Factors Affecting Adoption of Mobile Reservation for Hotel Rooms: A Conceptual Framework

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Abstract

Most hotels increasingly emphasize direct web bookings, pursuing consumers by promising best rate guarantees. Abundant information has indicated that the proliferation of wireless Internet via mobile device is increasingly important in developing hospitality business. Mobile commerce allows consumers and businesses to build connectivity by transcending time and place. So, we believe that mobile reservation for hotel rooms will be popular and proliferous in the near future because of its convenience and flexibility. Full bloom of mobile reservation services depends on user adoption and acceptance. This paper develops a conceptual research model by extending technology acceptance model (TAM) to explain the factors influencing user adoption of mobile reservation for hotel rooms. By revising TAM, we propose some important constructs. Theses, in turn, indirectly or directly determine user intention and willingness to adopt mobile reservation for hotel rooms. Seventeen propositions are developed to promote future empirical research.

1. Introduction

Information and computer technology, especially the Internet, has changed the socioeconomic context of tourism and hospitality industry. Tse [61] highlights how direct web distribution may affect the relationship between hotels. Most hotels increasingly emphasize direct web bookings, pursuing consumers by promising best rate guarantees. Kim and Kim [40] point out that using the Internet as a reservation method can benefit the hospitality firms and also customers by reducing costs and providing real-time information to both parties. In addition, several papers [27] [12] [67] highlight the rapidity with which the hotel industry is adopting the Web to sell directly to the customer. These studies show that the majority of hotels have adopted e-commerce, use the Internet to advertise their services and garner some revenues online. Namely, hotels have responded to the opportunities offered by e-commerce to take full advantage of the practical and creative business uses of the Internet.

Accordingly, as a matter of fact, hospitality firms will experience significant transformations because of the increased customer base available on the Internet [51]. Moreover, on the other hand, wireless Internet via mobile device (e.g. mobile phones and personal digital assistants) is leading the world into another spectrum of communications and means of conducting day-to-day business and life activities. Abundant information has indicated that the proliferation of wireless Internet via mobile device is also creating unparalleled opportunities for e-commerce to obtain the benefits of mobility [44]. We believe that mobile commerce refers to e-commerce activities carried out using a mobile device will soon be a part of everyday life. Such commerce will provide the ubiquity, convenience, localization, and personalization for users participating in mobile communications and service activities [19].

As mentioned above, mobile commerce allows consumers and businesses to build connectivity by transcending time and place and increasing accessibility. So, *mobile reservation* as a reservation method should much more benefit the hospitality corporations and also the customers using the wireless Internet via mobile devices by offering temporal/spatial flexibility and reducing costs than those using the Internet via traditional laptop/desktop computers. According to Cobanoglu [21], business travelers still use travel agents as their favorite hotel reservation resource. However, experts in IT predict within several years the Internet will be one of the most important sources for hotel reservations and services [20]. Here we believe that mobile reservation for hotel rooms will be popular and proliferous in the near future because of its convenience and flexibility. While the proportion of online reservations and wireless mobile activity is increasing, little attention has been given in the literature to user adoption of mobile reservation. Research on mobile reservation will be extremely worthy in providing useful information, especially at this early stage of mobile reservation systems development and implementation. Therefore, the purpose of this study is to develop a research model that examines and explains the factors influencing user adoption of mobile reservation for hotel rooms.

The major contributions of this study are as follows. Hospitality firms or hotels planning to offer mobile reservation services must be aware of the primary concerns of customers. Such knowledge can help these businesses to increase the adoption of mobile reservation services and to promote mobile reservation services in

the near future. Once the critical factors are known, hotels can improve performance to fit customer needs. Furthermore, marketing staff can understand the critical influences on customer adoption of mobile reservation services, and then develop an effective marketing strategy to convince customers that mobile reservation is a convenient method of reservation for hotel rooms. A good pricing strategy can also be developed accordingly.

The remainder of this paper is organized as follows. Section 2 reviews the related literature, especially on technology acceptance model, innovation diffusion theory, and the theory of planned behavior. Section 3 then presents the research model and propositions. Finally, we present conclusions, as well as discussing the related implications of this study.

