location from high Internet penetration countries, (ii) the overall market

size of the hotel's location, and (iii) the level of competition between the hotels in the locality.

Unless the target consumers access the Internet and use the Internet as a medium for transaction, the service providers are not in a position to rely heavily on the Internet for its marketing activities. Thus hotels in locations where most of the visitors come from a country with a high level of Internet penetration are expected to use the Internet to a greater degree than hotels in locations where the major part of the tourists are from countries where the Internet penetration is low. High internet penetration countries are defined as those countries where the access to personal computers and the Internet are high (EIU 2003). Regardless of their country of origin tourists may of course have access to the Internet. It is however assumed that the practice of booking rooms online is widely prevalent only in the high internet penetration countries. The market size of a location will also be a significant factor since hotels in smaller underdeveloped locations may try to use the Internet to reach out to the global population more than hotels located in a developed location.

The competition level amongst the hotels in a location, considered as part of the locational factor, can also influence the intensity of use of the Internet by a hotel. Many empirical studies (e.g. Crook and Kumar 1998, Grover 1993, lacovou et al 1995) have found evidence to suggest that competitive pressure drives innovation. In this study this factor is measured as the occupancy rate in the location where the hotel exists. High levels of occupancy rate imply that the hotels can expect to get their rooms filled with relative ease without much competition, while low levels of occupancy point towards higher levels of competition to attract customers between the hotels in the location.

The enterprise related factors considered are: (i) the size of the hotel in terms of the number of rooms, (ii) the scope of activities of the hotel in terms of activities that the hotel is engaged in, (iii) the type of the hotel in terms of economic segment it is targeting and (iv) the age of the hotel. The survey conducted by Wei

et al (2001) amongst the managers in the hotel industry supports the fact that the size of the hotel and the scope of activities of the hotel have considerable influence on the usage of e-mail and internet. In a study conducted with manufacturing enterprises, Zhu et al, (2002) found that the size of the enterprise influences the intensity of use of e-commerce based facilities and processes.

The Information and Communication Technology resources of the enterprise is also considered as a factor that could impact the intensity of use of e-commerce. Zhu et al, (2002) has found that the technological capabilities of manufacturing enterprises positively affect an enterprise's usage of e-commerce. The ICT resources of an enterprise is defined here as the enterprise's possession of a variety of ICT technologies and has to be distinguished from the intensity of use of e-commerce. ICT technologies, like Global Distribution Systems and Information Systems for back office operations, have been used in the tourism industry even before the advent of the internet and e-commerce. Hotels with high levels of ICT adoption are expected to be more interested and more capable of utilizing the possibilities presented by the internet in communicating and transacting with the potential customers than firms with low levels of ICT adoption.

The study thus attempts to analyze the impact of the eight factors - (i) the percentage of consumers who visit the hotel's location from high internet penetration countries, (ii) the overall market size of the hotel's location, (iii) the level of competition between the hotels in the locality, (iv) the size of the hotel, (v) the scope of activities of the hotel, (vi) the type of the hotel, (vii) age of the hotel, and (viii) possession of ICT resources by the hotel - on the intensity of use of the lotel Internet based commerce by the hotel.

THE STUDY METHODOLOGY

The study was conducted through a questionnaire survey amongst hotels which had participated in a national level exhibition. 200 hotels of different grades and sizes and from various region of the country had participated in the exhibition. 95 hotels were randomly selected from the 200 odd hotels for the survey. The questionnaire was directly administered to the executives of the hotels.

The hotels considered in the study are located in seven very popular destinations in Thailand, e.g. Bangkok, Phuket, Pattaya, Chiang Mai, Krabi, Samui and Hat Yai. Table - 1 shows the number of hotels selected from each of these locations. Together these locations attracted about 24 million visitors in the year 2003 and were expected to attract about 25 million visitors in the year 2004. The figures include both foreign and domestic visitors. Also these seven destinations have a total of about 2000 tourist accommodation establishments in 2003. The tourism authority of Thailand defines a tourism accommodation establishment as a place in which rooms are provided for tourists. This includes hotels, resorts, guest houses etc. Figures 1, 2, and 3 show the distribution of the hotels in terms of their size (number of rooms), class (room rent) and age respectively. The following paragraphs describe the operationalisation of the factors considered in the study.

