Ergin Sait Varol and Ertugrul Tarcan

An empirical study on the user acceptance of hotel information systems

Abstract

Information technology (IT) is an important strategic tool that allows hospitality organizations to improve their organizational performance and long-term strategic competitiveness. The present study investigates the relationship between antecedents including personal innovativeness, organizational innovativeness, and users' acceptance of hotel information systems by adopting an extended technology acceptance model (TAM2). Perceived ease of use, perceived usefulness and intention to use were investigated including personal innovativeness and organizational innovativeness. As a result, current study is able to find out the acceptance of hotel information systems from the perspective of users through personal innovativeness and organizational innovativeness in order to enhance the model. In addition, the paper presents a progressive theory and a practical contribution to raise the acceptance in order to provide useful suggestions for hotel managers and hotel information system practitioners.

Keywords:
hotel information systems (HISs); technology acceptance model (TAM); information technology acceptance; personal innovativeness; organizational innovativeness; Turkey

Introduction

Since the increased importance of information coupled with technological developments, organizations have gradually increased their investment in information technology in order to increase the efficiency of their business, improve productivity and support management decisions. So, information technology has become a strategic tool for attaining long term competitive advantages in organizations. Implementation of information technology (IT) systems has resulted in decreased costs, greater productivity and increased revenues in the hospitality industry (Siguaw, Enz, & Namasivayam, 2000; Huo, 1998), improved customer service and business operations (Sweat, & Hibbard, 1999; Barcheldor, 1999; Van Hoof, Verbeeten, & Combrink, 1996).

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Consequently, the hospitality industry also extensively relies on information technology since information technology has given them remarkable advantages over competition (Ham, Kim, & Jeong, 2005; Lam, Cho, & Qu, 2007; Walder, Weiermair, & Perez, 2007). Numerous studies have found that there is a positive relationship between information technology investment and organization productivity and performance (Byrd, & Turner, 2001; Powell, & Dent-Micallef, 1997; Rai, Patnayakuni, & Patnayakuni, 1997) while researchers in the hospitality industry have largely performed studies related to technology adoption and diffusion (Siguaw et al., 2000).

In this rapidly growing trend of information technology adoption, hotel organizations are benefiting significantly from the newer information technology applications (Ham et al., 2005). Nevertheless, researchers have stated that even though there are positive effects and benefits, new information technology would not be fully accepted if barriers of external factors influenced the acceptance of information technology (Davis, 1989; Davis, Bagozzi, & Warshaw, 1992). If researchers can develop a better understanding of the determinants of information technology adoption and use and devise interventions that can favourably influence these determinants, managers can proactively decide on implementing the optimal interventions to minimize resistance and maximize effective utilization of information technology (Venkatesh, & Bala, 2008).

The suggested technology acceptance model (TAM) based on the theory of reasoned action (TRA) was developed that explain the acceptance process of information technology on an individual level (Davis, 1989). Soon, the extended technology acceptance model (TAM2) was proposed, that has focused on the external variables' effects on perceived usefulness (PU) and perceived ease of use (PEOU), and the antecedents of these two beliefs have been chosen for investigation (Jackson, Chow, & Leitch, 1997; Agarwal, & Prasad, 1999; Venkatesh, 2000; Venkatesh, & Davis, 2000; Venkatesh, & Brown, 2001; Amoako-Gyampah, & Salam, 2004; Bruner, & Kumar, 2005; Shang, Chen, & Shen, 2005; Lee, Kim, Rhee, & Trimi, 2006).

In this study, technology acceptance model (TAM) is utilized as a theoretical background as one of the most persuasive research models in explaining the users' information technology usage or acceptance behaviour in various contexts (Davis, Bagozzi, & Warshaw, 1989; Chen, Gillenson, & Sherrell, 2002; Hong, Thong, Wong, & Tam, 2002; Bruner, & Kumar, 2005; Lee, Kim, & Lee, 2006; Kim, Lee, & Law, 2008). Accordingly, in current study, personal and organizational innovativeness (OI) are applied as external variables.

Recent investigations indicate that the most distinguishing information technology tool in hotel organizations is the hotel information system (Ham et al., 2005; Kim et al., 2008). The information technology applications of the hotel operations are divided into four sections that include front-office applications, back-office applications, restaurant and banquet management systems and guest-related interface applications (Ham et al., 2005). Service employees at the touch points with the customer also use hotel information system (Kim et al., 2008).

Current study intends to investigate the relationship between antecedents and users' acceptance of a hotel information system through the technology acceptance model (TAM) framework, which is based on the survey of hotel employees. Especially, the objectives of this study are: (1) to investigate how personal innovativeness can lead to the formation of perceived ease of use and perceived usefulness of hotel information systems; (2) to explore how organizational innovativeness can lead to the formation of perceived ease of use and perceived usefulness of hotel information systems; (3) to examine the impact of organisational innovativeness on acceptance of hotel information systems; (4) to assess the impact of perceived ease of use on perceived usefulness and intention to use of hotel information system; (5) to examine the impact of perceived usefulness on acceptance of hotel information systems.

The current study contributes to the theoretical development of behaviour formation regarding hotel information system acceptance in the hotel industry. Outcomes of this study would also be useful for hotel managers in preparation of strategic plans and implementation of effective tools to motivate employees on system use and acceptance of hotel information systems.

