

THE EFFECTS OF PERCEIVED RISK AND COST ON TECHNOLOGY ACCEPTANCE: A STUDY ON TOURISTS' USE OF ONLINE BOOKING

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ABSTRACT

The aim of this study is to determine how tourists' online booking sites related risk and cost perceptions affect their adoption level of this technology. In order to detect tourists' adoption level, Technology Acceptance Model (TAM) was adapted to online reservation technology. In this context, relationships between perceived risk, perceived cost, and the variables of TAM which are perceived ease of use, perceived usefulness, and behavioral intentions were tested. The participants of the study were 242 Russian tourists visiting Antalya, which is an important touristic destination in Turkey. In the research, participants were determined with the convenience sampling method and the data was gathered through face to face survey method. In the analyses of relationships between and effects sizes of variables, Structural Equation Modeling was used. The results revealed that tourists' risk perceptions about using online reservation technology have negative effects on TAM variables while cost perceptions have positive effects on these variables.

Keywords: *Perceived risk, Cost, Technology acceptance model, Perceived usefulness, Perceived ease of use.*

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RİSK VE MALİYET ALGILARININ TEKNOLOJİ KABULÜNE ETKİLERİ: TURİSTLERİN ONLİNE REZERVASYON KULLANIMI ÜZERİNE BİR ÇALIŞMA

ÖZ

Bu çalışmanın temel amacı, turistlerin online rezervasyon sitelerinin kullanımına ilişkin risk ve maliyet algılarının, online rezervasyon teknolojisini kabullerini nasıl etkilediğini belirlemektir. Turistlerin online rezervasyon teknolojisini kabul seviyelerini belirlemek amacıyla, Teknoloji Kabul Modeli online rezervasyon teknolojisine uyarlanmıştır. Bu bağlamda algılanan risk ve algılanan maliyet değişkenleri ile Teknoloji Kabul Modelinin değişkenleri olan algılanan kullanım kolaylığı, algılanan kullanışlılık ve kullanıma yönelik davranışsal niyetler değişkenleri arasındaki ilişkiler test edilmiştir. Araştırmanın katılımcıları, Türkiye'nin önemli bir destinasyon merkezi olan Antalya'yı ziyaret etmekte olan 242 Rus turistten oluşmaktadır. Araştırmanın katılımcıları kolayda örneklem yöntemiyle belirlenmiş ve veriler yüz yüze anket yöntemi kullanılarak toplanmıştır. Değişkenler arası ilişki ve etkilerin analizinde Yapısal Eşitlik Modellemesi kullanılmıştır. Analiz sonuçları, turistlerin online rezervasyon teknolojisini kullanmaya ilişkin risk algılarının Teknoloji Kabul Modeli değişkenleri üzerinde olumsuz etkisi olduğunu gösterirken, maliyet algılarının bu değişkenler üzerinde olumu etkisi olduğunu ortaya koymaktadır.

Anahtar Kelimeler: *Algılanan risk, Maliyet, Teknoloji Kabul Modeli, Algılanan Kullanışlılık, Algılanan kullanım kolaylığı.*

I. Introduction

In the last two decades, information and communication technologies have occupied important portion of our lives. The most important one of these technologies is internet that has conduced significant changes in daily life including working life. In accordance with fast growing use of Internet technology in commerce, searching and purchasing touristic products and services via Internet widely enhanced its part in e-commerce (Beldona, Nusair and Demicco, 2009). In this context, one of the most remarkable services is hotel reservation web sites. Customers may use both hotel owned- Web sites and third party Web sites for booking. However, the third party web sites have gained a very competitive advantage over hotel owned web sites by providing advantages for customers such as discounts, broader information about hotels and destinations, and comparing the products (Morosan and Jeong, 2008). In spite of these advantages, some of the customers are abstain from using these Web sites (Izquierdo-Yusta and Calderon-Monge, 2011). Most of the customers use Internet for gathering information, but only a small portion of them uses it to purchase touristic products (Chau et al., 2007). That is, most of the customers are in intentional stage. As

known, behavioral intention is an important precursor of actual behavior (Tett and Meyer, 1993). Therefore, it is important to explore which factors affect behavioral intentions of hotel reservation websites users.

