

Explaining online Purchase Intention: Validating Technology Acceptance Model via Structural Equation Model

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Abstract This study was conducted to explore the determinants affecting the intention to accept the use of technology in the online services sector by customers. Based on the theoretical model that includes the theory of technology accepting model (TAM) in this study, a revised model was proposed for a better explanation of the online service. Furthermore, the purpose of the research was to determine the impact of perceived ease of use, perceived usefulness and customer attitudes on online purchase intention. The proposed model was tested using survey data of 220 respondents. SPSS 22.0 and Statistica 8.0 were used for the data analysis. The data was analyzed using structural equation modeling. The results of the analysis showed that the TAM model is appropriate in the context of adopting online sales services by the customer. In addition, attitudes and perceived ease of use technology for online reservation users have been identified as the most important factor driving customers to adopt online booking.com services. Our findings through the study can allow service providers (travel agents, hostels, transportation, etc.) to develop strategies and improve their services in order to increase the adoption of technology over the Internet and accepting its use by customers.

Keywords Purchase intention, Technology Acceptance Model, Perceived Usefulness, Perceived Ease to Use, Structural Equation Modeling

1. Introduction

The process of consumption goes through a series of stages in which the customer acquires information about the product and / or service that enables him to decide whether to buy or not. In additional, the customer constructs a comprehensive assessment of the experience he had after consumption, on the basis the use of products or services is often to satisfy the needs and desires. In addition to all this we note now that the technology of the electronic environment has evolved and penetrated the various fields, and has directly affected the process and patterns of sale and customer purchase through the Internet. The electronic environment is different from reality and enterprises can not apply the same persuasion methods used in transactions traditional business as they sell on the Internet. It is therefore in the interest of the institutions to learn how to reach customers in the electronic environment and the diversity of

their behavior in electronic markets compared to customers in traditional markets (Gaile Sarkane, 2008).

There is a large number of studies in various fields that had an interest to study the factors affecting individuals intention to adopt a certain behavior, these studies used several models called models of intention, as: theory of reasoned action (TRA) developed by Ajzen and Fishbein (1975-1980) [7], there is also TAM model (1986, 1989) (Technology Acceptance Model) developed by Davis [4], and there is the model of the theory of planned behavior (TPB) developed by Ajzen (1991) [1], and finally, there is the e-TAM, (Enhanced Technology Acceptance Model developed by Lin (2007) [12]. Erdem (2017) points out that these models are interrelated because they are very similar, because each one refers to the psychological, social, and behavioral factors present in the environment in which the customer lives and which are likely to influence his intention to purchase [6]. In general, we note from the applied literature in the field of customer behavior, especially those that have studied the factors influencing the intention to buy online, that they confirmed the existence of three factors that affect the intention of customer buying on the web. Therefore, based on the above, our study will attempt to determine the factors influencing the intention to purchase. For this reason, the problem we will attempt to answer in this

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study is as follows:

What are the components influencing the customer's intention to buy on the web and how the technology affects his purchasing decision?

Practically, we aim to identify the factors that drive customers to make purchases on the Internet and to try to highlight the importance of each of these factors, whether it is psychological, social, contextual and environmental factors. In an attempt to understand these effects, we divided the main problem mentioned above into the following sub-problems:

- What are the customer's purchasing parameters when purchasing the service?
- What are the stages of purchasing of customer on the Internet?
- Among the models of intention mentioned above, which model is most appropriate to answer the problem of study?
- What is the degree of impact of the position factors, perceived benefit and perceived ease of customer's intention to buy on the web?

The use of technology in the purchase process is a new challenge for enterprises that sell their products and services on the Internet, so we find that most of the purchases made by the Algerian customer does not use technology for several reasons, we will try to identify some of them through this study. Recently, some Algerian customers have been forced to purchase many products and services on the Internet because they can not be purchased using traditional tools (traditional marketing). This forced them to search for ways to acquire these products and services on the Internet, so our study aims to analyze the behavior of their purchase and what are the obstacles that prevent countries from resorting to many of them to make purchases on the Internet.