Technology acceptance model (TAM) and related theories

There are several models in the literature used to explain individual technology adoption, of which the technology acceptance model (Davis et al., 1989) is to most widely adopted. The most of these models, including technology acceptance model (TAM), are inspired by the theory of reasoned action (Fishbein, & Ajzen, 1975). Grounded in social psychology, the theory of reasoned action was very important to other models, as it is one of the most fundamental and influential theories of human behaviour (Venkatesh, 2000). The theory contends that, both, the attitude towards a specific behaviour and subjective norm have an impact on behavioural intention which, in turn, determines actual behaviour. Intentions are assumed to capture the motivational factors that influence a behaviour, and thus indicate how hard people are willing to try or to what extent they are planning to make an effort in order to perform the behaviour (Ajzen, & Fishbein, 1980). Attitudes are defined as a person's negative or positive evaluations of performing the target behaviour (Ajzen, & Fishbein, 1980; Fishbein, & Ajzen, 1975). Based on the theory of reasoned action it can be argued that any other factors influencing behaviour do so only indirectly by influencing attitudes, subjective norms or their relative weights. This is one of the key assumptions of technology acceptance model (Davis et al., 1989).

Technology acceptance model was the first model to indicate that the psychological factors influence computer acceptance. The model supposed that perceived usefulness (PU) and perceived ease of use (PEOU) of the new technology are central in affecting the individual's attitude related to using that technology. Personal attitude is hypothesized to influence the behavioural intention to use a technology, finally relating to actual use. Technology acceptance model is different from the theory of reasoned action as it does not include the subjective norm. Moreover, the mediating role of attitude was also questioned by technology acceptance model. In 2000, Venkatesh and Davis

(2000) developed a theoretical extension of technology acceptance model called TAM2 where the attitude component was not included. Instead, the perceived technology characteristics directly influence the individual's intention to use the new technology. In addition, social influences (used as subjective norm) re-entered the model.

Technology acceptance model (TAM) and extended technology acceptance model (TAM2) have been used to explain technology adoption in a wide variety of contexts, ranging from consumer to intra-organizational technology acceptance. At the same time, the other models were proposed. In 2003, Venkatesh, Morris, Davis, and Davis integrated eight most prominent models of technology acceptance into the Unified Theory of Acceptance and Use of Technology. Their theory represented a significant step forward in the technology acceptance literature, as it suggests four core constructs to explain and predict user acceptance of a new technology. These constructs are: performance expectancy (instead of perceived usefulness), effort expectancy (instead of perceived ease of use), facilitating conditions and social influence. Venkatesh et al. (2003) reported that their model explains up to seventy percent of the variance in intention to use (IU) technology, outperforming previous models. However, its use is hampered by its very complexity, especially the grouping and labelling of items for the constructs of facilitating conditions and social influences. Considering that difficulty of the Unified Theory of Acceptance and Use of Technology, the current research relies on the more traditional and verified extended technology acceptance model (TAM2) that forms the basis for the conceptual model proposed. This means the inclusion of the subjective norm considering organizational innovativeness (OI), but exclude attitude. In the following section, the research hypotheses are formulated and drawn together in a conceptual model.

PERSONAL INNOVATIVENESS (PI)

Personal innovativeness (PI) is an external factor added to the technology acceptance model. Previous research has suggested that personality traits play an important role in technology adoption processes (Karahanna, Ahuja, Srite, & Galvin, 2002). Personal innovativeness in the domain of information technology can be defined as a person's predisposition or attitude reflecting his/her tendency to experiment with and to adopt new information technologies independently of the communicated experience of others (Schillewaert, Ahearne, Frambach, & Moenaert, 2005). In other words, it is the willingness of a person to try out an innovation and can, on a more general level, be seen as a conceptualization of risk taking propensity (Agarwal, & Prasad, 1998; Bommer, & Jalajas, 1999). This situation indicates that it has a stable effect across situations involving information technology (Thatcher, & Perrewe, 2002). Personal innovativeness is different from the innovativeness construct as used by Rogers (1995) in his Innovation Diffusion Theory, which is the extent to which an individual adopts innovations earlier than others. Rogers (1995) defines innovativeness as behaviour, while in this study, the personal innovativeness (PI) is seen as a form of openness to change.

ORGANIZATIONAL INNOVATIVENESS (OI)

Organisational innovativeness (OI) is the notion of openness to new ideas as an aspect of firm culture and subsequently, firm culture as central to successful implementation of innovations (Rogers, 1995). Hence, an employee's perception of innovativeness present in the organization should encourage the employee to be more receptive and favourable toward innovative technology. An element of pressure (managerial and peer) exists in an innovative organization for employees to adopt and use technological innovations to achieve high performance and rewards and is extending the influence through subjective social norms. According to Fishbein and Ajzen (1975), subjective norm is person's perception that most people who are important to him/her think he/she should or should not perform the behaviour in question. Subjective norm, as another determinant of attitude, is perception of general social pressures to perform or not to perform a particular act. Underlying subjective norm are normative beliefs that consist of two components of multiplicatively combined (Fishbein, 1967). Hence, individuals are more likely to perform an act if they perceive the existence of greater social pressure from salient referents to perform that act. In hotels, social pressure for operative employees is likely to come from managers. That is, managers' perspectives generally affect adoption and application of information technology in hotels. Hotel executives of higher rank are conscious of the importance of information technology in replacing existing paper systems, improving customer services, enhancing operational effectiveness (Law, & Jogaratnam, 2005) and improving guest satisfaction (Van Hoof et al., 1996). Positive hotel managers' perspectives about operational benefits by adopting information technology have extended an unseen pressure on operational employees to make use of information technology. Subjective norm comprises peer influence and superior's influence.