Level of internet penetration among the target population of the hotels was measured mostly from the secondary sources of data. To describe this variable, the connectivity and technology infrastructure index of countries of the 2003 ereadiness ranking of the economist intelligence unit was used. The connectivity and technology infrastructure criteria of a country indicate the access the individuals and businesses have to basic and fixed mobile telephone services, personal computers and the Internet. The affordability, quality and reliability of the services are also considered. The security of the contents delivered and transactions through the Internet is also considered in arriving at this index for a country. This index effectively gives an idea about the extent to which consumers in a given country can and are inclined to use the Internet for transactions. The 2003 rankings of the economic business unit ranked 60 countries all over the world. This study was found to be very meaningful in the case of Thailand since all of the major markets of Thailand were included in this study. The connectivity scores of the countries in the study ranged from 7.9 to 1.3. All the countries with a median score of 4.6 or higher were included as high internet penetration countries, and 29 countries fall under this category. The counties with a major share of tourist's arrivals in Thailand, and which were excluded from consideration as a high internet penetration countries are Malaysia, China, and India. The native tourists were also excluded since Thailand too didn't have a connectivity value equal or more than 4.6. Thus every destination was given a score which was equal to the percentage of visitors from the 29 high internet penetration countries who visited that destination in 2003.

The market size for a location was measured as the total number of visitors who had visited that location. Related statistics were available for all the locations used in the study. The general occupancy rate was also available from the statistical report for each of the locations considered. The values of the three locational variables e.g. total visitor arrival, percentage of people from high Internet penetration countries, and average occupancy rate for the seven locations are given in Table - 2.

The sizes of the hotels were measured in terms of the total number of rooms in the hotels. The scope of operation of the hotels was measured by asking the hoteliers about their lines of activities, for example whether they limit their operations to providing just accommodation, or also include other facilities like a convention center, health spa, business center, conducted tours etc. The type of hotel signifies the economic segment that the hotel mostly catered to. This was measured on the basis of the average room rent of the hotel. The age of the hotel was ascertained directly from the hotel managers.

The ICT resource of a hotel was measured in terms of the number of ICT related facilities the hotel is presently using. These ICT facilities offered the hotel various possibilities for improving the booking, service and back office functions. The variable was measured by counting the number of ICT related facilities the hotel

has adopted. These include facilities for: (i) on-line real time booking, (ii) Provision for linking to a Global Distribution system, (iii) an Internet center, (iv) Internet in all rooms, (v) wireless Internet in the premises, (vi) provision for e-check out, (vii) an ERP, and (viii) a LAN. Zhu et al (2002) had used a similar construct to measure the technological competence of manufacturing companies. The distribution of hotels according to their ICT facilities is shown in Figure - 4. Sufficient care was taken while measuring such instances where there was a provision for the Internet in all the rooms but no Internet center on the premises. However these cases were very rare (less than 5%).

The intensity of use of e-commerce in the hotel was measured by asking the hoteliers about the percentage of their transactions with the customers that occur through the Internet. This also included instances when enquiries were received and finalized through e-mail, real-time transactions through the hotel's own websites or the web-sites of other e-intermediaries etc. Most of the hotels surveyed also received visitors through such means like walk-ins, telephonic contact, travel agents, travel wholesalers, GDS apart from the e-mail and Internet based possibilities.

ANALYSIS

Multiple regression was used to assess the impact of the selected factors (independent variables) on the intensity of adoption of e-commerce among hotels (dependent variable). The results of the multiple regression analysis are given in Table - 3.

As the multiple regression result shows a p-value of 0.025 for the coefficient of differentiation, the model can be considered to be having acceptable levels of statistical significance. The plot of residuals indicates that the data follow the linearity and normality conditions without any homoscedasticity. Further the VIF values as shown in Table - 3 are all closer to 1.00, indicating an absence of multi-colleniarity. Of the regression coefficients, except for the age of the hotel, all the other variables have a significance level less than 0.1. This again goes to

indicate a significant impact for the independent variables on the dependent variable. Since the variables were mostly scaled differently, their relative significance can be compared only on the basis of the standardized beta coefficient.

