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A STUDY ON THE ACCEPTANCE OF INFORMATION TECHNOLOGIES FROM THE PERSPECTIVES OF THE ACADEMICIANS IN TURKEY

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ABSTRACT

Educational institutions have been increasingly started to use information technologies (ITs) for improving the service quality and achieving the effective organizational outputs in a competitive global environment. An individual's intention to use ITs is a crucial factor in determining the success or failure of an information technology (IT) system implementation. This study attempts to investigate the factors affecting the intention to use ITs from the academicians' perspectives in Turkey. This research extends the technology acceptance model (TAM) framework with subjective norm (SN) and facilitating conditions (FC) acting as external variables. The model has been tested using web-based data collected from 510 academicians. The findings demonstrate that this extended TAM can explain 80% of the variance of intention to use ITs. And also, SN and FC are potential variables that may be used to extend the TAM for the research on the academicians' intention to use towards ITs. This study reveals that educational managers can use this research model as a helpful tool in better understanding stakeholders' behaviors related to the technology acceptance, and also in the process of IT investment, implementation and renovation.

Key Words: Academicians, Educational technology acceptance, Subjective norm, Facilitating conditions, TAM, IT, SEM

1. INTRODUCTION

With increasing global competition, as more tasks involve human-Information Technology (IT) interaction, IT literacy has become a key factor for both occupational and personal successes. Therefore, as we move into such a technology-based society, it is important that experiences with Information Technologies (ITs) are made available for all academicians.

The rapidly growing trend towards use of new information technologies in higher education institutions (Bannan-Ritland et al., 2000 p.39; Bratina et al., 2002 p.7; Wiley, 2001 p.494) has made user acceptance an increasingly critical issue, as the end users are very important for the effective use of the information technologies (Cheney and Dickson, 1982 p.171). Although user acceptance has received fairly extensive attention in prior research, the majority of these studies have focused on specific information systems in Management Information Systems (MIS) fields, other than education. There is scarce research literature that addresses learner intention to use (IU), and acceptance of educational technologies (McMahon et al., 1999 p.303, Mun and Hwang, 2003 p.433). New trend in education such as lifelong learning developed learning and teaching methods, and virtual education supports the studies to be done related to the technology acceptance process. (Martinez-Torres et al., 2008, p.495; Turan and Colakoglu, 2008, p.106-111; Varol et al.,2010, p.91-93).

Information Technology has been a significant research area for some time, but its nature has changed considerably since the over a decade ago. Many researchers have proposed theories and models of technology acceptance in order to explain and predict user acceptance with technology in order to account for rapid change in both technologies and their environments. Each theory or model has been proposed with different sets of determinants. According to the meta-analysis study of Legris et al. (2003, p.191), literature indicates that TAM and its extended variations can explain up to %40 the variance of IU for the different contexts. It has been thought that a different TAM extended with the new variables may explain the variance of IU at a higher level. Researchers in MIS recently also suggest that factors influencing intention to use Information Systems (IS) may vary, and the degree of influence of the same factors differs with different stages of adoption (Legris et al., 2003 p.200-202, Lu et al. 2005, p.246).

An individual's technology acceptance is a crucial factor in determining the success or failure of a computer systems project. Given that the academician is the key to effective use of information technologies in the university educational system, it is important to understand academicians' IU towards IT and the factors that influence these intentions. The successful use of ITs in academic life will depend largely on subjective norm (SN) and facilitating conditions (FC) of academicians and their willingness to embrace the technology. Literature has points out that FC and SN are suitable variables to be used in designing a new extended TAM. Hence, this study extends the technology acceptance model

(TAM) framework, with SN and FC acting as external variables to be able to answer some questions relating to the acceptance and usage of technology of the academicians in teaching, learning and their academic studies (Davis 1989, p.319 and 1993, p.475).