Research model and hypotheses

THE TRADITIONAL TECHNOLOGY ACCEPTANCE MODEL HYPOTHESES

In general, perceived usefulness and perceived ease of use have constituted a significant influence on an individual's intention to use a technology or system (Ma, & Liu, 2004; Schepers, & Wetzels, 2006). The mediating role of attitude between these perceptions has been doubtful from the start of technology acceptance model) research and was therefore not considered in later assessments of the model (Venkatesh, & Davis, 2000). Therefore, in line with the existing research, the following hypotheses are formulated:

Hypothesis 1. The perceived usefulness (PU) of the system will have a positive impact on intention to use (IU) the system.

Hypothesis 2a. The perceived ease of use (PEOU) of the system will have a positive impact on perceived usefulness (PU) of the system.

Hypothesis 2b. The perceived ease of use (PEOU) of the system will have a positive impact on intention to use (IU) the system.

THE INFLUENCE OF ORGANIZATIONAL INNOVATIVENESS

Research on organizational innovation stresses the implementation stages involved in putting an innovation into use in an organization. This is important because imple-

mentation does not always actually follow once the decision to adopt has been made by the organization (Robinson, Marshall, & Stamps, 2004). A key factor to be considered in successful implementation is the organization member's perception of the firm's general level of innovativeness (Rogers, 1995). Organisational innovativeness is the notion of openness to new ideas as an aspect of firm culture and subsequently, firm culture as central to successful implementation of innovations (Rogers, 1995). Hence, a hotel employee's perception of innovativeness present in the organization should encourage the hotel employees to be more receptive and favourable toward innovative technology. An element of pressure (managerial and peer) exists in an innovative organization for hotel employees to adopt and use technological innovations to achieve high performance and rewards. This drive to be innovative may be expected to influence the intention to use new technology by the hotel employee to increase his/her likelihood of success in the organization. Thus,

Hypothesis 3a. Organisational innovativeness (OI) will have a positive impact on perceived usefulness (PU) of the system.

Hypothesis 3b. Organisational innovativeness (OI) will have a positive impact on perceived ease of use (PEOU) of the system.

Hypothesis 3c. Organisational innovativeness (OI) will have a positive impact on intention to use (IU) the system.

THE INFLUENCE OF PERSONAL INNOVATIVENESS

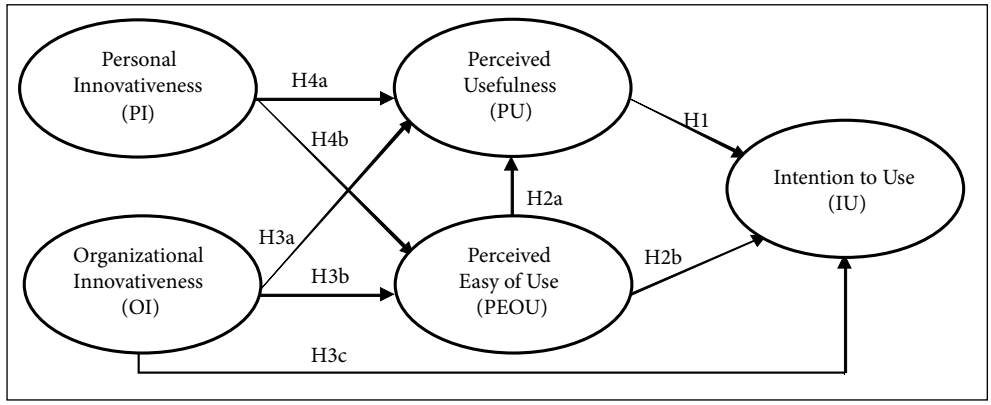
As indicated earlier, in this study the personal innovativeness is defined as a form of openness to change. Being used to adapting the new systems and processes might reveal the usefulness and ease of use more quickly to an innovative person than to a non-innovative person (Schillewaert et al., 2005). Innovative persons know better what kind of technologies are in the field at the present time. They get pleasure from receiving updates and are therefore additionally informed about the possibilities of these systems (Robinson et al., 2004). Keeping in touch with similar technologies enables them to draw parallels and quickly match it to the system. Therefore, personal innovativeness can, both, relate to the perceived utility (usefulness) as well as to the perceived functioning (ease of use). In this context, it is hypothesised that personal innovativeness is an antecedent to both perceived usefulness and perceived ease of use:

Hypothesis 4a. Personal innovativeness (PI) in the domain of information technology will have a positive impact on perceived usefulness (PU) of the system.

Hypothesis 4b. Personal innovativeness (PI) in the domain of information technology will have a positive impact on perceived ease of use (PEOU) of the system.

The hypotheses above give rise to the structural model that is depicted in Figure 1.

Figure 1
INITIAL RESEARCH MODEL



Methodology

MEASURES

To examine the users' acceptance of hotel information systems using technology acceptance model extended with the constructs of organisational innovativeness and personal innovativeness, a self-administered questionnaire including 27 questions divided in two sections, was designed. The first part consisted of 22 items related to the technology acceptance model construct, while in the second part five questions collected socio-demographic data (job title, department, age, gender and education). The questionnaire also included a short explanation of the scope of the study. To measure the five constructs of the model specified in Figure 1, the existing scales were used (for details on scale items and sources see Table 1). For all constructs, Likert-type scale ranging from 1 (strongly disagree) to 5 (strongly agree) was used.

