MEASURING THE ACCEPTANCE OF INTERNET BY USING TECHNOLOGY ACCEPTANCE MODEL (TAM) FROM CUSTOMERS' PERCEPTIONS: A QUALITATIVE STUDY

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ABSTRACT

There is a growing literature on the use of internet and connectivity is an emerging issue in today's manufacturing. Every day, an innovation is being presented and the acceptance of these technologies are decisive in the market success of the goods. The present work deals with the acceptance of internet and utilizes the results of a questionnaire. Although having difficulties in supporting the theory empirically, it provides useful information for both academics and practitioners.

Keywords: Acceptance of Internet, Technology Acceptance Model (TAM), Turkey

1. INTRODUCTION

Recently, people are conducting their business besides social life by using internet. Connectivity is an emerging issue in the modern world and people are being addicted to this technology. It is being preferred as the content is richer than it is in the radio or on TV. It also boosts the performance of the professionals as the access to knowledge is in milliseconds.

Moving here, the present study aimed to measure the acceptance of internet by using TAM. For this reason, the former studies are reviewed and the methodology of Gardner and Amorosso (2004: 1) is deployed. A questionnaire is adopted and applied to 128 undergraduate and post graduate university students. The usable answers are turned into a dataset and reliability and validity are tested. Besides these correlation and factor analyses are deployed in order to test a Structural Equation Model (SEM).

Consequently, two of the proposed relations are verified statistically whereas most of them have failed. The study discusses its limitations and provides some implications for the future work.

2. LITERATURE REVIEW

With the development of better communication facilities, people are in search of new ways of keeping in touch. Internet is the most popular way of communication and people are constituting their personal contents and make fun of them. The literature on the use and the acceptance of internet are rich and the present study includes a review of it. The findings are presented below.

First of all, McDonald, (2008: 374) focused on internet testing and he found that it adds value to the processes. The study covers the good examples of internet usage. He concludes that internet can ease our lives and enables us to live faster. However, the security of the system is still a bias. This research includes contributive information about the purposes of using internet. These can be adopted in the theory of the present work.

Salah and Mudawi, (2005: 355)   reports the results of a survey conducted on the Sudanese librarians. The study investigates the usage of internet and e-mail. The study revealed that the

librarians are using internet for chatting, checking e-mails and surfing on the net. However, the number of people who are using internet for library related areas are scarce. Moreover, the author mentions the need for more educated users are needed. This study also include the reasons for using internet and these can make contribution to the theory. Moreover the obstacles that users face are presented.

Bankole, (2013: 15) investigates the usage of internet in a Nigerian university. He focuses on the academics. After analyzing the results of the survey, he found similar results with Salah and Mudawi, (2005: 355). He reports that academics make use of the internet for e-mailing and surfing. The study includes the reasons for using internet and the present study has a similar context. Thus, these can be beneficial in building the theory.

Rahman, (2004: 31) studied the use of internet in supply chains. He concludes that the use of internet increases the speed of communication, improve service quality and reduce costs. As the study mentions the benefits of using internet, these benefits might be used for supporting the theory of the present work.

Akporido, (2005: 302) searched for the use of internet for suburban areas. The study includes the questionnaire results obtained from 150 respondents. He analyzed the data by using descriptive statistics. The size of the sample is limited in this study just like the present one. This can be used in mentioning the limitations of the present one.

Adomi et al. (2005: 567) also made a research on the use of internet in Nigeria. 89 questionnaire forms are analyzed. Just like Akporido, (2005: 302), this study also analyzes the data in terms of descriptive statistics. The study includes some reasons for people to use internet. These can be used in building the theory.

Al-Ansari, (2006: 791) investigated the use of internet in Kuwait university. He gathered data from 491 respondents. The study reports that people are in favor of using internet as it enables them to save time, find up to date information and cooperate with colleagues. The study includes some implications for both practitioners and academics. These can be mentioned in the conclusion.

Semertzaki, (2008: 735) has made a research on the use of internet in Greek libraries. He used a survey consists of 44 questions. He revealed that internet is crucial for librarianship. This study deals with the reasons for using internet. So, it can also make contribution to the theory of the present attempt.

