ORIGINAL ARTICLE

Investigating the Antecedents of Online Reservation Acceptance in Malaysian Higher Institutions

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Abstract

This study attempts to investigate the causal link between individual differences in computer self efficacy (CSE), perceived ease of use (PEOU), perceived usefulness (PU), perceived credibility (PC), and behavioural intention (BI) in Malaysia environment. Sample is drawn using stratified random sampling on 24 campuses located all over Malaysia where the final sample size required is 370 through the use of questionnaires method. Results of Structural Equation Modelling (SEM) demonstrate that CSE has a significant relationship with PU, PU and PC have significant influence on BI, PEOU has no significant influence on BI, and CSE does not predict PC and PEOU. In addition this study also introduced location and experience as a moderating variable. The results confirm that location is a moderating factor that will affect the user acceptance on online reservation, while experience is not. The research findings would be useful for companies that engage in online reservation transaction to design marketing strategies to cater new potential market segments while at the same time maintain their customers. In this study, extended version of TAM is being used where two moderating variables are introduced which are location and experience.

Key words: Electronic commerce, online reservation system, TAM, Malaysian higher institutions

Introduction

E-commerce revolution has created a competitive environment that change the way of how business is being delivered and designed (Turban and King, 2003). Travel related industry that dominates by hoteliers, airline companies and travel agencies is one of the sector that being affected by the E-commerce revolution. In order to facilitate promotion and reservation processes, online reservation system has been established to provide conveniences of twenty four hours, seven days a week services to the customers. However, although the benefits of using online reservation system are obvious, it is a surprise that there are customers who prefer to stick to the traditional method of business transactions (Intan Salwani, 2010). Due to this, it is a need for businesses to find effective ways of persuading customers to reserve online. Thus, empirical investigation on factors that influence user’s acceptance on online reservation system could provide useful findings to the E-commerce players. Drawing upon the issue, this study employs a modified version of the Technology Acceptance Model (TAM) to explore the factors that influence the customer’s behavioral intention to use online reservation system. Focus is given on Malaysian individual user of Internet through an empirical study conducted among the lecturers in public Universities, Malaysia. In short, the study attempts to investigate the user’s behavioral intention to use the online reservation system. Empirical investigation is done to examine the causal link between individual differences in computer self-efficacy, perceived ease of use, perceived usefulness and perceived credibility with the user’s behavioral intention of online reservation. More specifically the study attempts to determine:

i. The influence of individual differences in computer self-efficacy on perceived usefulness, perceived ease of use and perceived credibility of the online reservation system.

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ii. The influence of consumer’s attitude in dealing with a complex transaction (perceived ease of use) on perceived usefulness and perceived credibility of the online reservation system.

iii. The extent to which perceived usefulness will influence behavioral intention to use online reservation.

iv. The extent to which the user’s perception of credibility regarding security and privacy issues could influence their voluntary acceptance of online reservation system.

v. Will the location and experience of users influence their acceptance upon online reservation

Review of Literature:

Travel related product is rated among the top three products or services purchased via Internet (Eric and Cassidy, 2006). In response to this, many travel Web sites have been established, for which online reservation is applied on services such as hotels rooms, air tickets, car rentals, cruises, and package tours (Bell and Tang, 1998; Bernstein and Awe, 1999). The online reservation systems facilitate the customers to make reservations directly from the Internet. This system avoided a misery of long queues at the counters, and the time wasted on negotiating with the travel agents. Moreover, this system enables the customers to have a glance into the hotel rooms virtually, and also review the places that they plan to visit, eat and shop (Nusair and Kandampully, 2006). According to a study carried out by Jupiter Research, the number of people who bought travel products over the Internet has doubled from 18.6 million in 2006 to 38.6 million by 2007 (Abdul Rahim and Fariza, 2008). There is no doubt that manual reservations like phone calls, queues at counters or using a travel agent to buy the airline tickets and holiday packages are gradually being replaced by a few simple clicks of the mouse (Business world, 2008).