2. Theoretical Background

2.1. Technology acceptance model (TAM)

Numerous studies have applied TAM in different research fields over the past decade. Based on the theory of reasoned action (TRA) and the theory of planned behavior, the TAM has been validated as a powerful and parsimonious framework to explain the adoption of IT by the users. According to TRA, individual's belief influences attitude, which in turn shapes behavioral intention. Previous research has demonstrated the validity of TAM across extensive applications of IT [17] [34] [26] [30] [15] [68] [31] [29]. TAM posits that perceived usefulness and perceived ease of use are two primary determinants in explaining the variance in the user's intention. The former is defined as the extent to which a person believes that using a particular system will enhance his or her job performance, while the latter is defined as the extent to which a person believes that using a particular system will be free of effort. Both perceived usefulness and perceived ease of use influence the individual's attitude toward using an IT system. Additionally, perceived ease of use is hypothesized to be a predictor of perceived usefulness.

Although TAM has been applied to a wide range of IT, none has investigated the adoption behavior of mobile reservation for hotel rooms using the TAM framework. Some of the prior studies were targeted at computer applications or systems in the traditional or Internet context, such as bulletin board system [48], groupware [46], virtual store [16], Internet [58], electronic tax filing systems [68], and on-line games [29]. However, Pedersen [52] develops a model using extended TAM and tests relevant theory on the adoption and use of mobile services, and the author emphasizes the importance of both determinants and perceived concepts may vary between mobile services. Furthermore, Pedersen [52] advocate others to conduct more research on the importance of the determinants and perceived concepts across various mobile services. Thus, this suggestion encourages us to investigate the adoption behavior of mobile reservation for hotel rooms to disclose the important factors affecting individual's adoption of mobile reservation.

2.2. Theory of planned behavior (TPB)

The theory of planned behavior is an extension of the theory of reasoned action [3] [24]. TPB has been applied to explain the adoption of many diverse information and communication systems as spreadsheets [47], computer resource centers [57], virtual banking [43], electronic brokerage services [6], electronic commerce services [7], telemedicine technology [15], and recently, WAP services [31]. According to TPB, individuals' actions are determined by their intentions and perceptions of control, where their intentions are influenced by attitudes towards behavior, subjective norms and perceived behavioral control. Moreover, Ajzen [4] indicate the ability of TPB to provide a very useful theoretical framework for understanding and predicting the acceptance of new information technology.

2.3. Innovation diffusion theory (IDT)

Rogers [53] tries to explain the observed adoption by characteristics of the technology being introduced. He first defined innovation diffusion theory as the process by which innovation is communicated through certain channels over time among the members of a social system. Innovation, communication channels, time, and social system are the four key elements of innovation diffusion theory. Prior research has pointed out that key constructs in the innovation-decision process include the perceived attributes of an innovation, people's attributes and beliefs, and socioeconomic communications [38]. In this way, innovation diffusion theory characterizes the social system by categorizing users and the demographic and socioeconomic groups of it. In addition, innovation diffusion theory also focuses on the communication channels of social systems and individual innovativeness.

3. Conceptual framework and propositions

The conceptual framework proposed in this study is shown in Fig. 1. This model was constructed based on TAM, TPB and IDT. Subsequently, we will briefly review the major antecedents to adoption of mobile reservation in this study.

Figure 1 about here.

3.1. Prior computer experience

Previous research has provided findings regarding the relationship of prior computer experience to computer literacy. For example, Brock et al. [11] found that nearly any type of computer experience, especially video game experience, increased the computer literacy levels of individuals to some degree. Karsten and Roth [39] chose to operationalize computer literacy using a measure of computer self-efficacy, and the results showed that actual computer experience should enhance one's personal self-efficacy with computers. Because this study is targeted at adoption of mobile reservation, we assert that individual with more prior computer experience will have higher mobile computing self-efficacy. Moreover, Braak [9] manifested that prior computer experience contributed to the prediction of computer competence. Thus, individuals with more self-perceived computer competence will feel more easy to use new technology.

The following inferences are made:

P1: Prior computer experience will have a significant effect on individual's mobile computing self-efficacy.