2. LITERATURE REVIEW

2.1. Factors Effecting Information Technology's Use

IT at both workplace and at home influences whether an individual user uses the technology. Consequently, there has been enormous investment in building IT infrastructure in order to ensure that there are enough hardware and software resources available in organizations. However, the sole availability of infrastructure does not guarantee actual usage in daily routines. It is also very important to understand key motivational variables in IT use of individual end users. Recent studies find that instructors and students are still reluctant to engage in an active or sustained manner in activities using IT (Reffell and Whitworth, 2002 p.427and434). The actual formal use of IT in undergraduate and graduate studies still remains inconsistent and varies significantly from individual courses to individual institutions (Breen et al., 2001, p.111, 112 and 113; Marriott et al., 2004 p.121-122). At present more studies propose that further research design should extend beyond the technology-based tools as to include a broader range of social factors (Bielaczyc, 2006 p.325; Selwyn, 2007 p.84). Thus, in order to predict and understand academicians' technology use and acceptance a well- defined framework is essential.

The Technology Acceptance Model (TAM) has been the most widely adopted theoretical framework to study technology acceptance. Perceived usefulness (PU) and perceived ease of use (PEOU) are hypothesized to be the fundamental determinants of user acceptance (Davis, 1989 p.330). Legris et al. (2003, p.202) concluded: "TAM is a useful model, but has to be integrated into a broader one which would include variables related to both human and social change processes and to the adoption of the innovation model''. Consequently, while we took TAM as the core framework in our study, we also looked for appropriate human and social constructs to be put into the framework in order to provide a better understanding to the exploration of IT acceptance amongst academicians. After reviewing relevant literature, it is found that ''Facilitating conditions'' (FC) of users and ''subjective norm'' (SN) of the users' workplace are appropriate constructs to be considered in formulating the composite framework.

2.2. Technology Acceptance Model

The foundation of technology acceptance model is based on the theory of reasoned action by Fishbein and Ajzen (1975, p.410, 449, 450, 508 and 509), and the theory of planned behaviour (Ajzen, 1991, p.179, 206 and 207) derived from theory of reasoned action. The theory suggests that a person's belief

determines his/her attitude toward things. An attitude is a kind of perceived behavioral control, and a high degree of perceived behavioral control will introduce behaviour intention, and result in actual behaviour.

The original technology acceptance model suggests that two beliefs named PU and PEOU are instrumental in explaining the variance in users' intentions. PU is the degree to which a person believes that using a particular system will enhance his or her job performance. PEOU is the degree to which a person believes that using a particular system will be effortless. These factors are common in technology usage settings and can be widely applied to solve the acceptance problem (Taylor and Todd, 1995 p.168-170).

An individual's attitude is hypothesized to influence the behavioral IU a technology, finally relating to actual use. TAM deviated from Theory of Reasoned Action (TRA) from the start, by leaving SN out of the model. Furthermore, the mediating role of attitude was doubtful. Information systems researchers have investigated the technology acceptance model, and found it to be valid in predicting the individual's acceptance of corporate IT systems (Segars and Grover, 1993, p.521-524; Chin and Todd, 1995 p.244; Doll et. al., 1998 p.855). However, as more and more key motivational determinants were found, the mediating effect of attitude towards behavioral intention to computer technology use diminished.

In the follow-up model Venkatesh and Davis (2000 p.197) proposed an extension, TAM2, which consisted of social influence processes (SN, voluntarism, and images) and cognitive instrumental processes (job relevance, output quality, result demonstrability, and PEOU), but it omitted attitude to use due to weak predictors of behavioral IU. That means the attitude component was not included anymore, and the perceived technology characteristics directly influence the individual's IU the new technology under consideration. Additionally, social influences (operationalized as SN) re-entered the model. In a recent review, it was found that nearly half of the studies being reviewed found attitude non significant and did not include attitude in their model framework (Legris et al. 2003 p.200). It seemed that attitude was once actively used but had been excluded from more recent computer technology acceptance studies. However, other models have been proposed as well. Recently, Venkatesh et al. (2003 p.447) integrated eight models of technology acceptance into the Unified Theory of Acceptance and Use of Technology (UTAUT).