Technology Acceptance Model (TAM):

One of the Information System (IS) research areas that flourished in previous literature is a study on adoption of a new information technology (Klopping and McKinney, 2004). There are quite number of tools being used to describe the adoption of new technology in which one of them is the Technology Acceptance Model (TAM). TAM is developed by Davis in 1989 with the adaptation from the theory of reasoned action (TRA) by Ajzen and Fishbein in 1975, which stated that beliefs influence attitude, which leads to intention, and finally behaviors. After its development, it has become one of the widely referred adoption models in IS research (Gefen and Straub, 2003). According to Davis et al. (1989) TAM is developed to explain and predict computer usage behavior and specifically its goal, to provide an explanation of the of computer acceptance. They further stressed that TAM is capable of explaining user behavior across a broad range of end-user computing technologies and user populations, while at the same time being both parsimonious and theoretically justified. Later researchers who used TAM has to agree that TAM is robust across time, settings, population and technologies (Klopping and McKinney, 2004; Venkatesh et al., 2003; Lu, Yu, Liu and Yao, 2003). The original TAM assumes that beliefs about usefulness and ease of use are always the primary determinants of Information technology or Information system adoption (Lu et al., 2003). These two elements are interrelated and serve as a basis for attitude towards using a particular system, which in turn determines the intention to use, and finally generates the actual usage behavior. Davis and Venkatesh (1996; 2000) have validated and extend TAM under different situation to make it more explanatory (Lu et al., 2003). Later on, Venkatesh et al. (2003) concluded the attitude construct because attitude did not fully mediate the effect of perceived usefulness on intention. This is explained by Davis et al. (1989) as in the working environment, people may use a technology for productivity enhancement (i.e. usefulness) even if they do not have a positive attitude (affect) towards using it. Later on, researchers simplified TAM by removing the attitude construct found in TRA (Venkatesh et al., 2003). They believed that TAM in its current form is not enough to explain some of the newly accepted technology. According to Klopping and McKinney (2004), extended TAM may help to address the limitations of the original TAM and perhaps it will provide more evidence for such behavior to happen. As a result, attempts to extend TAM have generally taken one of the three approaches: by introducing factors from related models; by introducing additional or alternative belief factors, and by examining antecedents and moderators of perceived usefulness and perceived ease of use (Wixom and Todd, 2005).

Determinants of online reservation acceptance:

In this study, extended version of TAM (Wang et al., 2003) is being used in representing the hypothesized interrelationship of the factors under study. The variable of the main interest is the behavioral intention of a user. Behavioral intention and other variables are quantified and measured in order to find answers to the question
of “what are the determinants of online reservation acceptance?” There are five independent variables and two moderating variables as follows:

a) Computer Self Efficacy:

According to Compeau and Higgins (1995), computer self efficacy means one’s ability to perform a specific task or job using a computer. In general, most of the researchers suggested that computer self efficacy played an important role in understanding the individual responses towards information technology. Besides, Wang et al. (2003) argued that choosing computer self-efficacy as a variable would be good because it could be manipulated by practitioners through the promotion and training approaches as compared to choosing age, gender and level of education which beyond the control of a business. This theoretical argument by Bandura (1997) also suggested that computer self-efficacy affect individual computer anxiety which in turn, influence the perceived ease of use, perceived usefulness and system usage.

b) Perceived Usefulness:

Perceived usefulness is defined as the degree to which a person believes that using a particular system would enhance his or her job performance (Davis, 1989). Based on the longitudinal study done by Davis, perceived usefulness is found to have strong influence on peoples’ intention. Lallmaahmood (2007) also found perceived usefulness as a critical factor of the user’s intention to use a system, by looking at the attributes of perceived usefulness (i.e.: convenience, ease and time savings) which act as a main reason for the adoption of the system. Therefore, when a person realizes that a particular system will enhance his or her performance and productivity, this will initiate his/her intention to use online reservation.

c) Perceived Ease of Use:

Perceived ease of use is defined as the extent to which a person believes that using a particular system will be free from effort (Davis, 1989). According to Law and Leung (2002), a well-designed reservation system with a user-friendly interface and useful information that is available to the customers prior to their purchase can help increase sales volume and improve the reputation of the travel Web site. Law and Bai (2007) also claimed that ease of navigation is a necessary condition for determining satisfaction. Burns (2006) stated that prospective buyers left the E-commerce websites due to few reasons, and one of them is difficulty in using the system.

d) Perceived Credibility:

Perceived credibility is the extent to which one partner believes that the other partner has the required expertise to perform the job effectively and reliably (Ganesan, 1994). It includes the word or written statement of the other partner that can be relied upon (Lindskold, 1978). According to Wang et al. (2003), perceived credibility consists of two elements which are privacy and security. Consumers often feel that their bank is concerned with privacy issues and will protect them. (Pikkarien et al., 2004). While in Malaysia, the consumers have lack of confidence and trust in E-commerce transactions and this is further accentuated by the fact that the Consumer Protection Act specifically excludes protection for electronic transactions (Kaur, 2005). Nabi (2005) reported that the perceived security and privacy risks associated with E-transactions make many consumers feel skeptical about E-commerce.