Table 1
SCALE, ITEMS AND SOURCES

Perceived usefulness (PU)
PU1. Using technology increases my productivity.
PU2. Using technology improves my job performance.
PU3. Using technology enhances my effectiveness on the job.
PU4. Using technology makes it easier to do my job.
PU5. Overall, I find technology useful in my job.
Davis (1989), Chin and Todd (1995).
Perceived ease of use (PEOU)
PEOU1. Learning to operate technology is easy for me.
PEOU2. I find it easy to get the technology to do what I want it to do.
PEOU3. My interaction with the technology is clear and understandable.
PEOU4. Overall, I find the technology easy to use.
Davis (1989), Adams et al. (1992).

Table 1 **CONTINUED**

Intention to use (IU)
IU1. I intend to use technology in my job when it becomes available to me.
IU2. I intend to use technology for my customers as often as needed.
IU3. To the extent possible, I would use technology with my customers and management frequently.
Ajzen and Fishbein (1980)
Personal innovativeness (PI)
PI1. If I heard about a new technology, I would look for ways to experiment with it.
PI2. Among my peers, I am usually the first to try out new technologies.
PI3. In general, I am hesitant to try out new technologies.
PI4. I like to experiment with new technologies.
Agarwal and Prasad (1998)
Organizational innovativeness (OI)
OI1. The upper management of my hotel has a positive attitude toward change.
OI2. My supervisor has a positive attitude toward change.
OI3. In my firm, power and control are concentrated in the hands of relatively few individuals.
OI4. The employees of my firm possess a high level of knowledge and expertise.
OI5. In my firm, rules and procedures are strictly enforced.
OI6. The employees of my firm are linked to each other by interpersonal networks.
Robinson Jr, Marshall and Stamps (2004)

DATA AND SAMPLING PROCESS

The validity of questionnaire was evaluated by three experts in the field of tourism and information technology, and 4 department managers from hospitality sector. In order to determine if the samples, which were taken from the hotels using hotel information system at the different levels, could be drawn from the same population, the data obtained from two hotels with 62 valid questionnaire were tested with the Levene's test for equality of variances in the pre-test ($p>0.05$). Hotel information systems consist of different modules such as back office systems, front office systems, food and beverage systems, facilities management systems, and it can be also classified under the management departments. These systems are also used at the different levels according to the different departments, and the usage of hotel information systems is more intensive in five-star hotels (Bertan, 2008; Kim, Lee, & Law, 2008). Hence, the study sample was drawn, based on management departments, from the hotel information system users working for 41 five star-hotels located in Alanya which is one of the important tourist destinations in the southwest of Turkey, having a 6.5% share in the Turkish and 21% in Antalya's international tourist arrivals, and contributing almost 9% to the total Turkish tourism income (ALTSO, 2007; ALTSO, 2008).

Survey was conducted between September 1 and November 15, 2008 by the aid of Alanya Touristic Hoteliers Association (ALTID, 2008), which had 21 members of five star hotels at the time of the research. Of those, 19 hotels accepted to participate in study. After getting approval by the top management, the questionnaire was

distributed to the hotel information system users by the department managers. The respondents have completed the questionnaire on the same day and handed it back to the managers in the sealed envelope to ensure anonymity of respondents. In total, 396 valid questionnaires were returned, with a response rate of 46.6%.

In the sample (Table 2), most were males (73%), between 18 and 30 years of age (49%) with high school education (44%). The most represented were those performing highly qualified jobs (48%) and mid-management – 28% department heads and 28% assistant managers. Most respondents were from the food and beverage (37%) and room service (38%) departments. It would be useful to compare the structure of the sample with the population of the study that is of the hotels' employees using the hotel information system. However, such information could not be obtained for the hotels participating in the study.

Table 2
DESCRIPTIVE STATISTICS

Job title	n	%	Departments	n	%	Gender	n	%
General and hotel managers	5	1.6	Top management	6	1.6	Female	104	27.1
Department managers	36	9.6	Accounting and finance	24	6.3	Male	280	72.9
Assistant managers - Chiefs	104	27.7	Food & beverage and supplying	142	37.4			
High qualified workers	180	47.9	Rooms	143	37.6			
Low qualified workers	50	13.3	Marketing	14	3.7			
			Human-resources	10	2.6			
			Facilities management	41	10.8			
Total	376	100.0		380	100.0		384	100.0
Age	n	%	Level of Education	n	%			
30 and below	188	49.2	Primary	43	11.4			
31-40	158	41.4	Secondary	77	20.4			
41-50	30	7.8	High school	165	43.8			
51-60	6	1.6	Associate - bachelor	85	22.5			
			Master - doctorate	7	1.9			
Total	382	100.0		377	100.0			

DATA ANALYSES

Kaiser-Meyer- Olkin (KMO), Barlett's test of sphericity and Measures of Sampling Adequacy (MSA) tests were performed, using SPSS, for sampling adequacy. For the composite factor score, an explanatory factor analyse (Kaiser-Meyer- Olkin and Barlett's Test, Maximum Likelihood and Direct Oblimin Rotation Method) was used. The internal consistency values for each of factors in the model were computed using Cronbach's alpha reliability measures. Overall measurement quality was determined using Confirmatory Factor Analysis (CFA) with Lisrel software. Structural Equation Modelling was used to evaluate the proposed hypotheses.

