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An Analysis of Technology Acceptance in Turkey using Fuzzy Logic and Structural Equation Modelling

Yapısal Eşitlik Modeli ve Bulanık Mantık Kullanılarak Türkiye'de Teknoloji Kabulünün Bir Analizi

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Abstract

Technology is in a constant progress in the way of satisfying increasing human needs. This fact will hold true for the years to come. However, the level of adaptation to technological advancements varies greatly across countries. The pace of adjustment is directly proportional to the importance attached to and the funds allocated for this purpose. Despite the abundance of technological investments in Turkey in recent years, there are only a few studies analyzing the current level of individual interest in technology. This study therefore aims to determine the technology acceptance of Turkish people by using the Technology Acceptance Model (TAM) developed by Davis (1989) and to demonstrate the reasons to accept or not accept technology departing from the links between dimensions. While accomplishing this aim, Structural Equation Model (SEM) that is a highly strong multivariable analysis technique that makes possible the evaluation of latent structures like psychosocial needs, and the Fuzzy Logic Theorem that provides strong and significant instruments for the measurement of ambiguities and provides the opportunity to meaningfully represent ambiguous concepts expressed in the natural language were used. According to the findings of this study, it was determined that the perceived ease of use is more influential in people's acceptance of technology than the perceived usefulness is. It was also found that technology acceptance does not differ significantly at the statistical significance level of 0.05 with respect to the participants' demographic characteristics (age, gender, education level, hometown etc.). In addition, analyses performed to define the relationships between the dimensions of the TAM yielded results that highly supported the TAM. In other words, the dimensions affect technology acceptance to positive and significant degrees.

Keywords: Technology Acceptance Model, Technology, Fuzzy Logic, Structural Equation Modelling

Özet

Teknoloji, artan insan ihtiyaçları tatmin etme yolunda sürekli bir ilerleme içindedir. Bu gerçeğin gelecek yıllar ile birlikte doğruluğu ortaya daha net çıkacaktır. Ancak, bu teknolojik gelişmelere olan uyum düzeyi, ülkeler arasında büyük ölçüde değişir. Uyum düzeyinin hızı ile teknolojik araçlara tahsis edilen fonlar arasında direct

bir ilişki bulunmaktadır. Türkiye'de son yıllarda teknolojik yatırımlar fazlalığına rağmen, teknoloji kullanımında bireylerin mevcut seviyesi belirlenmesi ile ilgili az sayıda çalışma vardır. Bu nedene dayanarak bu çalışmada, Davis (1989) tarafından geliştirilen Teknoloji Kabul Modeli (TAM) ile Türk insanının teknoloji Kabul durumunu ve teknoloji kabul modeli boyutları arasındaki ilişkiler belirlenerek, teknolojiyi kabul etme veya etmeme nedenlerinin belirlenmesi hedeflenmiştir. Bu amaçla, psikososyal ihtiyaçları gibi gizli yapıların değerlendirilmesi mümkün kılan son derece güçlü, çok değişkenli bir analiz tekniği olan Yapısal Eşitlik Modeli (SEM) ve belirsizlikler ölçümü için güçlü ve önemli araçlar sağlayanve doğal dilde anlamlı bir şekilde ifade edilmesine fırsat sağlayan Bulanık Mantık Teoremi kullanılmıştır. Bu çalışmanın bulgularına göre, algılanan kullanım kolaylığının ve algılanan faydanın, teknolojinin insanların tarafından kabulünde çok etkili olduğu tespit edilmiştir. Aynı zamanda katılımcıların teknoloji kabulü ile demografik özellikleri (yaş, cinsiyet, eğitim düzeyi, memleketi vb) arasında 0.05 istatistiksel anlamlılık düzeyinde önemli bir farklılık bulunmamış olduğu tespit edildi. Buna ek olarak, TAM'ın boyutları arasındaki ilişkinin belirlenmesi için yapılan bu çalışmada, yüksek oranda TAM'ni destekleyici sonuçlar elde edilmiştir. Diğer bir deyişle, TAM boyutlarının teknolojinin kabulünde pozitif ve önemli derecede etkili oldukları belirlenmiştir.