P2: Prior computer experience will have a significant effect on perceived ease of use of mobile reservation systems.

3.2. Perceived information satisfaction

Jeong et al. [37] investigated consumer perceptions of hotel web sites and the results indicated that information completeness and currency were two of crucial factors for increasing sales via the Internet. Out of the key factors of online transaction intentions, information completeness was the most important for online customers' satisfaction with web site information. In addition, Jeong and Lambert's [36] empirical results showed that consumer's perceived quality information about products and services on the web was the most crucial factors in predicting the customers' purchase behavior. Also, Szymanski and Hise [56] determined that consumer's perceptions of product information were the dominant factors in consumer assessments of satisfaction. Accordingly, we infer the following proposition:

P3: Perceived information satisfaction will have a significant effect on perceived usefulness of mobile reservation systems.

3.3. Perceived accessibility

Above all, unlike traditional telecommuting that typically uses the home as a fixed alternative worksite, mobile telework facilitates the "anytime, anyplace office" [25]. Klobas [41] included the measurement scale, accessibility, in a study that examined the potential influences on the use of electronic information resources. The dimension of accessibility contains such attributes as ease of access, availability, and convenience. Jeong and Lambert's [36] addressed that perceived accessibility was one of the dominant factors in predicting their decision-making. Furthermore, Szymanski and Hise [56] manifested that online convenience was a main determinant in predicting consumers' satisfaction. So, this study conducts the following proposition:

P4: Perceived accessibility will have a significant effect on perceived usefulness of mobile reservation systems.

3.4. Facilitating condition

To understand information technology usage, Taylor and Todd [57] found that individual perceived facilitating resources, such as time and money, influence perceived behavioral control toward information technology adoption. This variable was tested in a number of technology acceptance studies, and Bhattacherjee [6] found that facilitating resources are an important predictor of perceived behavioral control. Behavior cannot occur if the facilitating conditions make the behavior difficult [59]. Policies, regulations, and legal environment are therefore all conditions critical to technology acceptance. Wireless digital devices rely on radio frequency spectra allocated. Standardization of protocols and other regulations is still a goal to strive for in the near future for the growth of wireless communication systems and digital network markets around the world [13] [54]. Hence, we have the following proposition:

P5: Facilitating condition will have a significant effect on perceived behavioral control towards mobile reservation systems use.

3.5. Mobile computing self-efficacy

Compeau and Higgins [22] claim that computer self-efficacy refers to a judgment of one's capability to use a computer. It is not concerned with what one has done in the past, but rather with judgments of what could be done in the future. Davis [23] and Mathieson [47] proposed that there is a relationship between computer self-efficacy and perceived ease of use. Besides, there also exists empirical evidence of the causal link between computer self-efficacy and perceived ease of use [33] [63] [64]. On the other hand, according to TPB model, perceived behavioral control is defined as individual perceptions of how easy or difficult it is to perform a specific behavior. Perceived behavioral control thus reflects individual perceptions of internal and external behavioral constraints [3]. So, regarding internal constraints, increasing computer self-efficacy will influence much more one's perceived behavioral control on the behavior [31].

Because there are so many differences between palmtop and desktop computers, computer self-efficacy developed for traditional computers context may no longer be appropriate for the mobile context. Thus, mobile computing self-efficacy may be distinguished from computer self-efficacy as the beliefs that one can successfully perform a distinct set of behaviors required to establish, maintain and utilize effectively the wireless Internet via a mobile device and all the basic personal computer skills. Therefore, based on the theoretical and empirical support from prior literature, this study postulate the following propositions:

P6: Mobile computing self-efficacy will have a significant effect on perceived behavioral control toward mobile reservation systems use.

P7: Mobile computing self-efficacy will have a significant effect on perceived ease of use of mobile reservation systems.