Various theories such as Theory of Reasoned Actions, Theory of Planned Behavior, and Technology Acceptance Model (TAM) were developed to determine the factors affecting the use of information technologies at individual level. These theories aim to explain the relationships between users' attitudes towards, perceptions of, beliefs in, and actual use of these technologies. Among these theories, TAM is seen as the most widely used model by information technologies researchers, probably because of richness of the empirical research support (Agarwal and Prasad, 1999). On the basis of Fishbein and Ajzen (1975)'s Theory of Reasoned Action and Theory of Planned Behavior (Ajzen, 1991), Davis (1989) developed TAM in order to explain information technology usage behavior from different aspects. It is seen in the literature that TAM is also well accepted and used by researchers to explain online transaction behavior in different contexts (Nunkoo and Ramkissoon, 2013) including online hotel booking (Morosan and Jeong, 2008).

With reference to these points of views, the study aims to determine how online booking sites related risk and cost perceptions of Russian tourists visiting Antalya affect their level of accepting this technology. In the study, therefore, the effects of perceived risk and cost variables on perceived ease of use and perceived usefulness, which are main variables of Technology Acceptance Model (TAM), were examined. Thus, the study is organized as follows. In the second section, the literature related to TAM, perceived risk and cost variables was reviewed and hypotheses of the research were proposed. In the third section, the methodology of the research was described. In this section, brief information about data gathering process, measurement of the variables, and results of the analysis was included. Finally, results of the research were discussed, and implications for researchers and managers were provided.

II. Literature Review and Hypotheses

A. Technology Acceptance Model

As one of the most effective theories on technology adoption, TAM describes an individual's technology adoption through a structure composed of attitudes, perceived usefulness (PU), perceived ease of use (PEU), behavioral intention to use (BITU) and actual system use (Figure 1). TAM assumes that PU and PEU are two primary precursors for acceptance behavior. PU was defined as individuals' perceptions on that using an application would increase

their performance (Davis, 1989). In hotel booking context, performance could be reaching more and better choices and attaining one of them with a better price and condition in comparison with offline ways. PEU refers to a tentative user's degree of expectation about using an application, such as online booking, with less effort with reference to the other ways (Davis, Bagozzi and Warshaw, 1989).

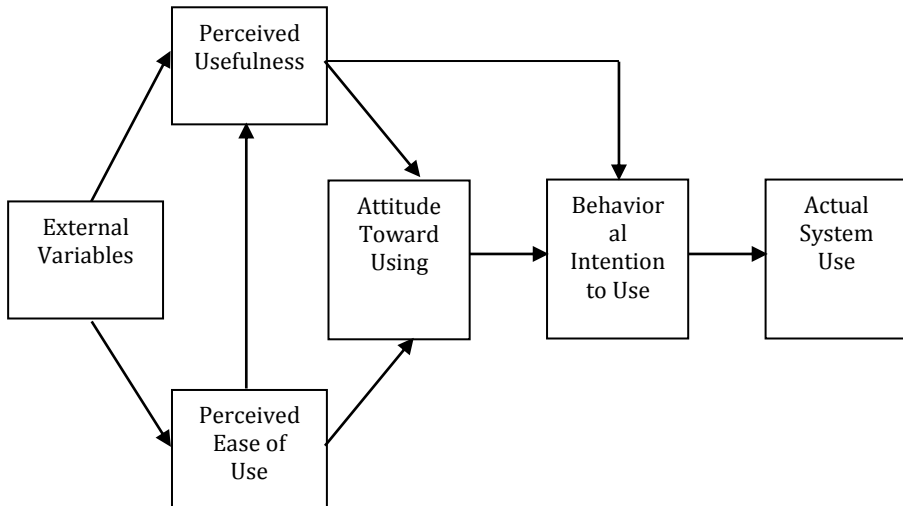


Figure 1. Technology Acceptance Model (TAM)