Nyagwu et al. (2009: 718) investigated the factors influencing the use of internet. Although the study aims to put forth the factors, it doesn't include a factor analysis. Tough having some problems in selection of the analyses, it makes contribution to the theory of the present work.

Juznic et al. (2006: 332) searched the use of internet in elderly people. The elderly are reported to be active internet users. The findings of this study are important as it focuses on a student group with a higher age.

Madhusudhan, (2007: 36) made a research on the use of internet in Indian academic context. He analyzed the usage characteristics of the academics. The study concludes that use of internet helps the academics to reach excellence. This study also supports the theory of the present research as it mentions the benefits of using internet.

Hadaya, (2009: 621) benchmarks the companies in terms of using internet. He conducted a questionnaire on 228 manufacturers. Statistical analyses proved that the more the firm is cheek by jowl with internet, the more the quality of the service improves. As it mentions the importance of using internet, it can also be used in supporting the theory of the present search.

Younis, (2002: 193) reviewed the use of internet in Jordanian libraries. The study gives information about the educational system and institutions of Jordan. The study highlights some obstacles for

using internet. These obstacles are mostly valid in the context of the present study and these may be discussed.

John and Gorman, (2002: 335) focused on the use of internet in South Korea. The paper reveals the using habits of the Koreans. This study can be used in supporting the theory of the research.

Kim, (2010: 875) searched for the consistent use of internet health information. The author concludes that the intention to use internet health information is bound to the customer satisfaction and post-use expectations. The study includes some information about sustaining customer loyalty. These can be adopted for the present study.

Kumar and Manjunath, (2013: 219) compared the internet use of academics and teachers. They obtained 240 usable questionnaire forms. They found that both teachers and researchers are using internet intensively. The findings of this study can be recommended for future studies.

Adetoro and Sodipe, (2013: 9) also conducted a study on the undergraduates' use of internet. The context of this study is similar to the present one. So, the research design is adopted.

Lastly, Gardner and Amorosso (2004: 1) developed a scale to measure acceptance of internet technology by customers. The theory of this research depends on the Technology Acceptance Model (TAM). However, it doesn't include an empirical study and the present study fulfills this gap.

To sum all up, the former studies on use and acceptance of internet mainly based of works issuing the usage reasons of internet or the acceptance in a specific context. The studies on the usage are descriptive and the ones on acceptance lack empirical studies. Moreover, the theory of the ones issuing acceptance lack a ground theory. Moving here, the present study investigated the acceptance of internet by using a model grounded on TAM.

3. ACCEPTANCE OF INTERNET ACCORDING TO TAM

Recently, well-known theories are being used in examining the acceptance of technology. These theories are mainly based on behavioral intentions and namely Theory of Reasoned Action, Theory of Planned Behavior and Technology Acceptance Model (TAM). Moving here, the theories mentioned in the former studies are analyzed and TAM is deployed by using Gardner and Amorosso (2004: 1)'s classification. This theory id grounded on perceived ease of use of the internet, perceived usefulness of the internet, attitude towards using the internet, behavioral intention to use internet and perceived usage of the internet.

3.1. Perceived Ease of Use of the Internet

Internet eases our lives when compared to previous times. People can make fast transactions ad knowledge transfer by using the internet. The ease of use of internet is measured with items including being able to accomplish tasks quickly, performance and productivity boosting besides effectiveness and finding using internet useful for work/job.

3.2. Perceived Usefulness of the Internet

Similar to perceived ease of internet, perceived usefulness is another related issue. Actually, the results of the questionnaire reports strong correlations between these two concepts. It is measured by using learning, meeting needs, keeping in touch, flexibility, skillfulness and finding internet as easy to use.

3.3. Attitude Towards Using the Internet

In grounded theories attitudes towards anything can create behavior. The acceptance of internet is then bound to the attitudes on using it. This dimension is measured by using interaction, enjoyment and boredom. The last item was reversely coded as it is tricky.

3.4. Behavioral Intention to Use Internet

As mentioned before, behavior is a consequence of many factors. If the attitude of the individual is positive on anything, s/he is supposed to have an intention to act. This intention is measured by having functionality, probability, planning, intention to use in the future and expectations.