3.6. Perceived ease of use

Perceived ease of use is one of the major determinants of attitude toward use in the TAM. This internal belief ties to an individual's assessment of the mental effort involved in using a system [23]. Extensive research over the past decade provides evidence of the significant effect perceived ease of use has on attitude toward use (e.g. [31], [5], [45], [49], [64]). Venkatesh [63] believes that for any emerging IT/IS, perceived ease of use is an important determinant of users' acceptance of information technology. On the other hand, Improvements in perceived ease of use may lead to improved performance, thus contributing to perceived usefulness. Clarke [18] found perceived ease of use is among the top five factors in order of significance for determining use of wireless handheld devices. Consequently, we propose the following propositions:

P8: Perceived ease of use will have a significant effect on attitude towards mobile reservation systems use.

P9: Perceived ease of use will have a significant effect on perceived usefulness of mobile reservation systems.

3.7. Perceived usefulness

Perceived usefulness in the TAM model, originally referred to job related productivity, performance, and effectiveness [23]. Similarly, we find extensive research provides evidence of the significant effect of perceived usefulness on the usage intention [32] [31] [68] [2] [66] [35] [63] [65] [64] [30] [62]. So, many previous studies have manifested that perceived usefulness is an important determinants of individual acceptance of information technology. This study thus propose the following proposition:

P10: Perceived usefulness will have a significant effect on attitude towards mobile reservation systems use.

3.8. Perceived credibility

The usage attitude towards mobile reservation for hotel rooms could be affected by users' perceptions of credibility in terms of security and privacy issues. All business transactions require an element of trust, especially those conducted in the uncertain environment of electronic commerce [42]. There are two key ingredients of a wireless trust environment: security and privacy [44]. Compared to wired Internet, wireless Internet is exposed to greater danger of insecurity because interception of wireless transmission is much easier in the open air. So, the wireless Internet threatens the privacy of user information in new and extreme ways. Therefore, perceived fears of divulging personal information and users' feelings of insecurity provide unique challenges to planners to find ways in which to develop users' perceived credibility of mobile reservation systems. This study thus makes the following inference:

P11: Perceived credibility will have a positive significant on attitude towards mobile reservation systems use.

3.9. Personal innovativeness

Many researchers have explored information system adoption problems using the innovation diffusion theory [38] [10] [1] [49] [31]. Agarwal and Prasad [1] presented a conceptual and operational definition of personal innovativeness and noted that personal innovativeness can moderate the effects of perceptions on information technology related adoption decisions. Furthermore, Hung et al. [31] indicate that resistance to adoption of new IT includes the general propensity of individuals to adopt particular innovations, or their innovativeness. Therefore, the greater the utility an individual perceives based on past adoption behavior, the greater the willingness that individual risks in trying an information technology innovation. Hence we propose the following:

P12: Personal innovativeness will have a significant effect on attitude towards mobile reservation systems use.

3.10. Subjective norm

Subjective norms directly determine behavioral intentions [3] [24] [4]. Fishbein and Ajzen [24] pointed out that subjective norm refers to perceptions of the preferences of significant others regarding the worth of engaging in a specific behavior. Also, Ajzen [3] proposed that subjective norm refers to individual perceptions of social pressure regarding whether or not to perform a particular behavior. In discussing subjective norm, Bhattacherjee [6] classified social influence into two types, namely external influence and interpersonal influence. Additionally, the author noted that external influence includes mass media reports, expert opinions and other non-personal information, while interpersonal influence includes word-of-mouth influence by friends, colleagues and superiors. Much empirical support for the relationship between subjective norms and behavior can be found (e.g. [60], [65]). Considering the possible subjective norm on the mobile reservation systems users, the following propositions are developed:

P13: Peer influence will have a significant effect on subjective norm toward mobile reservation systems use.

P14: External influence will have a significant effect on subjective norm toward mobile reservation systems use.

3.11. Intention to use

Much research has conducted information technology adoption from the perspective of TPB application [43] [15] [57] [6] [47] [31]. Although it is now widely recognized that attitudes, subjective norms, and perceived behavioral control are important for understanding and predicting intentions and behavior in specific contexts, numerous empirical question continue to surround mobile reservation systems adoption. Consequently, the following propositions originated from the theoretical framework of TPB:

P15: Perceived behavioral control towards mobile reservation systems use will have a significant effect on intention to use mobile reservation systems.

P16: Attitude towards mobile reservation systems use will have a significant effect on intention to use mobile reservation systems.