The aim of this study is to attempt to predict the behavior of online customers (using technology) by relying on the technology acceptance model developed by Davis (1989) [4]. According to this theory, the overall behavioral attitude of a potential user of a particular system is a key factor in determining whether or not this person will use the system.

We divided this research into a number of sections. After discussing the theoretical and applied literature, the methodology of the study and the hypotheses of research, and the tools used to conduct the field study we conducted on 220 customers who used Booking.com in the booking process at the Renaissance hotel (Tlemcen, Algeria). We tested the hypotheses and analysis of the empirical results on the nature of the relationships between the factors affecting the intention to buy of customers over the Internet, and we will issue recommendations for future studies.

2. Conceptual Background

One of the most important models that played a major role in predicting the behavioral intentions of individuals is the

theory of reasoned action [TRA] developed by Ajzen and Fishbein (1980), and the theory planned behavior [TPB] (Ajzen, 1991), and there is technology acceptance model [TAM] (Davis, 1989). This latter model may be one of the most important models used to predict purchasing behavior among Internet users.

2.1. Technology Acceptance Model (Davis, 1989) TAM

The technology acceptance model developed by Davis (1989) focuses on predicting the behavior of the use of this particular technology [4]. It demonstrates the importance of the interaction between two fundamental beliefs in the form of "perceived usefulness" and "perceived ease of use" of a particular technology. According to Davis (1989), although there are several variables that can cause the acceptance or rejection of Information Technology by a certain person, two of them are very important [4]. First and foremost, the person's use of an application is determined by measuring the person's conviction of the effectiveness of a particular technological application and its contribution to improving the performance of an act. Davis referred to this variable as "perceived usefulness". Second, although a potential user thinks a specific application is useful, he can also believe that the application is very complex. In this case, he may not find that the performance usefulness resulting from the use merits the effort required of him to use this application. This variable is called "perceived ease of use" (Davis, 1984, p. 320).

The main purpose of the TAM model is to provide a basis for the purpose of examining the impact of external factors on internal beliefs, attitudes and intentions. TAM was formed by knowing some of the fundamental variables suggested in previous research regarding the emotional determinants of computer acceptance and the use of the TRA model as a theoretical basis in order to crystallize the theoretical relations between these variables. The TAM model does not include the TRA's own criteria as a key factor in the customer's intention to buy, but also the importance of attitudes, perceived usefulness and ease of use of technology.

2.2. Use of Information Technology (IT)

Over the past few decades, the widely recognized importance of IT adoption (known as information technology adoption) has led to many attempts by researchers and practitioners to discover their determinants. This effort resulted in the development of models and theories such as reasoned Action theory, technological acceptance model and theory of planned behavior, a comprehensive review that can be found in the work of Venkatesh et al. (2013) [23]. Among the examples of IT adoption that has been reported in the literature and has proven to be effective is the acceptance model for technology developed by Davis (1984). The TAM model proved to be the most popular as can be inferred through many research efforts used in many different countries and IT settings. Singh et al (2006) emphasized that "TAM was

one of the most influential theories in information technology literature," while Mc Kechnie et al. (2006) demonstrated its appropriateness in examining users' acceptance of IT advertising and use by customers. One of the most important variables that studies in this area have attempted to prove is the prediction of the intention of purchasing in individuals during their visit to Internet sites.

2.3. Online Purchase Intention

According to Triandis (1980), intentions represents the instructions given by the individual to himself to act in a certain manner [21]. Intent is often seen as a variable and a mediator between the attitudes and individuals behavior [7]. They represent desire, hope, determination, or will to do a certain behavior. In this context, Taylor and Todd (1995) point out that intentions and their power to predict use, make it possible to predict certain behaviors [21]. Heijden et al. (2001) has defined the online purchase Intention as the threshold at which a consumer tends to buy a product or service from a particular location. The purchase intention may be specific to actual purchasing behavior. For this purpose, Limayem et al. (2000) studied purchasing behavior across the web and empirically verified that online purchasing behavior is determined by intention.