Anahtar Kelimeler: *Teknoloji Kabul Modeli, Teknoloji, Bulanık Mantık, Yapısal Eşitlik Modeli*

Introduction

Technological competence, which can be defined as the skill to produce, utilize and spread information, has become the most critical determinant of global competitive capacity and economic growth, and thus of societies' levels of welfare. In technologically advanced countries, a process of change is being observed in which knowledge-intensive activities constitute a significant portion of economic activities.

The transition process to information economy, which is becoming widespread globally, refers to a structural transformation in all economic activities from production to marketing. In this process, the leading actor of which is technological competence, countries' long-term development perspectives are reshaped.

The near future will be marked by a process in which those countries, which design their development strategies in the direction of improving technological competence and unwaveringly execute these strategies, will shine out.

Technology is seen today as the main source of economic growth for businesses as well as for countries. Thus, countries with advanced technologies assume superiority over others in industry and all other economic areas. In short, technology has become a defining element that ensures countries superiority over others in today's world that is marked by intense competition. Therefore, countries that possess technological superiority play decisive roles in the international arena, in terms of not only the increase of social welfare but also the distribution of world's riches (Gülmez, 2004).

South Korea (76.1%), the USA (74.4%) and Japan (73.8) occupy the first three places in terms of internet use, whereas Turkey ranks the 16th country with 35% (www.internetworldstats.com/stats.htm).

The reason behind Turkey's relatively poor performance in this ranking is the problems that Turkish firms and individuals experience in using and getting accustomed to new products. For example, the free Apache web server constitutes 67% of the global web server market. In addition, 90% of web servers in the world operate via Unix. In

Turkey, on the other hand, Sun and Oracle have 67% of the web server market. The idea that Turkish firms and individuals have a negative attitude towards innovation is proved by the low prevalence of software like Apache, which is a newly developed software that can be obtained for free; Linux, which gives the opportunity to use multiple servers instead of a single one, to backup, and more importantly, to enable the continuation of service in case of hardware breakdown; and the PHP (Personal Home Page) programming language that is used to create dynamic and interactive webpages.

To increase the number of internet users and to indirectly improve the familiarity with technology, which is seen as the first step to eliminate the problems brought about by this situation, Turkish public institutions have rapidly increased the number of their services in fields like e-land registry, e-judiciary, e-municipality. However, another thing to be done in the way of increasing the number of users is reducing the tax rates of technological devices. Hence, each discount to be applied to the prices of these devices will bring about greater cost advantages to both public and private sectors. These cost advantages will indirectly increase the competitiveness of a country or a firm in international markets and thus render them dependent upon technological competence. Findings of numerous studies in the Economics literature support this argument (Soete, 1981; Dosi and Soete, 1983; Magnier and Toujas-Bernate, 1994; Amable and Verspagen, 1995; Greenhalgh, 1988; Dosi and Pavitt Soete, 1990; Wolff Fagerberg, 1996 and 1997).

Technology Acceptance Model (TAM) was developed by Davis (1989) in order to determine individuals' technology acceptance rates and their relations to technology. It give researchers important inspirations to explain and –more importantly- to estimate individuals' attitudes towards using or not using technology (Liao and Cheung, 2001: 299-306). Previously, numerous studies have been carried out to determine the behaviours of internet users in countries like the US, the UK, Switzerland, the Netherlands and Arab countries (Al-Gahtani, 2001; Heijden, 2003; Loch, Straub and Kamel, 2003; Straub, Keil and Brenner, 1997).

Once information systems are implemented in the organization, the value can only be achieved if these systems are adopted and used by the intended users. Though the antecedents of IT adoption and usage have been widely researched (Davis, 1989; Jeyaraj, Rottman and Lacity, 2006; Venkatesh and Davis, 1996; Venkatesh, 2000; Venkatesh, Davis and Morris, 2007; Venkatesh, Morris and Davis, 2003), understanding why IT is accepted or rejected by individuals is still considered a major issue for both IT practitioners and scholars (Sami and Pangannaiah, 2006).