P17: Subjective norm towards mobile reservation systems will have a significant effect on intention to use mobile reservation systems.

4. Conclusions

In this study, we propose a conceptual framework for understanding, explaining and predicting factors that influence individual adoption of mobile reservation services. The integration of common TAM determinants should be helpful for confirming the existing results in a new situation. Also, the results of the proposed model can be compared to other relevant models and hopefully can add to the existing knowledge of user acceptance. A major difference in the present model, compared with other TAM-related research, is the addition of some specific constructs – perceived information satisfaction, perceived accessibility, mobile computing self-efficacy,

perceived credibility, and perceived innovativeness. Our literature review reveals that this framework is an innovative system with strong potential to support mobile reservation services.

In addition, inclusion of the factors such as facilitating condition, peer influence, external influence, subjective norm, prior computer experience, and the proposed relationships also elevates the proposed framework up to a more comprehensive level to promote and facilitate future research concerning adoption of mobile reservation services. However, attention should be called to the fact that the proposed framework does not include all factors influencing the actual adoption of mobile reservation services. Therefore, this conceptual framework can be modified and improved through studies. To operationalize the proposed framework, some recommendations are put forward for consideration:

- The proposed framework is designed to predict adoption of mobile reservation among individuals in general. Empirical testing the theoretical validity and applicability of this framework should be a must for prediction purposes.
- A general survey research design will be appropriate for acquiring self-reported data on each of the model constructs.
- In terms of instrument selection, a number of instruments which have been validated and which have won strong empirical support for reliability and validity in prior studies can be adopted for testing the present framework.
- Structural equation modeling procedures can be used to test the model fitness, and explore the possible relationships between the model constructs.

Finally, we hope that such empirical studies utilizing the proposed model will provide adequate predictive and explanatory power for adoption of mobile reservation services, and yield insights into improving general user acceptance.

References

[1] Agarwal, R., & Prasad, J. (1998). A conceptual and operational definition of personal innovativeness in the domain of information technology. *Information Systems Research*, 9(2), 204-215.

[2] Agarwal, R., & Prasad, J. (1999). Are individual differences germane to the acceptance of new information technologies? *Decision Sciences*, 30(2),361-391.

[3] Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50(2), 179-211.

[4] Ajzen, I. (2001). Nature and operation of attitudes. Annual Review of Psychology, 52, 27-58.

[5] Al-Gahtani, S.S., & King, M. (1999). Attitudes, satisfaction and usage: factors contributing to each in the acceptance of information technology. Behavior and Information technology, 18(4), 277-297.

[6] Bhattacherjee, A. (2000). Acceptance of e-commerce services: the case of electronic brokerages. *IEEE Transactions of Systems, Man, and Cybernetics*, 30(4), 411-420.

[7] Bhattacherjee, A. (2001). An empirical analysis of the antecedents of electronic commerce service continuance. *Decision Support Systems*, 32(2), 201-214.

[8] Bohmstedt, G.W. (1970). Reliability and validity assessment in attitude measurement. In G.F. Summers (Ed.), *Attitude Measurement* (pp. 80-99). Chicago: Rand-McNally.

[9] Braak, J.P.V. (2004). Domains and determinants of university students' self-perceived computer competence. *Computers & Education*, 43, 299-312.

[10] Brancheau, J.C. & Wetherbe, J.C. (1990). The adoption of spreadsheet software: testing innovation diffusion theory in the context of end-user computing. *Information Systems Research*, 1(2), 115-43.

[11] Brock, F.J., Thomsen, W.E., & Kohl, J.P. (1992). The effects of demographics on computer literacy of university freshmen. *Journal of Research on Computing in Education*, 24(4), 563-570.

[12] Buick, I. (2003). Information technology in small Scottish hotels: is it working. *International Journal of Contemporary Hospitality Management*, 15(4), 243-247.

[13] Burnett, R. (2000). Legal aspects of e-commerce. *Computing and Control Engineering Journal*, 11(3), 111-114.

[14] Chau, P.Y.K. (1996). An empirical assessment of a modified technology acceptance model. *Journal of Mangement Information Systems*, 13(2), 185-204.