Online shopping is a will that can be likened to the Ajzen and Fishbein (TRA) theory of rationality. On this basis, the level of consumers' expression of their intention to buy from a particular store is reasonable and identical to their shopping behavior. Davis (1989), the owner of the famous TAM model (technology acceptance model) noted that the intention to use the system is directly specific to use [4]. The writer highlighted the importance of the impact of attitudes, perceived benefit and ease of use of technology which leads to acceptance by users. Suki et al (2008) argued that the effect of perceived ease of use and perceived usefulness on purchasing behavior also indicates this effect on behavioral intention [19]. The Technology Acceptance Model (TAM) developed by Davis (1985) illustrates two specific factors of user intent that determine a user's intention to accept and deliberately adopt new technology: user beliefs about perceived ease of use and (ii) perceived usefulness of this technology. perceived ease of use refers to the degree to which the use of a particular system or, in other words, online shopping will be feasible; the perceived usefulness is the degree to which the use of a particular system will enhance its function or, in other words, shopping. Acceptability by users [4].

Gefen et al (2003) found through their study on websites that a website will receive more visits when it becomes more useful and practical to the user [4]. The less effort the technology makes, consumers will feel more inclined and more powerful to use. According to Li et al. (2005), usefulness perception is positively related to behavioral intention. In parallel to the work of Davis (1985), Klopping and McKinney (2004) reported a positive impact of ease of use and perceived usefulness of purchase intention.

3. Research Model and Hypotheses Development

To try to answer the main and sub-problem presented in the study, we propose the following main hypothesis:

The customer's intention to make purchases on the Internet is directly affected by three key factors: attitudes towards technology, perceived usefulness, and perceived ease of use of technology to online purchase (see Figure 1).

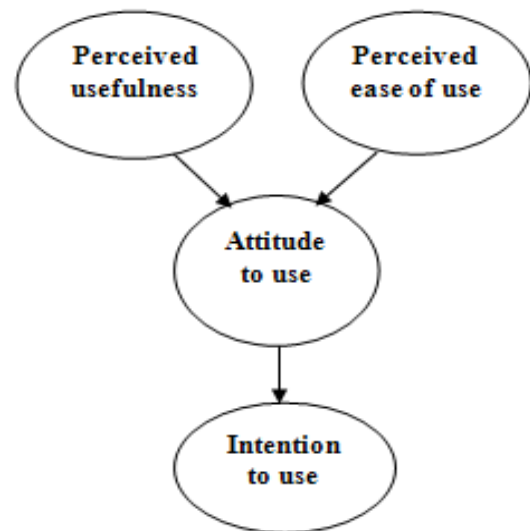


Figure 1. Research model

We note that the main hypothesis is in fact constructed and to be confirmed or not we divided it into four sub-assumptions:

H₁: The ease of using Booking.com has a positive impact on the perceived usefulness of the customer;

H₂: The ease of using Booking.com has a positive impact on the customer's attitude;

H₃: The perceived usefulness of the customer towards Booking.com has a positive impact on his attitude;

H₄: The customer's attitude towards Booking.com has a positive impact on intention to use;

It is clear from the theoretical model of the study that the purchase intention through the web is influenced by three main factors that have been culled from Davis's TAM model. These relate to attitudes towards purchasing behavior, perceived usefulness from purchasing behavior and the perceived ease of purchasing. This relationship has been confirmed by many studies in different fields. On this basis, we will try to ascertain them on the ground by choosing the Booking.com web site.

4. Methodology

To try to answer the problem presented in the study and to ascertain the hypotheses that make up the theoretical model of the research, we randomly selected a sample of the

customers of Booking.com and asked them to answer question sheets to know their attitudes about the studied brand. Then we filter the data and then process it using sample Structural equations.