Findings

The values of the sampling adequacy results were consistent: Kaiser-Meyer- Olkin (KMO) test outcome, which shows the consistency degree for a factor analysis with higher values, was 0.907; significance values for Barlett's test of sphericity, which is used to test if the variables in the population correlation matrix are correlated, showed reliability with the value of p=0.00. Measures of Sampling Adequacy (MSA) values, which should be greater than 0.5 for an acceptable factor analysis to be done, ranged from 0.571 to 0.907. Results of the factor analysis with Maximum Likelihood and Direct Oblimin Rotation Methods confirmed the constructs except the organisational innovativeness (OI). As a result of these analyses, organisational innovativeness (OI) construct was divided to 2 constructs as Organizational Innovativeness A (AOI) and Organizational Innovativeness B (BOI), and the construct number of the model in Figure1 increased from 5 to 6 (Figure 2). It can be said that this separation is meaningful. Organizational Innovativeness A (AOI) includes the items of OI1 and OI2 in the OI construct implies Supervisor Support; Organizational Innovativeness B (BOI), which includes OI4 and OI6 items, implies Communication Efficacy as knowledgeable employees and communication systems (See Table 1). Cronbach's alpha values, which were calculated to assess the reliability of the latent variables, ranged from satisfactory 0.62 to 0.93.

Four items were eliminated from analysis: Item IU3 ("To the extent possible, I would use technology with my customers and management frequently") from the intention to use (IU) construct; Item PI2 ('Among my peers, I am usually the first to try out new technologies') from the personal innovativeness (PI) construct; Item OI3 ('In my firm, power and control are concentrated in the hands of relatively few individuals') and Item OI5 ('In my firm, rules and procedures are strictly enforced') from the organisational innovativeness (OI) construct. The findings of the data analyses were presented in Table 3.

Figure 2
REFINED INITIAL RESEARCH MODEL

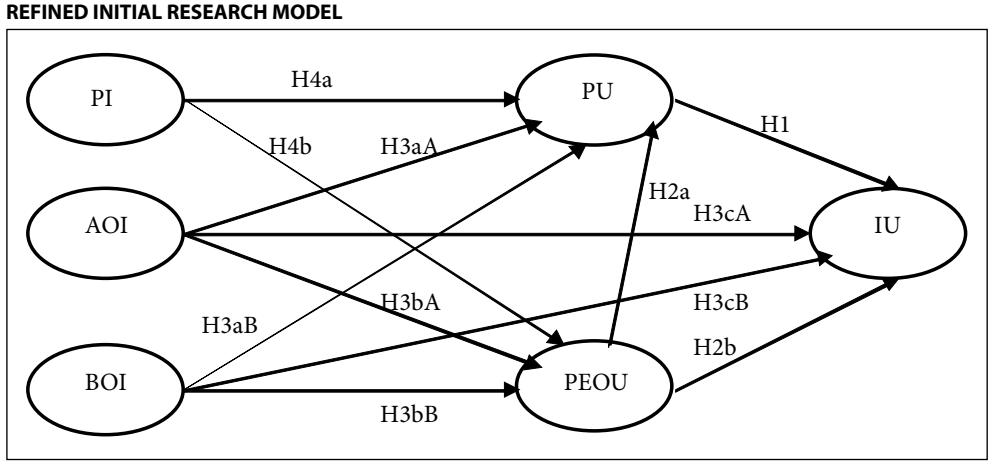


Table 3
RELIABILITIES*, SCALES MEANS, STANDARD DEVIATIONS AND CORRELATIONS**

Construct (number of items)	Croanbach's Alpha[a]	Mean	SD	1	2	3	4	5	6
1. Perceived usefulness (5)	0.93	4.47	0.72	1					
2. Perceived ease of use (4)	0.92	4.24	0.76	0.693*	1				
3. Intention to use (2)	0.86	4.3	0.85	0.626*	0.698*	1			
4. Personal innovativeness (3)	0.73	3.9	0.76	0.382*	0.413*	0.382*	1		
5. Organizational innovativeness A (AOI)[a] (2)	0.77	3.59	0.91	0.193*	0.054	0.094	0.143*	1	
6. Organizational innovativeness B (BOI)[b] (2)	0.62	3.51	0.91	0.105**	0.007	0.025	0.219*	0.298*	1
Confirmatory factor analysis (CFA) results	Chi-square, 284.02; df =117; Chi-square/df=2.43; p< 0.001; RMSEA=0.060; RMSR=0.025; GFI=0.93; AGFI=0.88; NFI= 0.97; CFI=0.98; PNFI=0.75								

*p < 0.01 **p<0.05 ***Values with only 2 items represent correlations; values with more than 2 items represent Cronbach's alphas. [a]Supervisor Support; [b]Communication Efficacy.