e) Behavioral intention:

According to Ajzen and Fishbein (1975) behavior is best predicted by intentions and intentions are jointly determined by the person’s attitudes and subjective norm concerning the behavior. Davis et al. (1989) also stressed that it is important to understand why people accept or reject a particular system. Therefore, there is a need to predict people’s acceptance of a new IS by measuring their intentions, and the ability to explain their intentions in terms of their attitudes, subjective norms, perceived usefulness, perceived ease of use and other related variables. The understanding of customers’ purchase intention is also important as customers’ behavior can be predicted through their intentions (Day, 1969). Pikkarien et al. (2004) highlighted that a good or bad system would depend on how the users feel about it. The study emphasized that if the users perceived the system to be negative; their behaviors towards that system would also be negative.

Moderating variables:

f) Location:
Socio-economics characteristics of the users are among the factors that contribute to the acceptance of e-commerce. As mentioned by Hernandez, Jimenez and Martín (2010), there are groups of researchers who attempt to study these socio-economics factors such as gender, educational level, location and income. According to Turban and King (2003) location play an important role in examining the buying pattern or behavior of people living in big cities from those in rural area. While in Malaysian context, consumers are believed to increasingly venturing online due to increasing urbanization and changing lifestyles of the urban Malaysian (Md Gapar and Janatul Akmar, 2011). In order to test this argument, this study looked at the effect of a location as a moderating variable

g) Experience:

There are several studies that look into experience as one of the factors in e-commerce acceptance and adoption. For instance, recent studies carried by Jain and Jain (2011) in India look at the effect of past online shopping experience of the users, whether it has an effect upon e-commerce adoption. Based on the result it is found that experience is one of the significant predictors.

Hence, the following hypotheses are tested (see Figure 1):

H1: Computer self-efficacy has significant positive effect on perceived usefulness of the online reservation systems.
H2: Computer self-efficacy has significant positive effect on perceived ease of use of the online reservation system.
H3: Computer self-efficacy has significant negative effect on perceived credibility of the online reservation system.
H4: Perceived ease of use has significant positive effect on perceived usefulness of the online reservation systems.
H5: Perceived ease of use has significant positive effect on perceived credibility to use the online reservation system.
H6: Perceived usefulness has significant positive effect on behavioral intention to use the online reservation systems.
H7: Perceived ease of use has significant positive effect on behavioral intention to use the online reservation systems.
H8: Perceived credibility has significant positive effect on behavioral intention to use the online reservation system.

Fig. 1: Theoretical Model of the Study

Research Methodology:

Scope of Study:
In this study, the lecturers of public Universities in Malaysia constituted the population of interest. There are several reasons why lecturers are desirable and acceptable sample for this study. Firstly, educated individuals are the most active users of new technology and are influential consumers. A study by Abdul Rahim and Fariza (2008), indicated that respondents with higher education level are exposed to a longer tenure of Internet experience. This is also supported by previous study on newly adoption technology which is conducted among educated people (i.e. Davis (1989) who chose respondents among MBA students). Secondly, their salary level entitles them to use credit cards. They are therefore at the highest potential of using it for online transactions. Furthermore, the population is chosen due to the reason of its dispersed location all over Malaysia.

Sampling Procedures:

There are all together 24 campuses located all over Malaysia. The total population is 7219. Based on the population, a sample is drawn using stratified random sampling. The sample size is determined by using a table provided by Sekaran (2003). According to the table, the most appropriate sample size for a population of 7,000 to 8,000 is 364. However, due to the case that samples are to be broken in to sub-samples, the rule of thumb of minimum sub-sample size of 30 is followed (Roscoe, 1975). Therefore, after performing the calculation, the final sample size of 370 is required for this study.

Data Collection and Analysis Procedures:

Data collection relies mainly on questionnaires method. The response rate of 51.08% is sufficient to avoid sample bias as suggested by Hussey and Hussey (1997). Data is analyzed using SPSS version 16.0 for windows and Amos Graphics version 16.0. Structural Equation Modeling (SEM) technique is chosen due to the ability of model fit assessment. Fit indices are used to determine whether the proposed model should be accepted or rejected. If the model is accepted, the next step is to interpret the path coefficient of the model.