4.1. Sample and Data Collection

The pilot study was done on the consumers of booking.com services. The sample at the Renaissance Hotel was contacted. We asked them to answer the questionnaire using a Likert scale. The survey was conducted with the help of friends and staff at the hotel, where the field study lasted from November 2017 to January 2018. After the data collection, we found that the age of the interviewees was between 20 and 60 years and the number of males was 135 (61.36%) and Number of females 85 (38.63%). And that the wages of the interviewees are shown in Table 1.

Table 1. Demographic characteristics

Gender	n	(%)
Male	135	(61.36%)
Female	85	(38.63%)
Income (DA)	n	(%)
30000>	70	62.56
30000-50000	114	54.01
50000<	15	17.24
Age group		(%)
25>	65	29.54%
25-30	61	27.72%
30-35	64	29.09%
35 <	30	13.63%

Source: own elaboration by software SPSS.22 [N = 220]

The chosen brand was Booking.com, we chose this brand because of the large number of customers who deal with it, which makes it easier for us to reach them on one hand, on the other hand each variable of the variables that make up our model (attitudes towards the brand, Perceived Usefulness and perceived ease of use) contributes to the connection between the Booking.com brand and the customers who deal with it on an ongoing basis.

4.2. Measurement Scale

The items used to measure the variables of the study were quoted from previous studies and research that used the same scales and the results were good (Davis, 1989; Ahn 2004, Sorce et al. (2005), Hansen et al. (2004), Joines et al. (2003) and Kim and Park (2005). In order to measure the nominal variables of the theoretical model of the research, we used a 25-items distributed as follows: (08) perceived ease of use of the site [PEU]; (06) Usefulness of using the service website [PU]; (07) attitudes towards using the service website [ATT]; the items on the purchase intention of use [IU] were (04). Likertscale was used which consists of 7 degrees starting from 1 "definitely OK", to 7, "definitely OK".

5. Data analysis and Findings

5.1. Exploratory Analysis

The exploratory analysis allows us to test the reliability of the items, to verify their validity in the statistical analysis. We used SPSS.22. Table 2 shows most of these indicators. The latter shows that the arithmetic average was greater than 4 for all variables and this result indicates that most of the responses were agree. The standard deviation is also greater than 1.5 which means that the answers are not dissimilar. As for the stability of the items, we used Cronbach's coefficient, which indicated that the items had good reliability because most of their results were greater than 0.89. We also analyzed the Varimax rotation, so that we obtained a KMO (Kaiser-Meyer-Olkin) greater than 0.84, and we confirmed the significant level of the Sphericity of Bartlett. The variance analysis also indicated that the explained variance (V(x)) ratio for all variables recorded results greater than 50%, indicating that more than half of the variables are explained in the model. After conducting exploratory analysis of the form, we verified the statistical stability of the paragraphs, which means that we can move to the empirical analysis.

Table 2. Reliability measures and Factor Analysis

Variables	Mean Score	α Cronbach	KMO	V(x)
Attitude [ATT]	5.32	,914	,904	66.08
Perceived Usefulness [PU]	5.26	,893	,87	65.09
Perceived Ease of Use [PEU]	5.21	,911	,908	61.89
Intention to use [IU]	5.24	,919	,849	80.43

Source: Own elaboration by SPSS.22. Software. [N=220]

5.2. Regression Equations between Study Variables

The results shown in Table 4 include three regression coefficients recorded between three causal relationships. Note that they are all significant because the T test for student was greater than the absolute value of 1.96, and the level of significance is less than 0.05. The coefficient of regression between the ease of use PEU of Booking.com and the perceived usefulness PU from its use was positive at more than 85%, indicating the positive impact of ease of use on perceived usefulness. The same for the regression relationship between the ease of use (PEU) of Booking.com and the attitude (ATT) from its use was also positive, but had a low value of more than 24%. These results confirmed the importance of ease of use impact on perceived usefulness and customer attitude from booking.com. The relationship between perceived usefulness and attitude was also positive (0.662). Finally, the results showed a positive coefficient

between the customer's attitude and the usefulness of the Booking.com site and the intention to use it, where the value of this coefficient is 80%. Regression coefficients between variables were generally positive and significant.