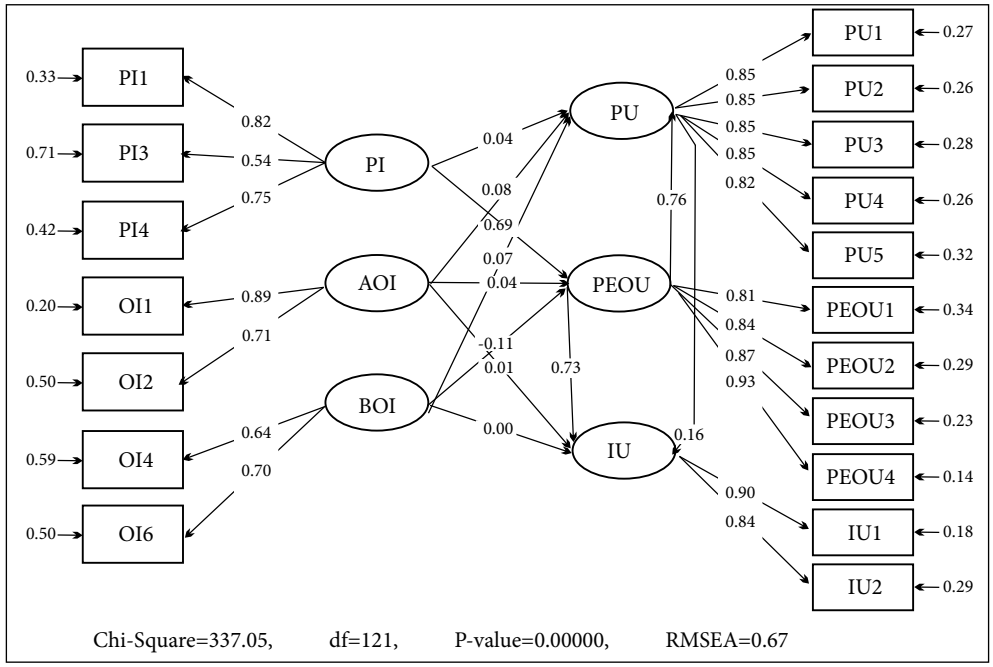
MEASUREMENT MODEL

Overall measurement quality was assessed using confirmatory factor analysis (CFA) with Lisrel (Gerbing, & Anderson, 1988). The results of CFA confirmed reliability analyses outputs. The measurement model had a Chi-square of 284.02 (p= 0.000) with 117 degrees of freedom (df). The ratio of chi-square/df was 2.43, which is below the suggested 3.0 value, indicating an acceptable fit (Reisinger and Mavondo, 2006). The root mean square error of approximation (RMSEA) for the measurement model was 0.060, and the root mean square residual (RMSR) was 0.025, which indicate adequate fit (Hooper, Coughlan, & Mullen, 2008). Overall, the measurement model indicated an acceptable fit with a normed fit index (NFI) of 0.97, and a comparative fit index (CFI) of 0.98 (Hu, & Bentler, 1999). The goodness-of-fit index (GFI) is 0.93, the adjusted goodness-of-fit index (AGFI) is 0.89, and the parsimony normed fit index (PNFI) is 0.75 (See Table 3). All statistics support the overall measurement quality given a large sample and number of indicators (Anderson, & Gerbing, 1988).

REFINED INITIAL RESEARCH MODEL

The results of the structural model component of the structural equation modelling shown in Figure 3 (also see Figure 2) represent an acceptable fit of the data. The resulting Chi-square is 337.05 with 121 degrees of freedom (Chi-square/df = 2.79, p< 0.001, RMSEA= 0.067, RMSR=0.028, GFI = 0.91, AGFI = 0.88, NFI=0.97, CFI=0.98).

Figure 3
INITIAL STRUCTURAL MODEL



Standardized path coefficients and their corresponding t-values that are provided by fitting the hypothesized model to the data allow for testing the hypotheses. The results of the hypothesis tests are shown in Table 4.

Table 4
RESULTS OF HYPOTHESIS TESTS

Hypothesized Paths		t - value	Standardized Path Coeffic.	Results
H1	Perceived usefulness - Intention to use	2.34 **	0.16	Supported
H2a	Perceived ease of use - Perceived usefulness	12.42 *	0.76	Supported
H2b	Perceived ease of use - Intention to use	10.18 *	0.73	Supported
H3aA	Organizational innovativeness A[a]- Perceived usefulness	1.72	0.08	Not supported
H3bA	Organizational innovativeness A[a] - Perceived ease of use	0.69	-0.04	Not supported
H3cA	Organizational innovativeness A[a]- Intention to use	0.27	0.01	Not supported
H3aB	Organizational innovativeness B[b]- Perceived usefulness	1.21	0.07	Not supported
H3bB	Organizational innovativeness B[b]- Perceived ease of use	-1.54	-0.11	Not supported
H3cB	Organizational innovativeness B[b]- Intention to use	0.09	0.00	Not supported
H4a	Personal innovativeness - Perceived usefulness	0.70	0.04	Not supported
H4b	Personal innovativeness - Perceived ease of use	10.01 *	0.69	Supported

*p < 0.01, **p < 0.05; Chi-square=337.05; df=121; Chi-square/df=2.79; p< 0.000; RMSEA=0.067.
[a](AOI) Supervisor Support; [b](BOI) Communication Efficacy.