In their study on TAM, Davis et al. (1989) derived three important results. First, individuals' use of an information technology could be estimated based on their intentions. Second, the principal determinant of individuals' intentions of using information technologies is PU. Finally, PEU secondarily determine the individuals' intentions of information technologies usage. The original TAM, which is seen in Figure 1, demonstrates the relationships of these two variables with information technologies related attitudes, intentions, and actual use. However, in many studies, the relationships of PU and PEU were investigated only with behavioral intention to use (BITU). Besides, the relationships of PU and PEU with attitudes variable were not examined. In addition, the relationships of PU and PEU with actual use variable was not mentioned (Akça and Özer, 2012; Gümüşsoy and Çalışır, 2009; Erdoğan and Esen, 2011). One reason of eliminating attitudes and actual use variables from the model is the weakness of relationships between attitudes, intentions, and actual use (Çelik, 2009). Another reason is that the full mediator effect of attitude variable on the

relationship between PU and BITU in original TAM was not confirmed by plenty of studies, thus, eliminating these variables was suggested (Burton-Jones & Hubona, 2006). In their meta-analytic study, Yousafzai, Foxall, and Pallister (2007) also asserted that excluding attitude variable from the model in researches became general manner after the attitude related results of Davis et al. (1989)'s study.

Importance of PU and PEU variables in explaining BITU was proved by various researches (Legris, Ingham, and Collerette, 2003). Adequacy of TAM's theoretical structure in explaining technology adoption was tested in a wide range from voluntarily used technologies such as Internet, e-mail, distance education, and shopping Web sites to unavoidable technologies such as microprocessors, commercial software, management information systems, and Intranet (Çelik, 2009). In this study, TAM was tested in terms of online hotel reservation technology.

B. Perceived Risk

Perceived risk has been long used in explaining consumer behavior, and examined in considerable amount of researches (Forsythe and Shi, 2003). With reference to Forsythe and Shi (2003)'s definition, perceived risk was described in this study as a consumers' expectation of possible loss related to an online reservation. Perceived risk areas can be ranged as 1) exposition of personal information such as personal location, and financial data, 2) weakness of network security and inadequate software technology, and 3) low product performance (Wang and Wang, 2010). In addition, following the assumptions of previous studies on perceived risk, Forsythe and Shi (2003), in their study, handled four types of risk that online customers may be confronted as financial risk, low product performance risk, frustration or exposition of personal information related psychological risk, and possible delays and difficulties related time/convenience risk. In terms of online reservation, having limited resources, online booking websites owners may not ensure their customers about security in online transactions, thus, tourists may be concerned about losing personal information, and money (Lam, Tam and Oh, 2014).

These possible risks may affect customers' adoption of online transaction technology. At this point, Li and Huang (2009) examined the effect of online shopping channel customers' risk perceptions on variables of TAM. They found that risk perceptions of customers negatively affected perceived ease of use and perceived usefulness. The authors did not investigate the effect of perceived risk on behavioral intention of use, but the results of their study

demonstrated that there was a negative correlation between these two variables. In addition, in his study on e-commerce acceptance, Pavlou (2003) found that perceived risk negatively affected customers' behavioral intention to use online transactions.

C. Cost

One of the important characteristics that have effect on internet usage online touristic transactions is lower cost (Lam, Tan and Oh, 2014; Clemes, Gan, and Zhang, 2014). In this study, therefore, cost was used as travel and accommodation costs. In this context, cost was used as perceived fee (Wan and Wang, 2010), and perceived price (Clemes, Gan and Zhang, 2014) in other studies. In the literature, previous studies indicated that perceived cost has an effect on adoption of online transactions. For instance, Vijayarathay and Jones (2000) suggested that provided lower cost in online transactions positively affects behavioral intention to use online purchasing. In another study, Wu and Wang (2005) proposed that cost is an important factor in customers' decision process on using mobile commerce. Given that using online hotel reservations provide lower travel and accommodation cost, the cost concept was used, in this study, as a benefit for customers in terms of cost-benefit analysis.

D. Development of Hypotheses

It is expected that risk perceptions of tourists planning to make online hotel reservation would have negative effect on their cost perceptions. The main reason of this expectation is that the question of cost perception was directed to tourists with a positive meaning. Thus, when customers perceive higher risk, their lower cost perceptions would be affected negatively (H1). In addition, people believing that using online reservation web sites is risky will also believe that using these sites is not easy (H2). Thus, their intention to use these sites will be lower, too (H3). On the contrary, it could be expected that people thinking that using these web sites is not risky, also, will perceive that using these sites is easy, and behaviorally intent to use these web sites.