[15] Chau, P.Y.K., & Hu, P.J. (2002). Examining a model of information technology acceptance by individual professionals: an exploratory study. *Journal of Management Information Systems*, 18(4), 191-229.

[16] Chen, L., Gillenson, M. & Sherrell, D. (2002). Enticing on-line consumers: an extended technology acceptance perspective. *Information & Management*, 39, 705-719.

[17] Chin, W., & Gopal, A. (1995). Adoption intention in GSS: relative importance of beliefs. *The Data Base for Advances in Information Systems*, 26(2-3), 42-63.

[18] Clarke, C. (2000). Coming attraction. *Wireless Review*, 17(12), 12-16.

[19] Clarke, I. (2001). Emerging value propositions for m-commerce. *Journal of Business Strategies*, 18(2), 133-148.

[20] Cline, R.S., & Warner, M. (2001). Hospitality e-business: the future. The Bottomline[Online]. Available: http://www.hftp.org/Members/BottomLine/current/ebusiness.htm

[21] Cobanoglu, C. (2001). Analysis of business travelers' hotel selection and satisfaction. Ph.D. Dissertation, Oklahoma State University.

[22] Compeau, D.R., and Higgins, C.A. (1995). Computer self-efficacy: development of a measure and initial test. *MIS Quarterly*, 19(2), 189-211.

[23] Davis, F.D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 13(3), 319-340.

[24] Fishbein, M., & Ajzen, I. (1975). Belief, Attitude, Intention and Behavior: An Introduction to Theory and Research. *Addison-Wesley*, MA.

[25] Galinsky, E. (1992). Work and family 1992: Status report and outlook. New York: Families and Work Institute

[26] Gefen, D., & Straub, D. (1997). Gender differences in the percepton and user of e-mail: an extension to the technology acceptance model. *MIS Quarterly*, 21(4), 389-400.

[27] Garcés, S., Gorgemans, S., et al. (2004). Implications of the Internet---an analysis of the Aragonese hospitality industry 2002. TourismManagement, 25, 603-613.

[28] Hair, J.F.Jr., Anderson, R.E., Tatham, R.L., & Black, W.C. (1998). Multivariate data analysis (5th ed.). Upper Saddle River, NJ: Prentice-Hall International.

[29] Hsu, C.-L., & Lu, H.-P. (2004). Why do people play on-line games? An extended TAM with social influences and flow experience. *Information & Management*, 41, 853-868.

[30] Hu, P., Chau, P., Sheng, O., & Tam, K. (1999). Examining the technology acceptance model using physician acceptance of telemedicine technology, *Journal of Management Information Systems*, 16(2), 91-112.

[31] Hung, S.Y., Ku, C.Y., & Chang C.M. (2003). Critical factors of WAP services adoption: an empirical study. *Electronic Commerce Research and Applications*, 2, 42-60.

[32] Hsu, M.H., & Chiu, C.M. (2004). Internet self-efficacy and electronic service acceptance. *Decision Support Systems*, 38(3), 369-381.

[33] Igbaria, M., & Iivari, J. (1995). The effectsof self-efficacy on computer usage. *Omega*, 23(6), 587-605.

[34] Igbaria, M., Parasuraman, S., & Baroudi, J. (1996). A motivational model of microcomputer usage, *Journal of Management Information Systems*, 13(1), 127-143.

[35] Jackson, C.M., Chow, S., & Leitch, R.A. (1997). Toward an understanding of the behavioral intention to use an information system. *Decision Sciences*, 28(2), 357-389.

[36] Jeong, M., & Lambert, C.U. (2001). Adaptation of an information quality framework to measure customers' behavioral intentions to use lodging Web sites. *International Journal of Hospitality Management*, 20(2), 129-146.

[37] Jeong, M., Oh, H., & Gregoire, M. (2001). An Internet Marketing Strategy Study for the Lodging Industry. *American Hotel & Lodging Foundation*, Washington, DC.

[38] Karahanna, E., Straub, D.W., & Chervany, N.L. (1999). Information technology adoption across time: a cross-sectional comparison of pre-adoption and post-adoption beliefs. *MIS Quarterly*, 23(2), 183-213.