Since it is believed that national culture influences technology adoption and usage (Chen, Chen and Kazman, 2007; Gallivan and Sprite, 2005; Lippert and Volkmar, 2007; Rouibah, 2008; Straub et al., 1997), and majority of the technology adoption studies were conducted in developed countries (Fusilier and Durlabhji, 2005; Alshare and Alkhateeb, 2008), then the findings from these previous studies might not be applicable to developing countries.

In the light of these data, given that TAM has been used to measure countries' technology acceptance rates, it was aimed in this study to determine whether the investments to provide services via the internet made by public institutions in the internet infrastructure produce the intended results or not. In addition, attitudes of employees in public institutions towards technology acceptance were investigated.

Acceptance of Technology

The Technology Acceptance Model (TAM), developed by Davis (1989), has been widely used in applications as the theoretical framework. The TAM has been one of the most influential theories in the IT literature (Straub et al., 1997; Chen et al., 2002a). TAM explains the causal links between individuals' perceptions, inclinations, intentions and behaviours in the acceptance of information technologies.

In addition, the TAM is a model, which helps observe the factors that facilitate or hinder the establishment of information technology in sectors accepting technology, reveals the reasons of this, and determines and defines various factors that drive workers to utilize technology easily. The Technology Acceptance Model is reduced to two main dimensions: the ease of use of the technology perceived by its users, and the perceived benefit from the technology. Previous studies showed that individuals' beliefs regarding technology influence the intensity of technology use.

The TAM is a theory that measures users' willingness and intention to use technology based on four main elements. These elements are the following:

1. *Perceived Usefulness*,
2. *Perceived Ease of Use*
3. *Attitude*
4. *Behavioural Intention*

The TAM asserts that perceived usefulness and perceived ease of use determine a person's intention towards the behaviour (Davis, 1989). The success and adequacy of these two variables in measuring individuals' intentions to use computer systems was determined empirically by numerous researchers (Legris, Ingham and Collerette, 2003). While *Perceived Usefulness* is defined by Davis (1989) as "the degree to which a person believes that using a particular system would enhance his or her job performance", *Perceived Ease of Use* denotes "the degree to which a person believes that using a particular system would be free from effort". *Behavioral Intention* is the indicator of a person's demands and efforts to realize a behaviour. *Attitude* is the tendency to react positively or negatively and is an important variable that determines computer use and intention to use computer. *Actual System Use* is the degree of the frequency and volume of a person's use of information technologies in their works.

Many organizations, private or public, have invested heavily in information systems, and the measurement of users' attitudes and perceptions toward information technology systems is an important one for researches. To examine this issue, many studies have been conducted using relevant models to evaluate system usage; one such model is the Technology Acceptance Model (Davis, Bagozzi and Warsaw, 1989), which has been used by a variety of scholars in different academic fields.

Methods and Procedures

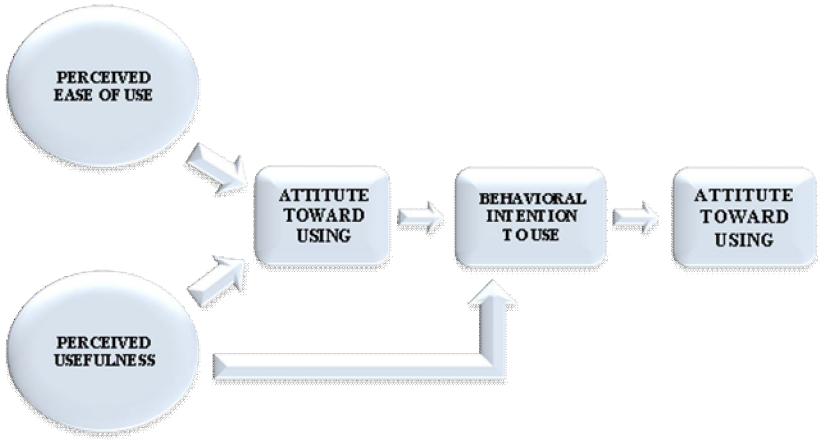
Research Model and Hypotheses

The aim of this research is to determine the technology acceptance of Turkish people by using the TAM developed by Davis (1989) and to demonstrate the reasons to accept or not accept technology departing from the links between dimensions.