We choose to rely on the more traditional and confirmed TAM2 extended by Venkatesh and Davis (2000 p.197) as the basis for our conceptual model. This means we include SN, but exclude attitude.

2.3. Facilitating Conditions

FC related to factors that are present in the environment that exert an influence over a person's desire to perform a task. Conditions and events that create a positive environment for technology adoption such as training and education and organizational technical support can be seen as elements of organizational facilitators (Frambach and Schillewaert, 2002 p.167; Schillewaert et al., 2005 p.325). In their study, Groves and Zemel (2000, p.57) found out that information or materials availability, skills training, and administrative support were estimated as very important factors which influenced the use of instructional technologies in teaching. In another study, faculty members responded to barriers included lack of technical support, lack of adequate software equipment, and lack of faculty administrative support that confronted while participating distance education (Daughtery and Funke, 1998 p.37-38). Also in the other study conducted by Farquhar and Surry (1994 p.22) proposed the adopter's individual factors as influential factors which affect the adoption and utilization of the instructional product. They separated organizational factors into two categories as physical environment and support environment. They gave more important place to support environment that includes the resources and services required in order to install and maintain an instructional innovation. Lim and Khine (2006 p.97 and 120) reinforced the importance of the support environment. In their study the teachers referenced to Information and Communications Technologies (ICT) integration to be the lack of access to computers, inadequate technical support and lack of support from peers and inadequate numbers of computers. Training, education and technical support can affect the way an individual applies a technology in a useful way and/or finds it easy to use (Venkatesh, 1999, p.253).

2.4. Subjective Norm

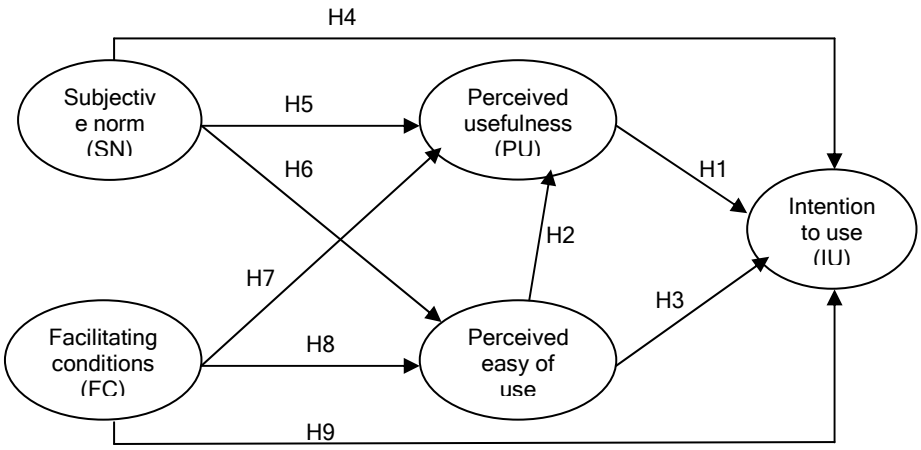
Fishbein and Ajzen (1975, p.16 and 301) defined SN as a person's perception that most people who are important to that person think whether the behaviour in question should or should not be performed by the person. In an organizational setting, it is possible to trace back the concept of 'important people' to the supervisor and the referent group (Teo et al., 2008 p.131). This means that, SN is the degree to which an individual perceives the demands of others on that individual's behaviour. In their study Venkatesh and Davis (2000 p.197) completely assumed this argument in the technology acceptance concept. They claimed that when a co-worker thought the system was useful, a person tended to have the same idea. Individuals can choose to perform a specific behaviour even if they are not positive towards the behaviour or its consequences. SN was found as a strong determinant to behavioral intention, and to a wide range of social behaviors (Fishbein and Ajzen 1975, p.328). SN has been empirically tested and has had a significant direct (Mathieson 1991 p.184-185; Taylor and Todd 1995 p.163-164) or indirect effect (Venkatesh and Davis 2000 p.195) in predicting an individual's IU computer technology. Ballone

and Czerniak (2001 p.24) informed students' positive opinions of the instructor increased in proportion to the use of the computers in the class- room. Marcinkiewicz and Regstad (1996 p.27) conducted a study that directly examined the influence of SN on computer use. They reported that SN is most predictive of computer use, beside self-competence, perceived relevance and perceived innovativeness. Lucas and Spitler (1999 p.291) and Venkatesh and Davis (2000 p.197) also reported that organizational variables such as social norms are more important than user's perceptions of IT in predicting system usage and acceptance.