[39] Karsten, R., & Roth, R.M. (1998). The relationship of computer experience and computer self-efficacy to performance in introductory computer literacy courses. *Journal of Research on Computing in Education*, 31(1), 14-24.

[40] Kim, W.G., & Kim, D.J. (2004). Factors affecting online hotel reservation intention between online and non-online customers. *Hospitality Management*, 23, 381-395.

[41] Klobas, J.E. (1995). Beyond information quality: fitness for purpose and electronic information resource use. *Journal of Information Science*, 21, 95-114.

[42] Lee, H.G. (1998). Do electronic marketplaces lower the price of goods? *Communications of the ACM*, 41(1), 73-80.

[43] Liao, S., Shao, Y.P., Wang, H., & Chen, A. (1999). The adoption of virtual banking: an empirical study. *International Journal of Information Management*, 19(1), 63-74.

[44] Lu, F., Yu, C.S., Liu, C., & Yao, F.E. (2003). Technology acceptance model for wireless Internet. *Internet Research*, 13(3), 206-222.

[45] Lu, H.P., & Gustafsen, D.H. (1994). An empirical study of perceived usefulness and perceived ease of use on computerized support system use overtime. International Journal of Information Management, 14(5), 317-329.

[46] Luo, W., & Strong, D. (2000). Perceived critical mass effect on groupware acceptance. European Journal of Information Systems, 9(2), 91-103.

[47] Mathieson, K. (1991). Predicting user intentions: comparing the technology acceptance model with the theory of planned behavior. *Information Systems Research*, 2(3), 173-191.

[48] Mathieson, K., & Chin, W. (2001). Extending the technology acceptance model: the influence of perceived user resources, The Data Base for Advances in Information Systems, 32(3), 86-112.

[49] Moore, G.C., & Benbasat, I. (1991). Development of an instrument to measure the perceptions of adopting an information technology innovation. *Information Systems Research*, 2(3), 192-222.

[50] Nunnally, J.C. (1978). Psychometric theory (2nd ed.). New Youk: McGraw-Hill.

[51] Olsen, M.D., & Connolly, D.J. (2000). Experience-based travel: how technology is changing the hospitality industry. *The Cornell Hotel and Restaurant Administration Quarterly*, 41(1), 30-40.

[52] Pedersen, P.E. (2001). An adoption framework for mobile commerce. *Proceedings of the 1st. IFIP Conference of E-Commerce*, Zürich, Switzerland, October 3-5.

[53] Rogers, E. (1995). Diffusion of Innovations. Fourth ed., The Free Press, New York.

[54] Sanghiran, S. & Takefuji, Y. (2000). Perspectives of unlicensed information infrastructure using spread spectrum technology. *IEEE Communications Magazine*, 38(5), 2-5.

[55] Schmacker, R.E., & Lomax, R.G. (1996). A beginner's guide to structural equation modeling. NJ: Lawrence Erlbaum Associates.

[56] Szymanski, D.M., & Hise, R.T. (2000). E-satisfaction: an initial examination. *Journal of Retailing*, 76(3), 309-322.

[57] Taylor, S., & Todd, P. (1995). Understanding information technology usage: a test of competing models. *Information Systems Research*, 6(2), 144-176.

[58] Teo, T., Lim, V., & Lai, R. (1999). Intrinsic and extrinsic motivation in Internet usage. *OMEGA International Journal of Management Science*, 27(1), 25-37.

[59] Thompson, R.L., Higgins C.A. & Howell, J.M. (1994). Influence of experience on personal computer utilization: testing a conceptual model. Journal of Management Information Systems, 1(1), 167-187.

[60] Tornatsky, L.G., & Klein, K.J. (1982). Innovation characteristics and innovation adoption-implementation: a meta-analysis of findings. *IEEE Transactions on Engineering Management*, EM-29, 28-45.

[61] Tse, A.C.-B. (2003). Disintermediation of travel agents in the hotel industry. International Journal of Hospitality Management, 22, 453-460.

[62] Venkatesh, V. (1999). Creation of favorable user perceptions: Exploring the role of intrinsic motivation. *MIS Quarterly*, 23(2), 239-260.