While accomplishing this aim, SEM that is a highly strong multivariable analysis technique that makes possible the evaluation of latent structures like psychosocial needs, and the Fuzzy Logic Theorem that provides strong and significant

instruments for the measurement of ambiguities and provides the opportunity to meaningfully represent ambiguous concepts expressed in the natural language were used.

Figure 1. Structural Model of the Research



More generally the objectives of our work and the hypotheses derived from these objectives are as follows.

Objective 1: Analysis of the relationship between Technology Acceptance and Demographic Variables of the Participants.

H1.1.: *There is a significant relationship at 0.05 significance level between gender of participant and actual system use*

H1.2.: *There is a significant relationship at 0.05 significance level between Marital Status of participant and actual system use.*

H1.3: *There is a significant relationship at 0.05 significance level between homeland of participant and actual system use*

Objective 2: Analyzing of the relationship between dimensions of the Technology Acceptance Model

H2.1.: *There is a direct and significant relationship between perceived ease of use and Attitude toward using at 0.05 significance level.*

H2.2.: *There is a direct and significant relationship between perceived usefulness and Attitude toward using at 0.05 significance level.*

H2.3.: *There is a direct and significant relationship between perceived usefulness and behavioral intention to use at 0.05 significance level.*

H2.4.: *There is a direct and significant relationship between Attitude toward using and behavioral intention to use at 0.05 significance level.*

H2.5.: *There is a direct and significant relationship between behavioral intention to use and actual system use at 0.05 significance level.*

Data Collection Tool

The study was limited through random sampling to those participants, who were shopping in technology stores (Teknosa, Bimeks and Vatan Bilgisayar) in shopping malls in five big cities (İstanbul, Ankara, İzmir, Antalya and Eskişehir) that were thought to represent the structure of Turkey, and who accepted to participate in the research.

This empirical work was performed based on a questionnaire form. The data were collected using a questionnaire, which consisted of two parts. The questions in the

first part focused on the demographical characteristics of participants. The second part comprised 32 questions that evaluate the participants' level of technology acceptance in five dimensions (Perceived Usefulness, Perceived Ease of Use, Behavioural Intention to Use, Attitude toward Using and Actual System Use). The questionnaire was designed using a 5-point Likert scale (1-Strongly Disagree to 5-Strongly Agree).

Firstly, a pilot survey with a 40-people size was conducted for the reliability tests of the hypotheses in the field before performing questionnaires, which were formed at the end of reviews done. The finding of this reliability test was detected 0.710. Then survey forms considered to be reliable was done.

Works have been carried out to determine required number of sample group to represent the universe. To determine the sample size, in $n = \frac{Z^2.p.q}{d^2}$ equation, z=1.96 corresponding to 0.05 significance level, the sensitivity (d) =0.05 and the values of p and q taken 0.5, the sample size was calculated 384. However, to increase reliability, 415 questionnaires were applied.

Participants

The sample profile regarding the participants' genders, ages, educational backgrounds, homeland and marital statuses were demonstrated in Table 2.

Table 2. The Values for Demographic Variables of the Participants

Demographic Characteristics		**Sıklık**	**%**	**Demographic Characteristics**		**Sıklık**	**%**
Gender	Women	207	49,9	Marital Status	Married	27	6,5
	Men	208	50,1		Single	388	93,5
Age	18-25	378	91,1	Educational Background	Literate	4	1,0
	26-33	29	7,0		Secondary Education	5	1,2
	34-41	3	0,2		High School	13	3,1
	42-49	1	0,2		University Student	325	78,3
	50 and over	3	1,2		University Graduate	60	14,5
Region	Marmara Region	102	24,6		Master/PhD Graduate	8	1,9
	Central Anatolia Region	121	29,2	Province	Aegean Region	71	17,1
	Black Sea Region	53	12,8		Southeast Anatolia Region	17	4,1
	Eastern Anatolia	34	8,2		Mediterranean Region	17	4,1