5.3. Structural Equations

The data we obtained, which are summarized in Table.4 (Structural Equations Modeling (SEM)), enabled us to write the structural equations listed in Table.3.

Table 3. Regression analysis for each variables

Latent variables	β_i , Ei*	Statistic T	Standard Error ξ	P-Level
(PEU)-54->(PU)	0,856	33,047	0,026	0,000
(PEU)-55->(ATT)	0,244	2,399	0,102	0,016
(PU)-56->(ATT)	0,662	6,705	0,099	0,000
(ATT)-57->(IU)	0,729	19,663	0,037	0,000
(ZETA1)-51-(PU)	0,268	6,043	0,044	0,000
(ZETA2)-52-(ATT)	0,226	6,109	0,037	0,000
(ZETA3)-53-(IU)	0,469	8,675	0,054	0,000

Source: Own elaboration by Statistica.08 software (N=220)

From the first structural equation we find that the usefulness (PU) from using booking.com is influenced by the perceived ease of use (PEU). The second equation showed that the customer's attitude on using Booking.com is affected by two variables, namely PEU and PU. Finally, the last equation showed the relationship between the customer's position from booking.com (ATT) and the intention of use in which the regression coefficient was 72.9%.

5.4. Findings and Hypothesis Testing

Table 4. Structural Equations Modeling (SEM)

Independent Variables	Equations Modeling
Perceived Usefulness	PU = 0,856. PEU +0,268
Attitude	ATT = 0,244. PEU +0.662. PU +0.226
Intention to use	IU = 0,729. ATT + 0.469

Source: own elaboration by software Statistica.8. [N=220]

5.4.1. Effect of Perceived Ease of Use on Perceived Usefulness

When we modeled the equations for perceived ease of use and perceived usefulness variables in the statistical program we obtained the following values: [$\beta_1=0.856$, $P<0.05$, $T=33,047$]. The coefficient β_1 indicates the intensity of the effect of perceived ease of use on the perceived Usefulness of using Booking.com website. We note from the result that the value of coefficient is positive and more than (85%). This result confirms the nature of the positive relationship between the variables; this is in line with the results of the field studies carried out by the following researchers: [9, 3, 5, and 16]. In the light of our findings and the results of field studies conducted in this regard, we can say that the first hypothesis is correct.

5.4.2. Effect of Perceived Ease of Use on Perceived Usefulness

When we modeled the equations for perceived ease of use and perceived usefulness variables in the statistical program we obtained the following values: [$\beta_1=0.856$, $P<0.05$, $T=33,047$]. The coefficient β_1 indicates the intensity of the effect of perceived ease of use on the perceived Usefulness of using Booking.com website. We note from the result that the value of coefficient is positive and more than (85%). This result confirms the nature of the positive relationship between the variables; this is in line with the results of the field studies carried out by the following researchers: [9, 3, 5, and 16]. In the light of our findings and the results of field studies conducted in this regard, we can say that the first hypothesis is correct.

5.4.3. The Effect of Perceived Ease of Use on Customer Attitude

The value β_2 reflects the degree of influence of the independent variable which is the ease of using Booking.com website on the Attitude variable. Note that the result is positive (0,244). The positive relationship between the two variables indicates that this result came after the following encouraging results [$\beta_2=0.244$, $P<0.05$, $T=2.39$]. We note that the result of the Student regression test is conclusive and confirms the validity of the second hypothesis that indicates a positive relationship between the perceived ease of use of Booking.com web site and the attitudes of customers. From the above, this result supports the first hypothesis proposed in this research ,and also confirms many of the results of previous studies conducted in this regard ,such as: [2, 18, 13, 17, 9, and 16]. From the above we can conclude that the second hypothesis is confirmed.