3. RESEARCH MODEL AND HYPOTHESES

While taking TAM as the core model, SN and FC were introduced to form a composite model to explore academicians' acceptance of IT. The direct and indirect effects of each construct constituted the hypotheses (Figure 1) and were tested through empirical data. Formulation of each hypothesis is described as follows.

Figure 1: Research Model



3.1. Traditional TAM Hypotheses

The TAM suggests that two factors PEOU and PU are the two main factors in explaining system use. PU is defined as the prospective users' subjective probability that using a specific application system will increase his or her job performance within an organizational context (Davis et al., 1989 p.985). This factor has a significant effect on usage intention (Agarwal and Prasad, 1999 p.377; Davis et al., 1989 p.997; Venkatesh, 2000, p.357; Venkatesh and Davis, 2000 p.197). PEOU is defined as the degree to which the prospective user expects the target system to be free of effort (Davis et al., 1989 p.985). This

factor plays a crucial role in understanding individual response to IT (Agarwal and Karahanna, 2000 p.683; Chau and Hu , 2001 p.709; Hong et al., 2001 p.115). Research over the past decade provides evidence of the significant effect PEOU has on usage intention (Agarwal and Prasad, 1999, p.377; Venkatesh, 2000, p.357; Venkatesh and Davis, 2000 p.197). If academicians subjectively thought that IT would help their job performance in any way, it would be a motivation for them to tend to use IT. Therefore, we posited that,

H1: An academician's PU of IT would positively influence his or her IU IT.

Then again, even if an academician thought that IT was useful, he or she might at the same time believe that the system was too difficult to use and that the performance benefits of usage were outweighed by the effort of using IT (Davis 1989, p. 320). Hence It was expected that academician' PEOU of IT would have a direct effect on their IU IT. If academicians perceived IT as hard to use, it would be doubtful that IT could really improve their job performance. That is, it would also affect their subjective evaluation of the usefulness of IT. Therefore, we suggested that,

H2: An academician's PEOU of IT would positively influence his or her PU of IT.

H3: An academician's PEOU of IT would positively influence his or her IU IT.

3.2. The Influence of Subjective Norm

Some studies reported that organizational variables such as social norms are more important than user's perceptions of IT in predicting system acceptance and usage (Lucas and Spitler, 1999 p.304 and Venkatesh and Davis, 2000 p.197). Thus, the social normative component captures the collective effect of these influences on behavioral intention.

H4: An academician's SN perception related to IT use would positively influence his or her IU IT.

In our current study, we were tended to the viewpoint that academicians were close and would be influenced by the thinking of important others both in making their decisions regarding IT acceptance, and in evaluating IT as useful. Therefore, we posited that,

H5: An academician's SN perception related to IT use would positively influence his or her PU of IT.

The academician perceives the important others would think he or she should use IT. He or she would also have a general perception that, as the important others think that he or she should use IT it must be easy to use. Therefore, we proposed that,

H6: An academician's perception on SN has a positive effect on his or her PEOU about IT.

3.3. The Influence of Facilitating Conditions

Training, education and technical support can affect the way an individual applies a technology in a useful way and/or finds it easy to use (Venkatesh, 1999, p.253). Giving hands on sessions and feedback can illustrate functions and features of a technology, thus influencing PU. Furthermore, generally, if somebody demonstrates a technology it is perceived easier to use then if an individual has to learn it by him. Hence, we hypothesized:

H7. An academician's perception of FC related to IT use would positively influence his or her PU of IT.