Procedures

The linguistic statements in the 5-point Likert scale used in the questionnaire form were formed as follows: 1-Strongly Disagree, 2-Disagree, 3-Partly Agree, 4-Agree, 5-Strongly Agree. Because there is no definite right or wrong for the latent variables tried to be measured (Dubois, Prade and Francesco, 1998; Zimmermann, 2001) and in order to make significant and useful inferences (Caporaletti and Dula, 1999; Dorsey and Coovert, 2003), the statements given by the participants were defuzzified with the fuzzy logic theory.

For the linguistic terms used in the study, a triangle membership function was used. Firstly, input values were changed into fuzzy values according to the membership function determined. In the second step, the database was formed based on expert opinions (Chen, 1997) in the application area and correlations between the input values and the output values were determined. In the third step, among available data related to rules based on the expert knowledge, inferences were made based on Mamdani style (Chen, 1997), which is widely regarded as appropriate to human behaviours. The obtained fuzzy outputs as a result of this were defuzzified using Center of Gravity (CoG) method, which is the mostly-used method, and they were changed into numeric values. The defuzzified numbers corresponding to the linguistic variables and their equivalents in the 5-point Likert scale are shown in Table 3.

Table 3. Defuzzified Linguistic Variables

Linguistic Variables	Defuzzified Number	Equivalent In The 5-Point Scale
1-Strongly Disagree	0.15	0.75
2- Disagree	0.25	1.25
3- Partly Agree	0.50	2.5
4- Agree	0.75	3.75
5- Strongly Agree	0.85	4.25

Exploratory factor analysis was conducted on the data matrix composed of 32 variables in total in the questionnaire form. The factors obtained at the end of the exploratory factor analysis are discrete because they measure different dimensions. When a factor is referred, it means dimension rooted in various variables. Within this framework, 32 variables were analyzed and five variables totally independent from each other were obtained at the end of the practices. While total variable quantity obtained at the results of factor analyses conducted was 32, variables with high correlations among each others were analyzed after removing variables with factor loadings below 0.5. In literature, the total explained variance ratio with 0.50 and higher is accepted as good for validation (Bagozzi and Yi, 1988; Henson and Roberts, 2006; Varki and Colgate, 2001). The number of removed variables is 16 and the total number of evaluated variables is 16. Factor loadings regarding the variables are given in Table 4.

Before testing the hypotheses, confirmatory factor analysis was conducted for the validity of the structure. The data obtained from the results of confirmatory factor analysis were accepted as valid because they indicated acceptable fit.

Structural Equation Modeling (SEM) called LISREL was used to analyze the data. Total sample size (415) enables all 16 variables to be used, which were created to

measure 5 latent variables of the structural modelling[1]. Three endogenous (dependent) latent variables, Attitude toward Using, Behavioral Intention to Use, and Actual System Use, were measured by 3 variables. Exogenous (independent) latent variables, Perceived Usefulness and Perceived Ease of Use were measured by three and four variables respectively.

Table 4. The Results of Factor Analysis

	Component				
	1	2	3	4	5
BIU3	,907				
BIU2	,902				
BIU4	,847				
ATU2		,888			
ATU5		,867			
ATU4		,835			
ASU6			,915		
ASU3			,873		
ASU7			,784		
PU9				,800	
PU8				,704	
PU7				,666	
PU3				,660	
PEU2					,729
PEU1					,720
PEU4					,675

Notes: PEU: Perceived Ease of Use, **PU**: Perceived Usefulness,
ATU: Attitude Toward Using, **BIU**: Behavioral Intention to Use,
ASU: Actual System Use