Results

The results of the multiple regression analysis are given in Table - 3. The R^2 value of 0.39 indicates an acceptable fit for the model. Amongst the location related factors, from the comparisons of the standardized Beta-coefficients, it is seen that the internet penetration among the target market have a positive value (0.092). This implies that a hotel's intensity of use of e-commerce increases in direct proportion to the internet penetration in the target markets served by the hotel.

The market size has a negative value (- 0.142) which implies that hotels in less developed destinations use the internet more than the hotels in well developed destinations. This is quite understandable since hotels in well developed destinations are highly networked with the travel wholesalers and travel agents, and can afford to ignore the internet to a certain extent. The well developed destinations in Thailand viz. Bangkok, Pattaya and Phuket with a market size of more than 3.5 million, were developed by the travel wholesalers at a time when the Internet was not available as a medium for tourism promotion. Thus, hotels in these destinations are able to attract customers without relying too much on the Internet. The occupancy rate has a negative coefficient (-0.010) which indicates that as the occupancy level increases in a location, the hotels rely less on the internet for communicating with the customers. This is probably caused by the increasing need to acquire customers in locations with low occupancy rates and hence all the means available to the hotel is utilized, including the internet. Thus the competition level in the market has positive impact on the use of the Internet.

Among the enterprise related factors, the positive value for the hotel class (0.148) indicates that hotels that belong to a higher grade use the internet more than the hotels in the lower grade. This is an interesting insight since there exists a view that hotels of a higher grade could rely more on travel wholesalers and other means to get more customers. It is possible that customers who stay in high grade hotels are more receptive to booking through the internet, or that the hotels in the high grade are more involved in marketing itself through the internet. Another reason might be the perceived value and reputation that the hotel would like to create to its customers. The negative coefficient for the age (-0.1) of the hotel indicates that new hotels are more prone to use the Internet than old hotels. The old and established hotels may have a good association with conventional intermediaries like travel wholesalers and travel agents which make them less reliant on the Internet. The possible organizational inertia could be another cause for the low Internet use. New hotels are probably more receptive to an innovative concept like e-commerce rather than older hotels. It could also be the fact that the incremental income on the investment for renovating the whole system to adopt ICT may not be attractive to the old hotels.

The size of the hotel has a high negative value (-0.151) which goes to show that small hotels are more prone to use the internet than the larger hotels. One probable reason for this phenomenon is that small hotels may not have a good access to travel agents or travel wholesalers which make them rely on means such as the internet. The scope of the hotel also has a negative coefficient (-0.044) which provides a counter intuitive result. The negative coefficient tends to indicate that hotels with lesser scope of activities are more reliant on the internet than hotels with a larger scope of activity. Though the absolute value is low and also the statistical significance of this variable is also relatively low, it is still very difficult to give a satisfactory explanation. One possible explanation is that the hotels which are limited in their scope of activities tend to be small and hence, they are more prone to utilize the internet due to lack of proper attachment with the established travel intermediaries. The possession of ICT resources also has

a positive value (0.094) for the regression coefficient. This implies that hotels with a high ICT adoption level will have a high level of reliance on e-commerce.

Since six of the eight factors have a significance value of more than 0.05, indicating a relatively lower value of statistical significance, a step-wise regression was carried out. The details of the step-wise regression are shown in Table - 4. As the table indicates, the statistical significance of the five factors viz. competition level in the hotel's market, scope of activities of the hotel, ICT adoption level in the hotel, age of the hotel, Internet penetration in the target market and Market potential of the location have limited statistical significance. The direction of their effect on the dependent variable is however beyond doubt and hence merits consideration.

CONCLUSION

With the rapid penetration of the Internet, its use as a medium for communication and transaction is increasing. The study attempts to understand the factors that influence the usage of e-commerce in the hotel industry. Thailand being an important tourist destination in the world, provides an excellent context for the study. Further, Thailand being a developing country, the extent of use of the Internet is in its growth phase. While all the hotels that were surveyed had a website and had an e-mail service to connect to the customers, there existed a large variation in their reliance on the internet to communicate and transact with the customers. The study tries to find the underlying reasons for this phenomenon. The results that have emerged from the study endorse some of the beliefs about the Internet usage in the travel and tourism industry. Table - 5 summarizes the results.