Findings:

The reliability of the items in each construct is tested using correlation coefficients, exploratory factor analyses and confirmatory factor analyses (CFA) using AMOS software. In CFA, the model fit indices used are: Chi-square/df ratio, Tucker-Lewis Coefficient (TLI), Comparative Fit Index (CFI) and Root Mean Square Error of Approximation (RMSEA). For a good fit, Chi-square/df ratio must be less than 3, TLI and CFI must be more than 0.9 and RMSEA must be less than 0.08 (Hair et al, 2006). Figure 2 depicts the structural model and fit assessment, and Table II summarizes the hypothesis testing.
Table II: Summary of Hypothesis Testing

<table>
<thead>
<tr>
<th>Proposition</th>
<th>Causal Relationship</th>
<th>P</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1</td>
<td>CSE→PU</td>
<td>0.034</td>
<td>Supported</td>
</tr>
<tr>
<td>H2</td>
<td>CSE→PEOU</td>
<td>0.855</td>
<td>Not Supported</td>
</tr>
<tr>
<td>H3</td>
<td>CSE→PC</td>
<td>0.182</td>
<td>Not Supported</td>
</tr>
<tr>
<td>H4</td>
<td>PEOU→PU</td>
<td>***</td>
<td>Supported</td>
</tr>
<tr>
<td>H5</td>
<td>PEOU→PC</td>
<td>0.029</td>
<td>Supported</td>
</tr>
<tr>
<td>H6</td>
<td>PU→BI</td>
<td>***</td>
<td>Supported</td>
</tr>
<tr>
<td>H7</td>
<td>PEOU→BI</td>
<td>0.108</td>
<td>Not Supported</td>
</tr>
<tr>
<td>H8</td>
<td>PC→BI</td>
<td>***</td>
<td>Supported</td>
</tr>
</tbody>
</table>

This study provides evidence that CSE is a determinant of PU. This is consistence with previous studies by Wang et al. (2003), Guriting and Ndubisi (2006), and Hanudin (2007). Results of the current study indicated that hoteliers, travel agencies and airline companies have to take certain measures in order to increase the level of computer self-efficacy among users. Sufficient guidelines and efficient customer service would ensure that customers are well guided whenever they encounter a problem with the reservation process due to the lack of computer skill. Furthermore, PU and PC have direct significant effects on behavioural intention. This is consistence with Lallmaahmood (2007), and Nysveen et al. (2005). The findings have indicated that in order to attract more users to voluntarily use online reservation, having a user-friendly system is not adequate. The most important aspect is to develop an online reservation with high functionalities to improve the performance of users by providing secured system for the users, and giving priority to users’ privacy. This will instil customer’s confidence to use the system. Apart from the above, other variables have shown a contrary result. CSE does not predict PEOU and PC, which is inconsistence with Venkatesh (2000) and Wang et al. (2003). This implies that user’s judgments upon the level of difficulty in the system as well as concerns on security and privacy issues in online reservation are not explained by level of computer knowledge but by other variable. Besides, in looking at the effect of PEOU on BI, the result is also insignificant. The possible reason would be the degree of difficulties of online reservation is not an issue for educated people who have longer tenure of Internet experience.

Mediators:

In this study there are several variables that mediate the relationship between two variables.

a) PEOU mediate the relationship between CSE and PU (CSE → PEOU → PU)

In looking at the direct relationship between CSE and PU, the standardized weight is 0.137 while the p-value is 0.034. As a result, the relationship is significant. While in looking at the relationship with mediator (PEOU), the standardized weight is 0.0096 (-0.015 × 0.637) in magnitude (< 0.085). Since the result is insignificant PEOU does not mediate CSE to PU relationship

b) PEOU mediate the relationship between CSE and PC (CSE → PEOU → PC)

For direct relationship between CSE and PC, the standardized weight is 0.107 while the p-value is 0.182. This denotes that the relationship is insignificant. While for indirect relationship, where PEOU as the mediator, the standardized weight is 0.0027 (-0.015 × 0.178) in magnitude (< 0.085). This insignificant result shows that PEOU does not mediate CSE to PC relationship.

c) PU mediate the relationship between PEOU and BI (PEOU → PU → BI)

For direct relationship between PEOU and BI, the standardized weight is 0.134 while p value is 0.108 > 0.05 which is insignificant. While for indirect relationship that have PU as a mediator, the standardized weight is 0.0301 (0.637 × 0.472) in magnitude (>0.085), which is significant. Thus we can say that PU mediates PEOU to BI relationship. Since the direct path is insignificant, it is a total mediator.

d) PC mediate the relationship between PEOU and BI (PEOU → PC → BI)

As indicate above, for direct relationship between PEOU and Bi is significant. However when PC mediates the relationship, the standardized weight is 0.060 (0.178 × 0.339) in magnitude (<0.085), which is insignificant. Thus PC does not mediate PEOU to BI.