Data Analysis and Findings

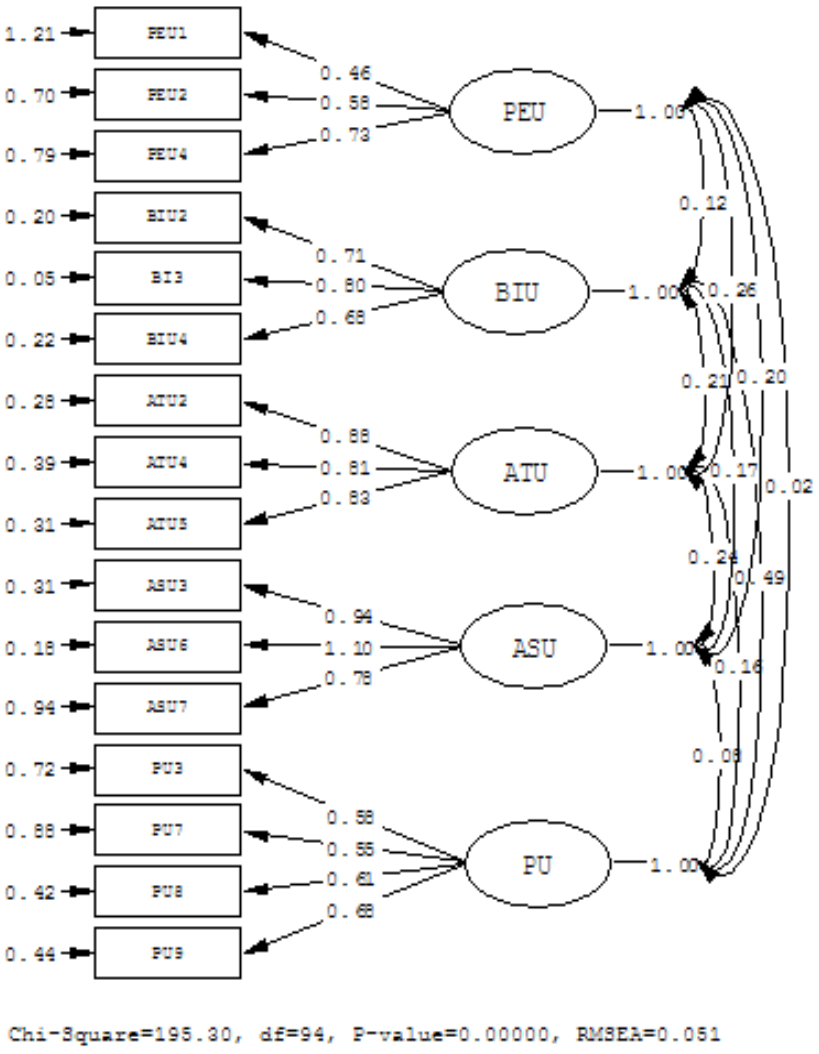
T-Test and One-way ANOVA were used to assess whether there is a statistically significant relationship between the demographic characteristics of participants and the level of technology acceptance. As the result of analysis, there is no statistically significant relationship between the demographic characteristics of participants and the level of technology acceptance. Therefore, H1.1, H1.2.and H1.3 hypotheses were rejected.

In order to determine the direct and indirect relationships between the dimensions of technology acceptance, numbers deffuzzified using fuzzy logic were used in Structural Equation Modeling.

Structural Equation Model (SEM) is a multivariable statistical approach that is similar to the linear regression analysis and that models the interactions between institutional structures by adding the measuring errors and the relations between the errors to the structures. Confirmatory Factor Analysis (CFA) results regarding whether the data set of the participants from which the items of this structure that was established according to the TAM were formulated are given in Figure 3, and it was determined that all correlations for this data set were significant.

[1] When the hypotheses to the Structural Equation Modeling were provided, the minimum sample size needs to be larger than the number of covariance or correlations within input data matrix (Hair, Anderson, Tatham & Black, 1998; Schermelleh-Engel, Moosbrugge & Müller, 2003).

Figure 3. The Results of Confirmatory Factor Analysis (CFA)



Notes: PEU: Perceived Ease of Use, **PU**: Perceived Usefulness, **ATU**: Attitude Toward Using, **BIU**: Behavioral Intention to Use, **ASU**: Actual System Use

After the Confirmatory analysis of the model to be constructed was performed, it was determined that the model is practicable and thus emerged the need to construct the model and check its goodness-of-fit values.