Furthermore, it could be asserted that people thinking online hotel reservation will reduce their travel costs may believe using these web sites is easy (H4), and these web sites are useful for them (H5). Besides, they may intent to use these web sites (H6). In this aspect, Lam, Tan, and Oh (2014), in their study on the effect of internet on travel experiences of international tourists visiting Malaysia, found that high cost negatively effects the satisfaction with the destination.

In the original model, TAM has three main hypotheses. The first hypothesis is that PEU had a positive effect on PU. In the

hypothesis, it was assumed that people accepting the easiness of using online hotel reservation web sites may better perceive the usefulness of these sites. In this study, therefore, retesting this hypothesis was required (H7). The second hypothesis is related to the positive effect of PEU on BITU. According to the hypothesis, it can be expected that people believing the easiness of using the web sites will intent to use these sites. The hypothesis, thus, tested again in terms of the sample of the current study (H8). The last hypothesis was about the possible effect of PU on BITU. In the hypothesis, it was proposed that when people regard that online reservation web sites are useful, they will intent to use these web sites (H9).

In the literature, previous studies revealed different results on these assumptions (Lim, Lim and Heinrichs, 2008; Lin, 2008; Belkhamza and Wafa, 2009; Amaro and Duarte, 2015; Morosan and Jeong, 2008) For example, the results of Ahn et al. (2014)'s study, which investigates the purchasing online sports ticket behavior through TAM, showed that PR has a negative effect on PEU, but does not have any significant effect on both PU and BITU. In the same study, the results demonstrated that PEU has significant effects on both PU and BITU, and also that PU has a significant effect on BITU. In another study on Free Trial, the findings detected that PEU affects PU, and PU affects BITU, but there is not any effect of PR on BITU (Zhu and Chang, 2014). In their study, Izquierdo-Yusta and Calderon-Monge (2011) investigated the internet as a purchasing channel and found that PR and PU have effects on BITU. Findings of another study on purchasing tourism products via e-commerce in Mauritius revealed that PEU has an effect on PU (Nunkoo and Ramkissoon, 2013). In a study on online check-in, the results showed that PEU has a significant effect on PU, and PR does not have any significant effect on BITU (Lu, Chou and Ling, 2009). In their study on adoption of internet banking in Turkey, Ceylan, Genç and Erim (2013) revealed a significant effect of PR on BITU, but did not detected any effects of PEU and PU on BITU. In another study on marketing tourism products via internet in Turkey, Yılmaz (2014) identified that PEU has a significant effect on PU but does not have any effect on BITU. The results of the same study also demonstrated that PU has an effect on BITU.

Based on these assumptions and the results of previous studies, following hypotheses were asserted:

H1: *Perceived risk has a negative effect on perceived cost.*

H2: *Perceived risk has a negative effect on perceived ease of use.*

H3: *Perceived risk has a negative effect on behavioral intention to use.*

H4: *Perceived cost has a positive effect on perceived ease of use.*

H5: *Perceived cost has a positive effect on perceived usefulness.*

H6: *Perceived cost has a positive effect on behavioral intention to use.*

H7: *Perceived ease of use has a positive effect on perceived usefulness.*

H8: *Perceived ease of use has a positive effect on behavioral intention to use.*

H9: *Perceived usefulness has a positive effect on behavioral intention to use.*

III. METHODOLOGY

A. Sample and Procedure

The participants of the study were 242 Russian tourists visiting Antalya, which is an important touristic destination in Turkey. In the research, participants were determined with the convenience sampling method. The research was implemented with face to face survey method. The questionnaire was prepared in English, and translated to Russian by a Russian linguist. Later, the questionnaire was checked with 20 Russian tourists to identify if there were any incoherent questions. The participants reported that questions were clear and understandable in Russian. Based on these feedbacks, the survey was performed in touristic hotels in Antalya between June and August of 2014. The survey was implemented with the participation of 300 Russian tourists who were determined with convenience sampling method. Some of the questionnaires did not return and some of them did not included in the analyses because they did not completed properly. Thus, the analyses of the research were carried with the rest 242 questionnaires.