H8. An academician's perception of FC related to IT use would positively influence on his or her PEOU of IT.

H9: An academician's perception of FC related to IT use would positively influence his or her IU toward IT.

4. METHODOLOGY

4.1. Questionnaire

To examine academicians' acceptances towards ITs with the extended TAM, a questionnaire including 24 items in two parts were designed: 17 questions related to the constructs in the research model; 7 items related to the demographic data. Five questions in PU construct were taken from Davis (1989, p.331),and Chin and Todd (1995 p.244-245) while that four items in PEOU construct were taken from Davis (1989, p.331),and Adams et al. (1992 p.237). Three questions in IU construct were taken from Ajzen and Fishbein (1980, p.42 and 104). Two items in SN scale were taken from Taylor and Todd (1995 p.174).Three items in FC construct were taken from Thompson et al. (1991 p. 132) (see Table 1). Because of the general tendency of using and its simplicity, A Likert-type scale ranging from 1 (strongly disagree) to 5 (strongly agree) were preferred for measuring 14 items in the constructs of the model. The constructs, sources of the constructs, and items are summarized in Table 1.

Table 1: Constructs, Items and Sources

Perceived usefulness PU1. Using technology increases my productivity. PU2. Using technology improves my job performance. PU3. Using technology enhances my effectiveness on the job. PU4. Using technology makes it easier to do my job. PU5. Overall, I find technology useful in my job. Davis (1989, p.331), Chin and Todd (1995, p.244-245).
Perceived ease of use PEOU1. Learning to operate technology is easy for me. PEOU2. I find it easy to get the technology to do what I want it to do. PEOU3. My interaction with the technology is clear and understandable. PEOU4. Overall, I find the technology easy to use. Davis (1989, p.331), Adams et al. (1992, p.237).
Intention to use IU1. I intend to use technology in my job when it becomes available to me. IU2. I intend to use technology for my customers as often as needed. IU3. To the extent possible, I would use technology with my customers and management frequently. Ajzen and Fishbein (1980 p.42 and 104).
Subjective norm SN1. People whose opinions I value will encourage me to use Communication Technologies. SN2. People who are important to me will support me to use Communication Technologies. Taylor and Todd (1995, p.174).
Facilitating conditions FC1. When I need help to use Communication Technologies, guidance is available to me. FC2. When I need help to use Communication Technologies, specialized instruction is available to help me. FC3. When I need help to use Communication Technologies, a specific person is available to provide assistance. Thompson et al. (1991, p.132).

4.2. Sampling and Participants

At the research time, there were 94 state and 31 foundation universities in Turkey. Survey was designed as a web page link based. Questionnaires were sent to the academicians working in 7 state universities, that were 15 years old and up, randomly chosen from 7 regions in Turkey. And also these state universities were the ones that we had been able to reach the e-mails of their academicians. Questionnaires were sent to all academicians in every department at these universities and completed anonymously. Numbers of academicians sent e-mail were 5814. Response rate was 8.77 % with a valid number of 510 academicians, including instructors, lecturers, research assistants, and professors. Demographic data percentages related to the gender, age, academic title and academic units are given in Table 2.

Table 2: Demographic Valid Percents (N=510)

Gender	%	Age	%	Academic Title	%	Academic Units	%
Female	49.7	30 and below	23.8	Professor Dr.	14.6	Institutes	5.1
Male	50.3	31-40	38.6	Associate Prof. Dr.	13.0	Faculties	75.9
		41-50	22.5	Assistant Prof. Dr	19.8	Schools	8.3
		51-60	11.2	Instructor	21.5	Vocational schools	7.9
		61 and up	3.9	Lecturer	2.6	Research centers	1.2
				Research assistant	25.9	Others	1.6
				Expert	2.6		

4.3. Research Analyses

For questionnaire scales, an explanatory factor analyses (Kaiser-Meyer- Olkin and Barlett's Test, Maximum Likelihood and Direct Oblimin Rotation Method) were performed. Cronbach's alpha reliability analyze was performed to assess the reliability of the latent variables in the research model. "If item deleted" method was also used in analyses for items of the constructs. Overall measurement quality was determined using CFA (Gerbing and Anderson 1988 p.187). Structural Equation Modelling was used to test assumed hypotheses.