To find this direct or indirect effect, firstly, various goodness-of-fit indexes are used to assess the conformity of the Structural Model to be constructed and statistical functions that these indexes have. Mostly used among the suggested indexes are likelihood ratio chi-square statistics, RMSEA (Root mean square error approximation), GFI (Goodness of fit index), AGFI (Adjusted Goodness of fit index) and (Joreskog and Sorbom, 1989). Other conformity measurements are CFI (Comparative Fit Index) and NFI (The Normed Fit Index). These measures have values between 0 and 1(Cheng, 2001). Along with the chi-square value, mostly GFI, AGFI, RMSEA, CFI and NNFI measures are used.

Goodness of fit indexes of the research model, model parameters and fit states are shown in Table 5. Whole model is sufficient in terms of acceptable boundary values of the fit parameters (Schermelleh- Engel et al., 2003).

Table 5.Fit Parameters

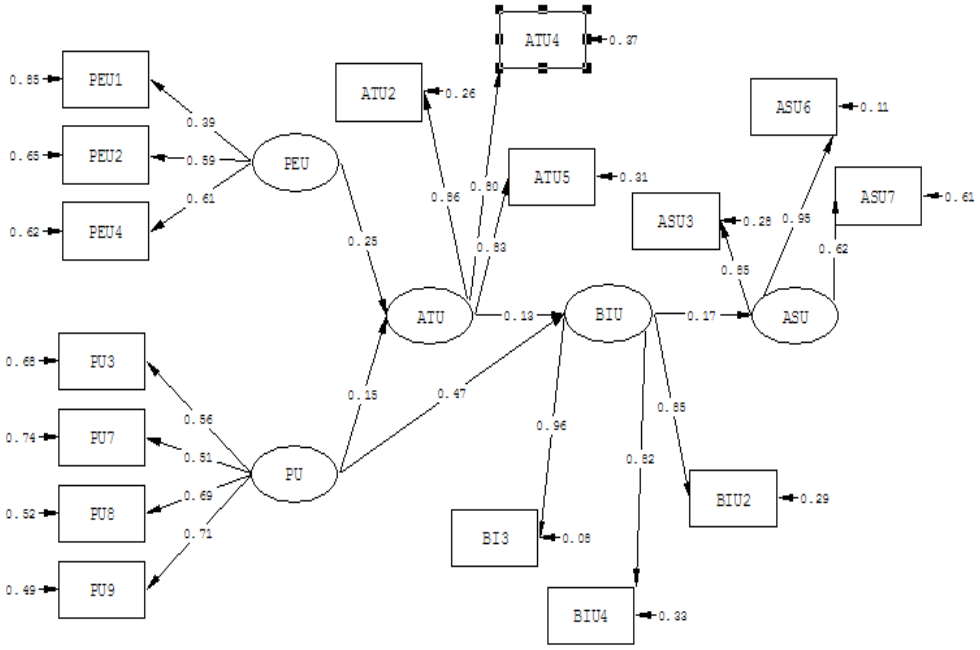
Evaluation Criteria	Good Fit	Acceptable Fit	Proposed Model Data
RMSEA	0≤RMSEA≤0.05	0.05≤RMSEA≤0.08	0.055
P Value for Close Fit Test (RMSEA<0.05)	0.01≤p≤1.00	0.05≤p≤0.10	0.045
RMR	0≤SRMR≤0.05	0.05≤SRMR≤0.10	0.067
NFI	0.95≤NFI≤1.00[a]	0.90≤NFI≤0.95	0.93
NNFI	0.97≤NNFI≤1.00[b]	0.95≤NFI≤0.97	0.95
CFI	0.97≤CFI≤1.00	0.95≤CFI≤0.97	0.96
GFI	0.95≤GFI≤1.00	0.90≤GFI≤0.95	0.95
AGFI	0.90≤AGFI≤1.00	0.85≤AGFI≤0.90	0.91

The correlations among the latent variables in the structural equation model were analyzed. The results of analysis conducted in parallel to the model constructed with the independent latent variables (perceived usefulness and perceived ease of use) and dependent latent variables (attitude toward using, behavioral intention to use and actual system use) were demonstrated in Figure 4.