3.5. Perceived Usage of the Internet

This is the last part of TAM and depicts the actual behavior. The intentions nor the attitudes can grant the probability of the specific behavior. Moving here, the researchers must pay attention to the reasons of behavior. This dimension is measured by using items including spending time while using internet and integration.

4. METHODOLOGY

The former parts of the study covered a literature review and the theory. However, it lacked empirical proof on the ground of the theory. So, a questionnaire is applied to a sample of 128 consists of university students. The questionnaire is adopted from the scale used by Gardner and Amorosso (2004: 1). The demographic variables are also asked.

Table 1. Demographic Features of the Sample			
Factor	Feature	Frequency	Percent
Gender	Female	17	13,3
	Male	111	86,7
Location	Home-Dormitory	96	75,0
	School	15	11,7
	Cybercafe	17	13,3
Have PC	Yes	88	68,8
	No	40	31,3
Age	lowest to 23	75	58,6
	24 or older	53	41,4
Total		128	100,0

The results showed that the sample can represent the universe. Most of the sample consists of males and use internet mostly in their homes or dormitories. Majority of the sample has a PC and their ages differ from 18 to 36. In Turkey the proportion of females in education is still low. Most of the Turkish people are users of internet and they have PCs. The ages seem unsuitable but nearly half of the sample consists of post-graduate students.

As the present study is based on a ground theory (namely, TAM), the sub-factors are defined via Exploratory Factor Analysis (EFA) (Kim, 2010: 882; Göksu and Eren, 2014: 85). This analysis depicted the state of factors used in the theory. Initially, the KMO and Bartlett's test is applied. Kaiser-Meyer-Olkin Measure of Sampling Adequacy is reported to be 0,762. This means that the size of the sample is efficient to make factor analyses.

Table 2. Factor Loadings, Reliability and Descriptive Statistics							
	1	2	3	4	5	6	7
useful1	,808						
useful2	,862						
useful3	,698						
useful4							
useful5	,788						
useful6	,797						
Ease1				,588			
Ease2			,823				
Ease3			,770				
Ease4			,812				

Table 2. Factor Loadings, Reliability and Descriptive Statistics							
	1	2	3	4	5	6	7
Ease5			,751				
Ease6			,592				
Atti1				,624			
Atti2				,901			
Atti3				,895			
Atti4				,748			
BehIn1		,928					
BehIn2		,641					
BehIn3		,817					
BehIn4		,916					
BehIn5		,634					
PerComp1					,903		
PerComp2					,946		
PerComp3					,948		
Exper1							,803
Exper2							,819
Volun1						,854	
Volun2						,605	
Volun3						,865	
Cronbach's α	.863	.827	.847	.882	.949	.755	.939
& of variance	12,718	12,052	11,708	10,940	9,774	7,701	6,843
Cumulative %	12,718	24,770	36,478	47,417	57,191	64,892	71,735
Mean	4.0339	3.2057	3.4375	3.8063	3.1250	4.0547	3.8906
Std. Deviation	.73839	.79408	1.03673	.92351	1.55899	.87672	.97395

The EFA revealed many useful information about the data set. Initially it depicted that some of the items are being listed in different factors, whereas some are being listed in two factors. These results showed that the mentioned items should be extracted from analysis. By doing so, the author was able to test the reliability and the descriptive statistics either. All of the sub-factors reported acceptable Cronbach alpha values. The highest perception is reported to be on perceived usefulness of internet. On the other hand the lowest values are obtained for perceived complexity. This result shows that the sample perceives internet as a tool which has simplicity.