5. FINDINGS

The values of the sampling adequacy for PU, PEOU, IU SN and FC were acceptable. Kaiser-Meyer- Olkin (KMO) test value was 0,914. Significance values for Barlett's test of sphericity approved reliability (p=0.000). Measures of Sampling Adequacy (MSA) values were between 0.77 and 0.97. Results of the factor analysis with Maximum Likelihood and Direct Oblimin Rotation Methods confirmed the research data. The calculation values of Cronbach's alpha for each of the constructs used were found greater than the acceptable limit (Cronbach's alphas $\geq$0.88). These analyses showed that all data values of results were determined suitable for, and included into the further tests. The reliabilities, means, standard deviations and spearman correlation coefficients for the scales are presented in Table 3.

Table 3: Reliabilities, Scales Means, Standard Deviations and Spearman Correlations

Construct [number of items]	Croanbach's Alpha**	Mean	SD	1	2	3	4	5
1. Perceived usefulness (PU) [5]	0.95	4.59	0.73	1				
2. Perceived ease of use (PEOU) [4]	0.89	4.05	0.79	0.453*	1			
3. Intention to use (IU) [3]	0.90	4.45	0.72	0.604*	0.698*	1		
4. Subjective norm (SN) [2]	0.88	3.69	0.96	0.267*	0.413*	0.336*	1	
5. Facilitating Conditions (FC) [3]	0.92	3.14	1.04	0.278*	0.054	0.164	0.414*	1

*p<0.01 **Value with only 2 items represents correlation; values with more than 2 items represent Cronbach's alphas.

5.1. Measurement Model

After exploratory data analyses, a confirmatory factor analysis (CFA) using Lisrel software were performed to find out overall measurement quality of the research model. CFA results approved the outputs of the exploratory analyses. The measurement model had a Chi-square of 249.81 (p= 0,000) with 105 degrees of freedom (df). The ratio of chi-square/df of the measurement model was 2.38. The root mean square error of approximation (RMSEA) of the measurement model was 0,052, and the root mean square residual (RMSR) was 0,030, indicating an acceptable fit (Hooper et al., 2008, p.53-56; Reisinger and Mavondo, 2006, p.56-57). Overall, the measurement model indicated an acceptable fit with a normed fit index (NFI) of 0.98, and a comparative fit index (CFI) of 0.99 (Hu and Bentler, 1999, p.27-28). The goodness-of-fit index (GFI) is 0.95, the adjusted goodness-of-fit index (AGFI) is 0.92, and the parsimony normed fit index (PNFI) is 0.76. CFA results confirmed the overall measurement quality of the research model (Gerbing and Anderson 1988, p.187).

5.2. Research Model

The research hypotheses related to the structural equation model were tested using Lisrel software. The findings of the structural equation model presented in Figure 2 (also see Figure 1) showed an acceptable fit of the data; the resulting Chi-square is 414.32 with 109 degrees of freedom (Chi-square/df = 3,80, p< 0.000, RMSEA= 0.074, RMSR=0.033, GFI = 0.91, AGFI = 0.88, NFI=0.98, CFI=0.98) (Hooper et al., 2008, p.53-56).

Standardized path coefficients and their corresponding t-values and results related to the research model hypotheses were given in the Table 4 (also see Figure 2).