B. Measure

The questionnaire was composed of two sections. In the first section, participants were asked about personal information and whether they used online reservation. The second section consisted of questions related to perceived risk and cost, perceived ease of use, perceived usefulness, and behavioral intentions to use. The questions of this section were asked with 5-points Likert type scaling that ranges from 1 (strongly disagree) to 5 (strongly agree).

Perceived risk was measured with 4-items scale adapted from Wu and Wang (2005)'s study. The scales of *perceived ease of use* and *perceived usefulness* were adapted from Davis and Venkatesh (1996) and Joo and Sang (2013)'s studies. The scale of *behavioral intention*

to use, also, adapted from Joo and Sang (2013)'s study. Perceived cost was measured with a question generated by authors.

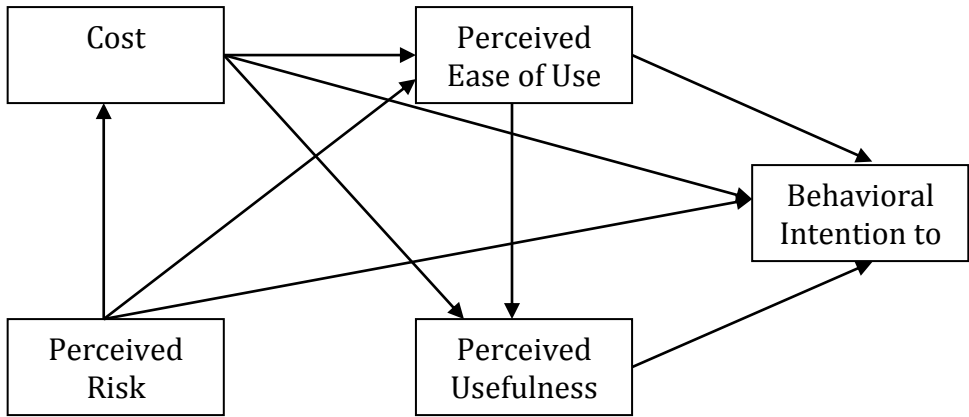


Figure 2. Research Model

Concepts	Mean	SD	AVE	1	2	3	4	5
1 Perceived Risk	3.1167	1.136	.698	(.900)				
2 Perceived Ease of Use	3.6745	1.091	.776	-.271	(.908)			
3 Perceived Usefulness	3.6628	1.033	.690	-.204	.709	(.869)		
4 Behavioral Intention to Use	3.6419	1.151	.893	-.321	.511	.662	(.961)	
5 Cost	3.1963	1.212	*	-.027	.168	.247	.168	(*)

Note: Figures in parenthesis are Cronbach's alpha

*: Cronbach's alpha and AVE values did not estimated since cost was measured with one question.

The theoretical model of the study was presented in Figure 2. Based on this model, the effects of perceived risk and cost variables on main variables of TAM were examined. In addition, relationships between main variables of TAM (perceived ease of use, perceived usefulness, and behavioral intention to use) were detected in terms of online hotel reservation.

IV. Results

Mean, standard deviation, and reliability values of PR, PEOU, BITU and cost, and correlations between these variables were presented in Table 1. Cronbach's Alpha values proved that scales had high reliabilities. Variables related questions of the survey were, firstly, assessed with exploratory factor analysis (EFA). According to results, KMO value was .86, and Bartlett's Test of Sphericity was

significant. These results showed that the sample of the study was adequate to perform EFA. According to EFA results, factor weights of questions were higher than threshold, and total explained variance with five factors was %85.309. The EFA results were demonstrated in Table 2.

Since measures were translated from English to Russian, a confirmatory factor analysis (CFA) was implemented to identify the suitability of measures. However, the cost measure did not included in CFA because it contains only one question. According to the results, CFA yielded adequate goodness of fit to the data (CMIN/DF=2.260, GFI=.925, CFI=.972, TLI=.963, RMSEA=.072, and SRMR=.0396), items of the measures loaded to factors well, and there was not any high correlation (>.70) between factors. Thus, these results proved that the questionnaire has convergent and discriminant validities. Based on the results of CFA, composite variables were generated, and the research model was tested with structural equation modeling (SEM). The results of SEM were demonstrated in Figure 2. The model's goodness of fit indices proved that the model structure was well fitted the SEM (CMIN/DF: 3.238, p: .072, SRMR: .0217, RMSEA: .096, CFI: .993, TLI: .933, GFI: .995, NFI: .991).