Table 3. İnter-item correlations						
	Meanuseful	MeanEase	MeanAtti	MeanABeIn	MeanPerComp	MeanExper
MeanEase	,348**					
MeanAtti	,402**	,413**				
MeanABeIn	-,184*	-,083	-,074			
MeanPerComp	-,091	-,110	-,089	,081		
MeanExper	-,068	-,034	-,092	,479**	,220*	
MeanVolun	-,155	-,046	-,113	,232**	,304**	,427**

**. Correlation is significant at the 0.01 level
*. Correlation is significant at the 0.05 level

The means of items asked for measuring the same sub-factor are calculated and these are tested with Pearson correlation (Hadaya, (2009: 628). The results showed that some of the factors are correlated to each other whereas some are not. Then, a Confirmatory Factor Analysis (CFA) (Kim, 2010: 883) is conducted. The analysis showed that the model fits with the data and the theory can be tested. After having satisfactory results for the data a Structural Equation Model (SEM) is developed (Kim, 2010: 883). The model fitted with the data (CMIN/df=1,314; NFI=0,902; RFI=0,875; IFI=0,975; TLI=0,967; CFI=0,974 and RMSEA=0,050).

	CR	AVE	MSV	ASV	exper	useful	ease	atti	BeIn	Com	volun
Table 4. Discriminant and Convergent Validity Measures											
exper	0.941	0.889	0.164	0.062	**0.943**						
useful	0.873	0.697	0.175	0.043	-,027	**0.835**					
ease	0.840	0.572	0.057	0.033	-,119	,239	**0.756**				
atti	0.906	0.765	0.175	0.040	-,078	,418	,230	**0.874**			
BeIn	0.913	0.781	0.130	0.037	,361	-,146	-,164	-,079	**0.884**		
Com	0.950	0.863	0.091	0.031	,244	,002	-,176	-,028	,085	**0.929**	
volun	0.896	0.812	0.164	0.052	,405	-,091	-,135	-,059	,181	,302	**0.901**

The analysis also included testing the discriminant and convergent validity of the measure. The CR reported was higher than 0,70 and the AVEs were higher than 0,50. However, the items for measuring the perceived ease of use were slightly higher than the acceptable threshold. So, future studies should consider the validity in a broader context. The MSV and ASV were lower than AVE. All of these findings showed that the measure has both convergent and discriminant validity. However, the AVE reported for perceived ease of use should be taken into consideration.
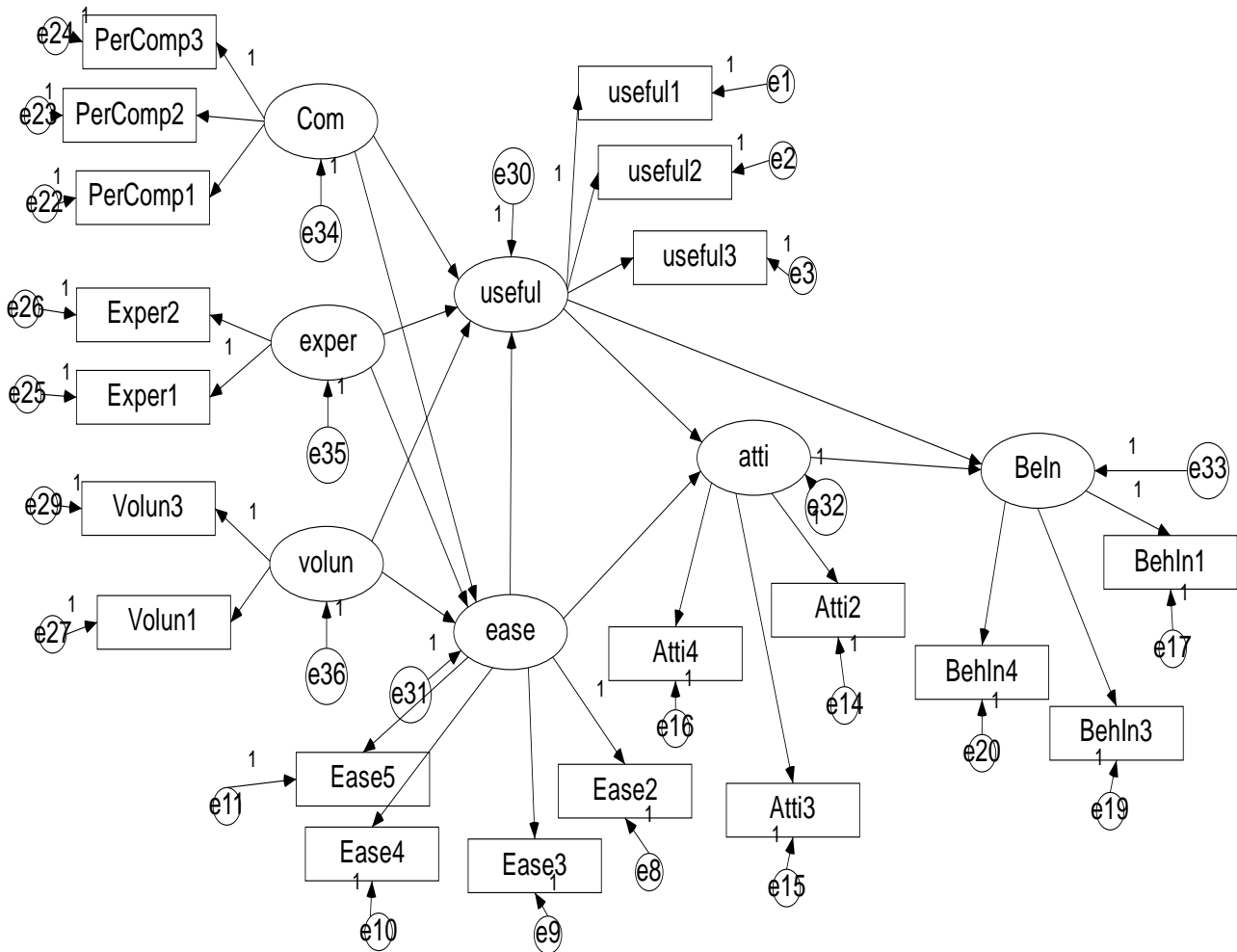