5.4.4. The Effect of Perceived Usefulness to Use booking.com on Customer Attitude

When we modeled the structural equations of the variables PU and ATT in the statistical program we obtained the following values: [$\beta_3 = 0.663$, $P < 0.05$, $T = 6.7$]. The coefficient of β_3 indicates the severity of the effect of the PU on the customer's position on the use of ATT (booking.com). We note from the result that the signal is positive and more than (66%). This confirms the nature of the positive relationship between the variables and is consistent with the results of its field studies: [2, 18, 3, 9, and 16]. In the light of our findings and the results of field studies conducted in this regard, we can say that the third hypothesis is confirmed.

5.4.5. The Effect of Customer Attitude on Intention to Use

The results of the regression analysis showed a positive correlation between the customer's attitude (ATT) and the purchase intention to use (PI) variable. The analysis indicated that the student test is significant [$\beta_4=0.299$,

$P < 0.05$, $T = 19.66$]. Clearly, the value of β_4 is greater than (72%) below a significant level less than (5%) and T of student greater than (1.96). This indicates the intensity of the effect of the customer attitude, which plays the mediating role on the purchasing intention of using Booking.com web site, thus confirming the nature of the positive relationship between the two variables. Thus, the type of relationship between these two variables is linear and positive and their results are consistent with the results of the studies: [2 3, 9 and 16]. On this basis we can say that the fourth hypothesis is true.

From the foregoing, we can declare that we have confirmed the four hypotheses in the research and concluded that the intention of the customer to use booking.com is affected by the perceived ease of use, perceived usefulness and customer attitudes from using the website of booking.com.

6. Conclusions

The aim of this research is to highlight the most important factors influencing the purchasing decision of the consumer through the Internet and to study the factors influencing the selection of the online reservation site and try to apply the model of technology acceptance model "TAM" to Algerian consumers who use Booking.com websites during the process of online purchasing. We have also identified the variables of this model such as: perceived ease of use of technology, perceived Usefulness, attitude of use and purchase intention to use technology. We then conducted a field study with customers who use Booking.com, so that we can confirm the four hypotheses set out in the research module. According to the results of the theoretical and applied studies and the results of the empirical study obtained in this study, the purchase intention of customers using Booking.com is affected by three main factors: perceived ease of use, perceived usefulness and attitude of use. The attitude plays the role of the intermediate variable between the ease and the perceived benefit of using the reservation site and intention to use the web site. Direct and indirect effects were observed between the perceived ease of use and the customer's attitude on the use of technology in reservation. However, the results revealed that the indirect effect between the perceived ease of use and the customer's attitude in the use of technology in reservation passing through perceived benefit is more important than direct impact. In addition, we concluded that the customer's attitude towards the use of technology in the online reservation process had affected more than 72% of the customer's purchasing intention to use Booking.com.

6.1. Implications to Research and Practice

The study contributes to pointing and guiding research aimed at studying the behavior of the consumer on the Internet, knowing the determinants of purchasing and measuring the degree of their impact, and the methodology

of research such as: determining sample size, building measurement scales, and how to verify the hypotheses and choose the appropriate ones, before applying the method of structural equations modeling to detect the relationship between independent and dependent variables. The study found that the acceptance of technology by customers is influenced by the perceived ease of use of the website and its perceived benefit and that the latter indirectly affect the purchase intention of using the website through the intermediary role of customer attitude. In addition, the ease of use of the website had a direct but weak impact on the customer's position on using Booking.com services. In contrast, its indirect impact was significant on the attitude and intention of use by booking.com customers.

6.2. Conclusions, Limitations and Future Directions

The results of this study can not be explained without considering the short comings that characterize the theoretical and applied aspect of our research. On the other hand, this research raises new questions that are expected to be answered in future research. The extent of this study is limited to the size of the sample which, in our opinion, is very small, especially if we want to disseminate the results to the research community. Therefore, future studies should cover larger sample sizes and focus on different types of services and their different types on the Internet. Future studies can also examine the effect of other variables on the acceptance model of technology. It is related to the impact of demographic factors, trust, experience of use, etc. A study of these variables will provide important explanations for the procurement process on the website. In conclusion, the preliminary findings of this study support the use of technology in the online booking.com process as the target customers have indicated that they are ready to use them in their future dealings.

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