Moderators:

a) Location:

In looking at the effect of location as a moderating variable, it had been classified into two categories where Shah Alam and south campuses had been regarded as one group, while the rest of the campuses are included in the other group. Based on the frequency distribution, the number of respondent for Shah Alam and south cam-
Puses are 96, while other campuses are 80. Test had been conducted to see the differences between these two locations. Figure 3 provides an unconstrained model for location while Figure 4 shows the constrained model. While Table III provides the summary of the constrained and unconstrained model for chi-square and df. To further look at which relationship that are found to have significant differences, test had been conducted between Shah Alam, Malacca and the others. Table V shows the result.

Chi-square = 702.736  
df = 402  p-value = .000  
Chi-square/df = 1.748  
TLI = .900  CFI = .913  
RMSEA = .066  
AIC = 910.736

Chi-square = 721.490  
df = 409  p-value = .000  
Chi-square/df = 1.764  
TLI = .898  CFI = .910  
RMSEA = .066  
AIC = 915.490

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Fig. 3: Unconstrained model for location

Fig. 4: Constrained model for location
Based on Table III, the p-value is 0.009 which is less than 0.05. Thus it is concluded that campus is a moderator. Furthermore, when comparison were made between Shah Alam, Melaka and others, on the tested model (Table VI) there are four relationships that believed to have significant differences between these two locations

i) CSE $\rightarrow$ PU:
   For positive relationship between CSE and PU, it is significantly positive for Shah Alam and south campuses, while insignificant for others.

ii) PEOU $\rightarrow$ PC:
   For positive relationship between PEOU and PC, it is significantly positive for Shah Alam and south campuses, while insignificant for others.

iii) PC $\rightarrow$ BI:
   For positive relationship between PC to BI, it is significantly positive for others, while insignificant for Shah Alam and south campuses.

iv) PU $\rightarrow$ BI:
   For positive relationship between PU and BI, it is significantly positive for Shah Alam and south campuses, while insignificant for others.

Based on the result PU is the important variable found to be significant for Shah Alam and south campuses, but insignificant for other campuses. This can be explained by the availability of internet facilities in urban area that are easily accessible for them to use, thus realize its usefulness in increasing their job performance. Secondly they are assumed to be early adopters of e-commerce. While for other campuses PC is the important variable. The possible reason for this would be, they still like to do a reservation in traditional form as before. These people like to touch the documents and money in hand and doing the process physically and manually. They believe in every dealing and business, physically rather than virtually. (Raja and Senthil, 2008). As a result when they want to use online reservation, concern on security and privacy are the main determinants either to use or not to use the system.

b) Experience:

Based on the frequency distribution, the number of respondent with prior experience are 133, while 43 of them have no prior experience. Test had been conducted to see the differences between these two locations. Figure 5 provide unconstrained model while Figure 6 show the constrained model. Table VI provides the chi-square and df. Since the p-value is 0.114 which is more than 0.05, experience is not a moderator.
Based on the above result the effect of user experience is not significant. Hence, experience is not a moderator.

**Conclusion:**

This study has enriched the knowledge in the E-commerce area by assessing the factors that influence users’ acceptance of online reservation. This study has contributed to advanced knowledge of TAM. It is hoped that the research findings would be useful for companies that engage in online reservation transaction to design marketing strategies to cater new potential market segments while at the same time maintain their customers. Although some of the results have been tested statistically, it is still subject to several limitations. The first limitation concerns the sample. In this study focus is only given to the lecturers of public Universities in Malaysia. Therefore, generalization of conclusions cannot be made to every online reservation user. Next, literature re-
views demonstrate that TAM is not the only model to predict technology acceptance. In fact there are other models that can be used to study user’s acceptance. This study only tested four variables (i.e. CSE, PU, PEOU, PC) as a predictors of user acceptance. On this basis, this model might face the fact that there are other possible factors influencing online reservation acceptance that are not included in the model. The above limitations have paved the way to future research. One avenue for future research could be by extending the sample to the general population to allow generalization of conclusions.

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