The results of the model's hypotheses were presented in Table 3. First three hypotheses of the research were about negative effects of perceived risk on cost, perceived ease of use, and behavioral intentions to use. The results showed that perceived risk negatively affects cost ($\beta = -.181$), perceived ease of use ($\beta = -.209$), and behavioral intentions to use ($\beta = -.280$), and therefore, these three hypotheses (H1, H2, and H3) were accepted. Second three hypotheses of the research assumed that the cost perceptions of customers would positively affect perceived ease of use, perceived usefulness, and behavioral intention to use. The results revealed that cost perception positively affects perceived ease of use ($\beta = .183$), perceived usefulness ($\beta = .204$), and behavioral intention to use ($\beta = .302$). Thus, H4, H5, and H6 were accepted.

Table 2. Exploratory Factor Analysis Results

	PR	PEOU	PU	BITU	COST
I think using online booking sites has potential risk in monetary transactions	.860				
I think using online booking sites has potential risk about having what I really want to buy.	.892				
I think there will be difference between services indicated at online booking sites and I actually encounter.	.873				
I think it is risky to give personal information while making hotel reservation via online booking sites.	.799				
I think learning to use online booking sites is easy.		.840			
I think finding what I want via online booking sites is easy.		.865			
I think becoming skillful at using online booking sites is easy		.793			
Using online booking sites allows me to make my reservation faster.			.804		
Using online booking sites would increase my productivity in my efforts to search hotels.			.823		
Using online booking sites would make online shopping easier for me.			.798		
I think I would use online booking sites afterwards.				.864	
I intend to keep using online booking sites.				.881	
I think I would use online booking sites if I have to stay in a hotel in the near future.				.875	
I think using online booking sites reduces my accommodation costs.					.926
KMO: .86; Total Explained Variance %85.309					

Last three hypotheses of the research were main hypotheses of TAM. The TAM assumes that perceived ease of use positively affects perceived usefulness. The result of this study revealed this effect with β : .610, and thus, H7 was accepted. Another assumption of TAM is that perceived ease of use positively affects behavioral intention to use. The result of the current study demonstrated that online hotel reservation customers' perceptions on ease of use this technology has a positive effect on behavioral intention to use this technology (β = .296). Therefore, H8 was supported. The last hypothesis of TAM and the current study was about the positive effect of perceived usefulness on behavioral intention to use (H). The results of the study supported this hypothesis with β value of .130.

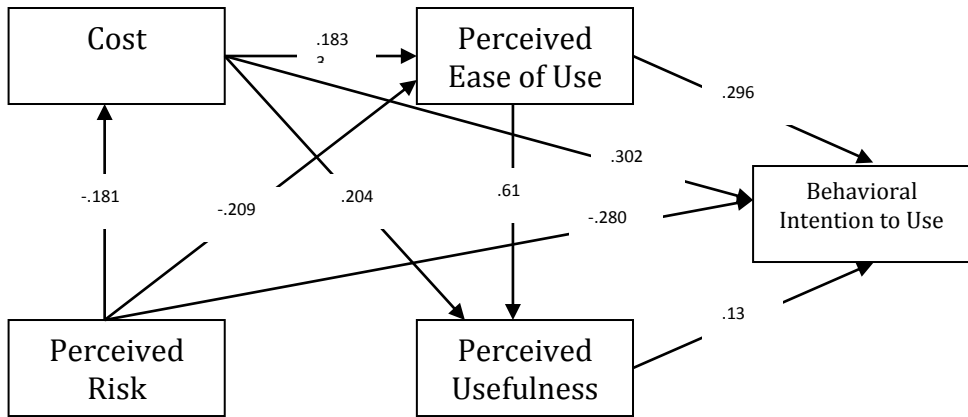


Figure 3. Result Model

Table 3. Structural Equation Modeling Results

Hypothesis	Independent Variables	Dependent Variables	Standardized β	Sig.	Results
1	Perceived Risk	Cost	-.181	.004	Accept
2	Perceived Risk	Perceived Ease of Use	-.209	.001	Accept
3	Perceived Risk	Behavioral Intention to Use	-.280	.001	Accept
4	Cost	Perceived Ease of Use	.183	.003	Accept
5	Cost	Perceived Usefulness	.204	.001	Accept
6	Cost	Behavioral Intention to Use	.302	.001	Accept
7	Perceived Ease of Use	Perceived Usefulness	.61	.001	Accept
8	Perceived Ease of Use	Behavioral Intention to Use	.296	.001	Accept
9	Perceived Usefulness	Behavioral Intention to Use	.13	.042	Accept