It is important to find out more about the factors that influence the usage intensity of e-commerce in the hotel industry. The study gives a general idea about the impact of the various factors on the intensity of use of e-commerce. However further studies that explore the reasons in depth would give a clearer picture in this respect. It is also important to look into the other variables that may influence the e-commerce usage intensity. Since the sampling methodology deviates from the strict conditions of random sampling, the results need to be generalized with caution. This is one of the limitations of the study. The study also does not consider the impact of the membership of an established hotel chain on the hotel's e-dependence.

The study attempts to link external and internal factors related to a hotel to its dependence on e-commerce. In terms of managerial implications, the study gives an insight towards the reasons behind e-commerce usage in the hotel industry. This will be very useful for e-intermediaries in assessing new opportunities for expansion and market growth.

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Destination	No. of hotels	
	selected for the	
	study	
Bangkok		18
Chiang Mai		8
Hat yai		8
Pattaya		10
Phuket		17
Krabi		15
Samui		19

Table 1: Hotels considered in various locations

	Size of the market: total visitor arrivals in 2002 (in million)	Percentage of people from high internet penetration countries (%)	Average occupancy rate (%)
Bangkok	10.7	53.8	63.9
Chiang Mai	2.3	49.5	44.47
Pattaya	3.6	47.1	61.08
Phuket	3.4	62.1	57
Samui	0.754	75	60.51
Hat yai	1.569	18	52.76
Krabi	1.632	50	43.22

Table 2: Locational variables: values across the seven destinations

	Unstandardized		Standardized	t	Sig.	Со
	Coefficients		Coefficients		_	linearity
						Statistics
	В	Std.	Beta			VIF
		Error				
(Constant)	0.149	0.199		0.748	0.088	
Market Size of the	-0.009	0.011	-0.142	-0.816	0.08	1.150
hotel's locations						
Internet penetration in	0.010	0.020	0.092	0.486	0.08	1.187
the target market						
Occupation rate	-0.002	0.029	-0.010	-0.052	0.08	1.176
(opposite to						
Competition level in						
the hotel's market)						
Hotel Class	0.011	0.011	0.148	0.976	0.04	1.014
Age of the Hotel	-0.002	0.004	-0.100	-0.690	0.13	1.081
Size of the hotel	-0.009	0.009	-0.151	-0.972	0.05	1.180
Scope of activities of	-0.002	0.009	-0.044	-0.259	0.07	1.152
the hotel						
ICT adoption level in	0.010	0.016	0.094	0.625	0.08	1.099
the hotel						

Table 3: Results of the regression analysi	S
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\mathbf{R}^2	=	0	.390	
		<u> </u>		

Adjusted $R^2 = 0.070$ F = 2.40 p = 0.025

Step	Variable removed	R2 value after removing the
No.		variable
0	none	0.39
1	Competition level in the hotel's market	0.388
2.	Scope of activities of the hotel	0.381
3.	ICT adoption level in the hotel	0.365
4.	Age of the hotel	0.353
5.	Internet penetration in the target market	0.315
6.	Market potential of the location	0.287
7.	Hotel size	0.252
8.	Hotel Class	0.145

Table 4: Step-wise regression of factors

Table 5: Summary of the effects of the various factors on the intensity of e-commerce use

Factors affecting the intensity of use	Effect on intensity of	
of e-commerce	e-commerce use	
Market size of the location	Negative	
Level of internet penetration among	Positive	
the target market		
Competition level in the hotel's	Positive	
location		
Hotel Class	Positive	
Hotel size	Negative	
Hotel's scope of operation	Negative	
Age of the hotel	Negative	
ICT resources of the hotel	Positive	

Figure legends:

- Figure 1: Size distribution of hotels according to number of rooms (sample size 95)
- Figure 2: Distribution of hotels according to room rent (sample size 95)
- Figure 3: Distribution of hotels according to age (sample size 95)
- Figure 4: The distribution of hotels in terms of ICT facilities

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Figure 1: Size distribution of hotels according to number of rooms (sample size 95)



Figure 2: Distribution of hotels according to room rent (sample size 95)



Figure 3: Distribution of hotels according to age (sample size 95)



Figure 4: The distribution of hotels in terms of ICT facilities