[63] Venkatesh, V. (2000). Determinants of perceived ease of use: Integrating control, intrinsic motivation, and emotion into the technology acceptance model. *Information Systems Research*, 11(4), 342-365.

[64] Venkatesh, V., & Davis, F.D. (1996). A model of the antecedents of perceived ease of use: Development and test. Decision Sciences, 27(3), 451-481.

[65] Venkatesh, V., & Davis, F.D. (2000). A theoretical

extension of the technology acceptance model: Four longitudinal field studies. *Management Science*, 46(2), 86-204.

[66] Venkatesh, V., & Morris, M.G. (2000). Why don't men ever stop to ask for directions? Gender, social influence, and their role in technology acceptance and usage behavior. *MIS Quarterly*, 24(1), 115-139.

[67] Vich-i-Martorell, G.A. (2004). The Internet and tourism principals in the Balearic islands. Tourism and Hospitality Research, 5(1), 25-44.

[68] Wang, Y.S. (2002). The adoption of electronic tax filing systems: an empirical study. *Government Information Quarterly*, 20, 333-352.

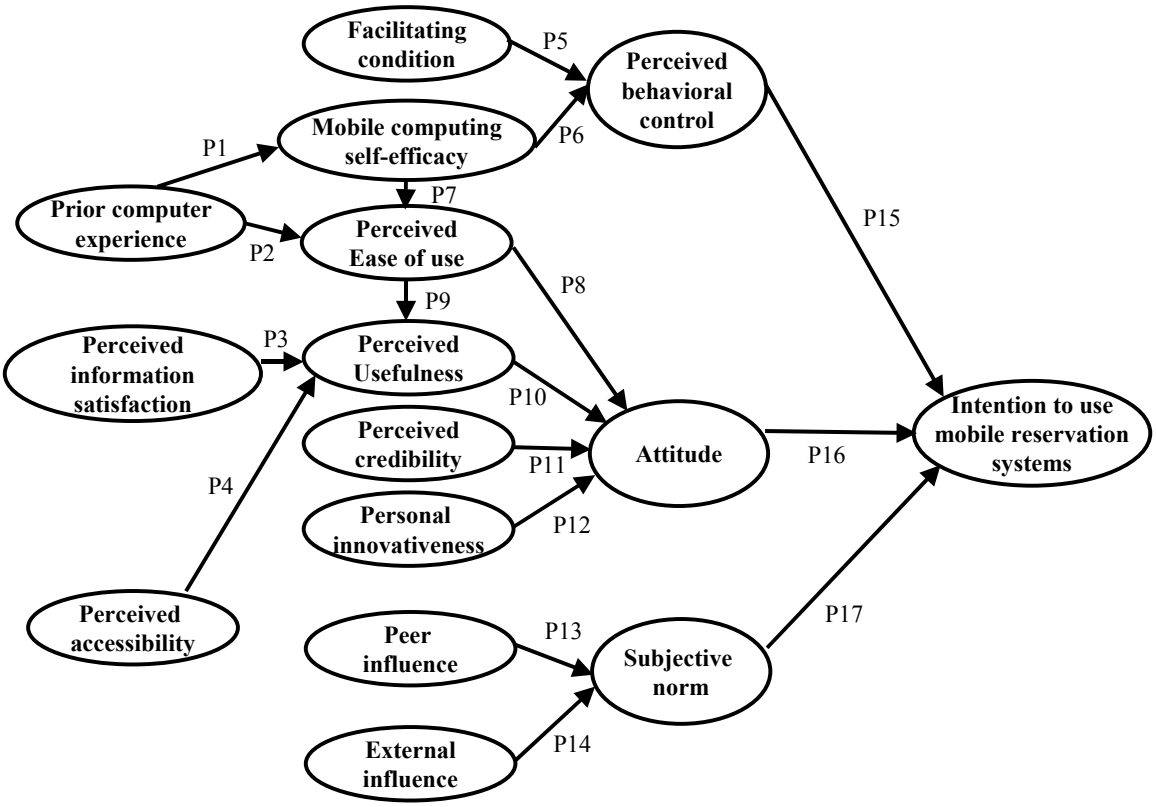

Figure 1. The conceptual framework.