V. Discussion

The current study purposed to determine effects of risk and cost perceptions of Russian tourists in Antalya about online reservation on their adoption levels of this technology. Within the theoretical frame of the study, the results of SEM revealed that goodness of the fit indices of the research model were higher than acceptable limits, and all developed hypotheses were supported. The most important finding of the study was that perceived risk and cost as antecedents of TAM demonstrated the expected effects on technology acceptance. Thus, the results showed that risk perceptions of Russian tourists cause them to perceive online

reservation cost higher (H1). In addition, higher level risk perception leads Russian tourists to believe that using online reservation is not easy (H2). This result is consistent with the results of previous studies (Lu, Chou and Ling, 2009; Ahn, Suh, Lee and Pedersen, 2014). The result of the current study, also, revealed that the tourists' intention to use online reservation technology was negatively affected by their risk perception (H3), and this result is consistent with previous studies (Amaro and Duarte, 2015; Chang and Chen, 2008; Ceylan, Genç and Erem, 2013).

On the other hand, Russian tourist believing that using online reservation web sites reduces their accommodation cost will also believe that using this technology is easy (H4), and useful for them (H5). In addition, Russian tourists' belief about that using online reservation web sites reduces their accommodation cost will intend to use this technology (H6). This result is congruent with previous studies (Wu, 2002; Vijayasarathy and Jones, 2000; Lam, Tan, ve Oh, 2014) Based on these findings, it could be suggested that in order to increase tourists' level of adopting this technology, online reservation web sites owners should concentrate on actions that diminish tourists' risk perceptions.

In terms of this study, main hypotheses of technology acceptance model were supported (H7, H8, H9). With the motivation of using online reservation web sites with less effort or learning how to use this technology easily, customers will consider this technology useful for them (H7) and intend to use it (H8). These results are supported by previous studies (Yousafzai, Foxall, and Pallister, 2007; Zhu ve Chang, 2014; Nunkoo ve Ramkissoon, 2013). In addition, considering this technology useful will also lead customers to intend to use it (H9). This result is als supported by previous studies (Yousafzai, Foxall, and Pallister, 2007; Ahn, Suh, Lee ve Pedersen, 2014).

Increase in number of firms that decreased potential risks for tourists mentioned in literature review would reduce risk perceptions of tourist, and they will trust these web sites. Besides, decrease in risk perception provides perceiving low cost. In other respect, tourists' level of adopting this technology would be higher if they believe that using this technology will reduce their travel costs. Therefore, if online reservation firms develop some strategic campaigns related to prices such as early booking discounts paying four night price for five night etc., tourists' level of adopting this technology will increase, and they intend to use this technology. In addition, it could be proposed that hotels that have online reservation websites or third party online reservation firms should

make their websites easy to use, and try to enhance usefulness perceptions of customers by adding some beneficial features to their web sites in order to provide customer accept this technology.

In the literature review, we couldn't reach any study inspecting the effect of perceived risk on cost perception. In addition, it could be denoted that this result is unique. Since we couldn't reach any study investigating the effects of perceived cost on perceived ease of use and perceived usefulness, it might be asserted that the current study is unique in this respect, and it is expected to contribute the literature crucially. The study will also contribute the literature in terms of generalizing the findings because TAM was tested in the context of online booking web sites in Turkey for the first time.

This study was limited in some aspects. First, the participants of the study were only Russian tourists in Antalya. Therefore, generalization of the results was restricted. As a matter of fact, different results could be derived from participants from different cultures. In the future researches, hence, applying this model to tourists from different cultures will contribute the literature, and enhance the validity of the model. Another limitation of the study that only perceived risk and cost variables were used as antecedents of TAM. In future studies, different variables such as trust, quality, perceived enjoyment that may likely affect the adoption of information technologies could be used as precursors of TAM.

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