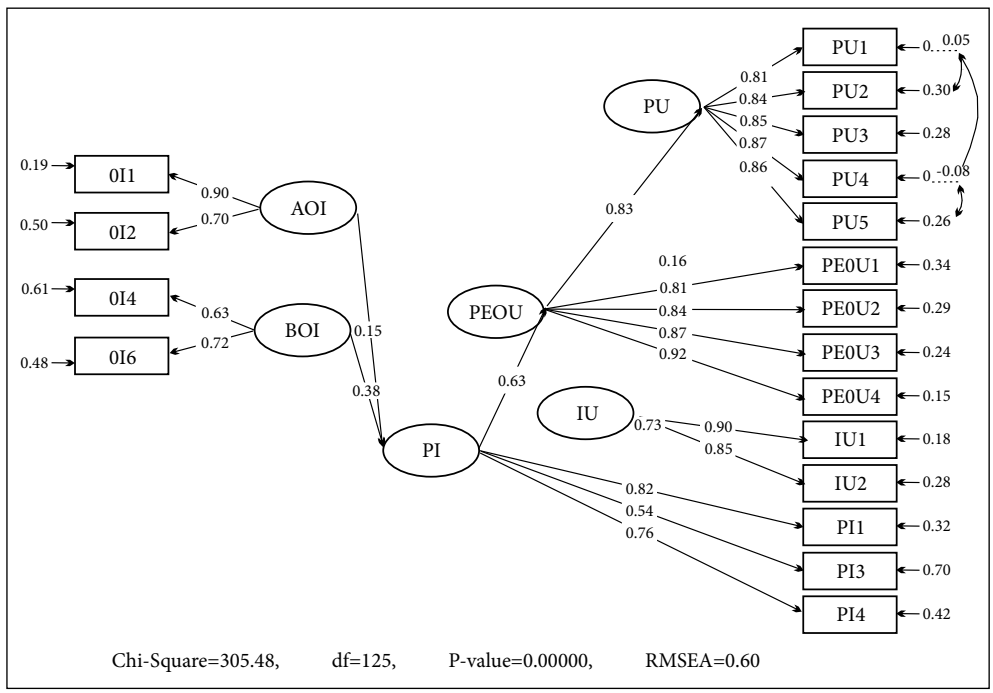
Of the eleven hypothesized relationships, only four were statistically significant (Figure 2 and Table 4), that between the perceived usefulness (PU) and intention to use (IU) (Hypothesis 1), perceived ease of use (PEOU) and perceived usefulness (PU) (Hypo-

thesis 2a), perceived ease of use (PEOU) and intention to use (IU) (Hypothesis 2b) and personal innovativeness (PI) and perceived ease of use (PEOU) (Hypothesis 4b). All other hypotheses were rejected, as the hypothesized relationships were not statistically significant.

MODIFIED STRUCTURAL MODEL

The standardized residuals and modification indices related to the results of the initial structural model indicated theoretically meaningful changes (See Figure 3 and Table 4). Therefore, the hypothesized model was modified for further analysis. After modification, the model in Figure 4 was developed. Revised structural model was retested, and showed an acceptable fit of data - the resulting Chi-square of 305.48 with 125 degrees of freedom (Chi-square/df = 2.44, p< 0.001, RMSEA= 0.060, RMSR=0.032, GFI = 0.92, AGFI = 0.89, NFI=0.97, CFI=0.98).

Figure 4
MODIFIED STRUCTURAL MODEL



The results of the analysis of the modified model are shown in Table 5 and Figure 4. All of the path coefficients obtained from the structural equational model were statistically significant (*p< 0.01 and **p< 0.05). The results of the analysis of the modified model showed that Organizational Innovativeness A (AOI - Supervisor Support) and Organizational Innovativeness B (BOI - Communication Efficacy) explained significantly 21 % of the variance of personal innovativeness (PI). Perceived ease of use (PEOU) was explained significantly (39 %) by personal innovativeness (PI). Perceived ease of use (PEOU) has a direct effect on intention to use (IU), and also perceived usefulness (PU) as well as mediated a relationship between perceived ease of use (PEOU) and intention to use (IU). Perceived ease of use (PEOU) explained 69 % of the vari-

ance of perceived usefulness (PU). Perceived ease of use (PEOU) and perceived usefulness (PU) explained 76 % of the variance of intention to use (IU) (Table 5).

Table 5
THE RESULTS OF THE ANALYSIS OF THE MODIFIED MODEL

Hypothesized Paths		t - value	Standardized Path Coeffic.	Results
H1	Perceived usefulness - Intention to use	2.32**	0.16	Supported
H2a	Perceived ease of use - perceived usefulness	15.40*	0.83	Supported
H2b	Perceived ease of use - Intention to use	9.75*	0.73	Supported
H4b	Personal innovativeness - Perceived ease of use	10.42*	0.63	Supported
***	Organizational innovativeness A[a] - Personal innovativeness	2.23**	0.15	Supported
***	Organizational innovativeness B[b] - Personal innovativeness	4.82*	0.38	Supported

	Personal innovativeness	Perceived ease of use	Perceived usefulness	Intention to use
R^2	0.21	0.39	0.69	0.76

*p < 0.01, **p < 0.05; Chi-square = 305.48; df = 125; Chi-square / df = 2.44; p< 0.001, RMSEA= 0.060; *** These relationships were not hypothesized at the beginning. [a](AOI) Supervisor Support; [b](BOI) Communication Efficacy.

Discussion and conclusion

The aim of this paper, as discussed in the introductory part, was to broaden the understanding of technology acceptance of the users by including two relatively new elements, firstly, by testing the technology acceptance model among the hospitality organizations working environment. Secondly, two individual traits were added to the model – the personal innovativeness in the domain of information technology and organisational innovativeness as independent variables. The purpose of the study was to determine the effects of personal and organisational innovativeness on mediating variables – perceived usefulness and perceived ease of use as well as the impacts of organisational innovativeness, perceived usefulness and perceived ease of use on intention to use. After factor analyses, organisational innovativeness scale was divided into two constructs, Organizational Innovativeness A (AOI - Supervisor Support) and Organizational Innovativeness B (BOI - Communication Efficacy). Subsequently, the construct number of the model in Figure 1 increased from 5 to 6 (Figure 2), and additional hypotheses were tested accordingly.