Path coefficients were demonstrated on the arrows in structural model. All path coefficients of model were found significant.

The Path coefficients can be interpreted like the standard coefficients in a regression analysis. The Path coefficient between behavioral intention to use and actual system use was found 0.17. This means that when participants' behavioral intention to use increases by 1 unit, actual system use will rise 0.17 unit (R^2= 0.03). It was detected that when others are ceteris paribus, a 1 unit increase in attitude toward using will cause a 0.13 unit increase in behavioral intention to use (R^2= 0.26), a 1 unit increase in perceived ease of use and perceived usefulness will cause a 0.25 (R^2=0.09) and 0.15 (R^2=0.09) unit increase in attitude toward using, respectively.

Figure 4. Structural Model with Standardized Parameters



Notes:PEU: Perceived Ease of Use, **PU**: Perceived Usefulness, **ATU**: Attitude Toward Using, **BIU**: Behavioral Intention to Use, **ASU**: Actual System Use

Table.6. Path Coefficients for the Structural Model

Relations	Path Coefficients	SE	t-Value	Hypotheses
BIU→PU	0.47	0.057	8.58	ACCEPTED
PU→ATU	0.15	0.061	2.43	ACCEPTED
PEU→ATU	0.25	0.069	3.69	ACCEPTED
ATU→BIU	0.13	0.051	2.65	ACCEPTED
BIU→ASU	0.17	0.053	3.27	ACCEPTED

Note: All path parameters were significant at α =0.05 level (t-value>1.96).

The study's hypotheses H2.1, H2.2, H2.3, H2.4 and H2.5 were accepted at the significance level of 0.05. In addition, it was found that the mean scores of the responses that the participants gave in the dimension of perceived usefulness were the highest for the expressions "I can do shopping, manage banking affairs and other daily affairs in a short time by using information and communication technologies" (3.6030) and "Using information and communication technologies saves time" (3.4205). In the dimension of perceived ease of use, on the other hand, the expression whose mean score was the highest is "The rapid advancement of information and communication technologies decreases their use, I think the reason behind this is the lack of information provided regarding the developments" (3.1741). In the dimension of attitude, finally, the expressions "Information technologies destroy the real life" (3.2602) and "Information technologies corrupt the society's culture" (3.2223) received the highest mean scores.

Conclusions

The use of information technologies is above all dependent upon the existence of necessary technical and human infrastructure. Unless this infrastructure exists, we cannot speak of people's utilization of it. Therefore, governments and businesses today allocate a great deal of their resources to invest in information technologies. However, even though the existence of technology is a prerequisite, it is not always enough for the use of these technologies. In this respect, it is necessary to define the driving forces and factors that affect technology use.

In this study, which was carried out by using the TAM that helps define the psychosocial factors influencing people's acceptance of technology, it was determined that the perceived ease of use is more influential in people's acceptance of technology than the perceived usefulness is. It was also found that technology acceptance does not differ significantly at the statistical significance level of 0.05 with respect to the participants' demographic characteristics (age, gender, education level, hometown etc.). In addition, analyses performed to define the relationships between the dimensions of the TAM yielded results that highly supported the TAM.

It was determined after the research that the participants' belief that using technological devices will improve their job performances affects their intentions to use technology more than the attitudes they will develop; and also that the ease of use of technological devices influences their attitudes. It is thus concluded that users still experience difficulties in using technological devices and that they are unable to see the benefits of technology use, given the fact that, according to TAM model, firstly users' attitudes affect their intentions and then intentions affect the realization of use. Therefore, it was determined that the participants' notions of using technology in every field have not yet matured.

These findings suggest that education should be given to Turkish people throughout their education lives using technological devices in order for them to be able to utilize technology in all fields. It should not be forgotten that in Turkey, which has a considerable young population, the technological investment to be made on young people would also influence families and enable them to purchase and use technological devices. Turkey, thus, will have a greater role in the global economy through these major technological investments.

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