Figure 1. Proposed SEM model

The figure depicts the tested model and the results of this analysis are a little bit confusing. First of all, most of the relationships proposed in the model are not statistically verified. Secondly, the direction of the relationship between two factors are different from those in the literature. Lastly, many items are being listed in different factors in EFA.

<table>
<tr><td colspan="6">Table 4. Regression Weights</td></tr>
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			Estimate	S.E.	C.R.	P
ease	<---	Com	-,072	,058	-1,251	,211
ease	<---	exper	-,102	,111	-,920	,358
ease	<---	volun	-,076	,091	-,837	,403
useful	<---	ease	,191	,082	2,346	,019
useful	<---	Com	,035	,046	,757	,449
useful	<---	exper	-,013	,050	-,265	,791
useful	<---	volun	-,059	,072	-,829	,407
atti	<---	ease	,172	,118	1,456	,145
atti	<---	useful	,611	,152	4,012	***
BeIn	<---	atti	-,019	,087	-,221	,825
BeIn	<---	useful	-,185	,142	-1,300	,194

The results indicate that the perception of the easiness of the sample is being affected by the perception of usefulness. Besides these The usefulness affects their attitudes on accepting internet. With these contributions aside, most of the model failed in meeting the statiscical thresholds. And this shows that the present study has many limitations.

5. CONCLUSIONS, LIMITATIONS AND IMPLICATIONS FOR FUTURE RESEARCH

This paper aimed to measure the acceptance of Internet from customers' perceptions. To do so, initially a questionnaire is adopted from the literature and former studies are reviewed in terms of measures, methodology and findings. After this stage the questionnaire is applied to 128 university students half of which is undergraduate and the remaining part is postgraduates. The sample reported satisfactory results for representation. However, the perceptions of the sample didn't match with the theory. Some of the items are listed under different factors and some reported more than one factor. The results of the EFA and CFA were satisfactory but the correlations were not significant. The theory of the present study is grounded on TAM but the data doesn't support it. The study has some limitations too. First of all, the sample is not large enough to generalize the results. Secondly, the data is not in high quality and the means and standard deviations are not compatible. Moreover, the inter-item correlations are not fully statistically significant. And lastly, the model only supports two dimensions of the model. Despite all these limitations, the present study can be accepted as a pilot study for researches with larger samples. Lastly, researchers can focus on the UTAUT model rather than TAM for future studies.

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