INITIAL STRUCTURAL MODEL

The test of the initial structural model led to acceptance of only four of total of eleven hypotheses. The effects of technology acceptance model (TAM) belief constructs – perceived ease of use and perceived usefulness on intention to use were consistent with the expectations (Ma, & Liu, 2004; Schillewaert et al, 2005; Schepers, & Wetzels, 2006). Those who have perceived the hotel information system technology to be easy to use are more likely to perceive it as useful (Davis et al., 1992; Shang et al., 2005; Burton-Jones, & Hubona, 2006). In addition, the more a person is innovative and follows the information technology, the more likely it is that he/she perceives the new technology

as being easy to use. This will contribute to accepting hotel information system, working more efficiently and improving performance. However, a positive stance towards new information technologies does not directly influence their belief to use the system. On the other hand, contrary to expectations, the organisational innovativeness did not influence the technology acceptance model constructs. The results of the study confirm that technology acceptance model extended with personal innovativeness is a functional model and applicable in explaining the employees' intention to use new technology.

MODIFIED STRUCTURAL MODEL

The purpose of this part of the study was to see if there were any other significant relationships among the variables in the initial model after its modification. Organizational innovativeness A (AOI - Supervisor Support) and organizational innovativeness B (BOI - Communication Efficacy) were connected to personal innovativeness, as seen in Figure 4, for reanalyzing. The values of goodness-of-fit for modified structural equation model increased. The test results of this model directed to acceptance of all of total of six hypotheses.

The findings showed that technology acceptance model (TAM) extended with organizational innovativeness A (AOI - Supervisor Support), organizational innovativeness B (BOI - Communication Efficacy) and personal innovativeness constructs might play a significant role in determining and explaining intention to use levels. This model explains 76% of the variance of intention to use of the hotel information system. For the one of the closest studies on the subject of hotel information system in literature (Hu, Kim, & Law, 2009), this value is 61% for technology acceptance model (TAM), while this rate for the Actual Use (AU: This measurement investigates users' thoughts on AU) is 46% in the extended technology acceptance model (TAM2) of Kim et al. (2008). A metaanalyse study of Legris et al. (2003) showed that the technology acceptance model (TAM) and its variations have been empirically proven as successful up to 40% in predicting intention to use for the different contexts. Venkatesh's unified model (2003) that includes factors across eight different models in the different contexts gives a value of 70%. Another study on the hotel employee behavioural intentions towards hotel information system has the meaningful results of the direct and indirect relationships between acceptance and different variables (Lam et al., 2007).

Organisational innovativeness [Organizational Innovativeness A (AOI - Supervisor Support) and Organizational Innovativeness B (BOI - Communication Efficacy)] impacts intention to use only indirectly via personal innovativeness (R^2=0.21) (see Table 3). These findings associated with organizational innovativeness A (AOI - Supervisor Support) and organizational innovativeness B (BOI - Communication Efficacy as knowledgeable employees and communication systems) support the previous literature related to organisational innovativeness (OI) and personal innovativeness (PI) (Fishbein, 1967; Rogers, 1995; Tarcan, Varol, & Ates, 2004; Varol, & Tarcan, 2007).

IMPLICATIONS

Hotel information system (HIS) is an important strategic tool for hospitality organizations to improve organizational performance and strategic competitiveness. Because of the necessity, the users might use hotel information system, but they might be less inclined to intention to use (IU), because the interaction between employees and hotel information system may be not suitable to successfully performing tasks. This means that hotel information system exits but it is not useful as expected. Managers may use this extended technology acceptance model (TAM2) as a useful tool to determine if the users have problem with hotel information system.

This study attempts to build up a more complete technology acceptance model (TAM) with the traits of organisational innovativeness (OI) and personal innovativeness (PI) that influence organizational outputs. This research investigated the acceptance of hotel information systems (HISs) from the perspective of users through personal innovativeness (PI) and organisational innovativeness (OI) in order to enhance the model of technology acceptance model (TAM). The findings of the study suggested that the modified technology acceptance model (TAM) relationships hold just as well in a Turkish setting as they do in Western countries.

The personal innovativeness (PI) levels of employees affect their tendencies to use new information technologies. A fundamental factor to be considered in successful implementation may be the employees' perception of the organization's general level of innovativeness. The results obtained here indicated that organisational innovativeness (OI) levels play a critical role in influencing personal innovativeness (PI) levels. Hence, managers should create an innovative job environment for their organizations. Managers should also make a point of working with employees qualified on innovativeness to be able to achieve high organizational outcomes.

LIMITATIONS AND FUTURE RESEARCH

It is necessary to point out to a few limitations of the study. Because of the unknown exact numbers of employees and hotel information system (HIS) users in these hotels, the distribution rates of hotel information system (HIS) users in the departments is the one of the limitations of research. This study used the data obtained from the actual hotel information system (HIS) users; it can be also done for the potential hotel information system (HIS) users. This model should be viewed as one of the initial models and repeated for the generalisation. It needs to emphasize that different organizations have different futures and requirements. This study should be repeated in different regions, different sectors and sub sectors to obtain higher reliable results. Additional external variables such as demographic factors can be used to extend the model in order to diminish the unexplained variance values. And also, these models should be developed in the direction of supporting the managers with the information determining the main causes of these levels.

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