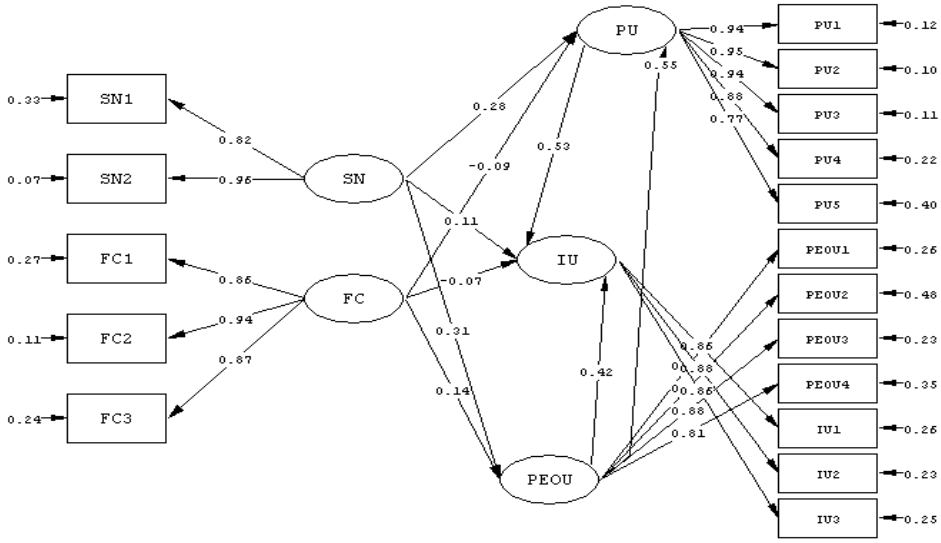
H1 suggested that an academician's PU would directly influence his or her IU and standardized path coefficient supports this hypothesis (p< 0.01) (See Figure 2 and Table 4).

Hypothesis H2 predicted that PEOU has a positive affect on PU. As expected, path coefficient for PU was statistically significant (p< 0.01) and this hypothesis was accepted (See Figure 2 and Table 4).

H3 involved that an academician's PEOU would directly influence his or her IU. Since the path coefficient between PEOU and IU constructs was statistically significant (p< 0.01) (See Figure 2 and Table 4), H3 hypothesis was accepted.

H4 suggested that SN is positively related to IU. Since the path coefficient between SN and IU constructs was statistically significant (p< 0.01), H4 hypothesis was accepted (See Figure 2 and Table 4).

Figure 2: The Research Model



Chi-Square=414.32, df=109, P-value=0.00000, RMSEA=0.074

H5 supposed that SN positively affects PU. As expected, path coefficient between SN and PU was statistically significant at the 0.01 level, and this hypothesis was accepted (See Figure 2 and Table 4).

H6 suggested that SN has a positive affect on PEOU and standardized path coefficient supports this hypothesis (p< 0.01) (See Figure 2 and Table 4).

Table 4: Results of Hypothesis Tests

Hypothesized Paths		t Values	Standardized Path Coeffic.	Results
H1	Perceived usefulness (PU) - Intention to use (IU)	13.02*	0.53	Supported
H2	Perceived ease of use (PEOU) - Perceived usefulness (PU)	12.44*	0.55	Supported
H3	Perceived ease of use (PEOU) - Intention to use (IU)	10.34*	0.42	Supported
H4	Subjective norm (SN) - Intention to use (IU)	3.04*	0.11	Supported
H5	Subjective norm (SN) - Perceived usefulness (PU)	6.19*	0.28	Supported
H6	Subjective norm (SN) - Perceived ease of use (PEOU)	5.69*	0.31	Supported
H7	Facilitating conditions (FC) - Perceived usefulness (PU)	-2.19**	-0.09	Not supported
H8	Facilitating conditions (FC) - Perceived ease of use (PEOU)	2.71*	0.14	Supported
H9	Facilitating conditions (FC) - Intention to use (IU)	-2.28*	-0.07	Not supported

*p < 0.01; **p < 0.05; Chi-square = 414.32; df = 109; Chi-square/df = 3.80; p< 0.000; RMSEA= 0.074

Hypothesis H7 predicted that FC was positively related to PU. The path coefficient related to H7 was statistically significant (p< 0.05), but this significantly relationship had been negatively, as not expected. And this hypothesis was rejected.

H8 involved that FC directly and positively influence an academician's PEOU. This hypothesized effect of FC on PEOU was supported by the data (p< 0.01) so that H8 hypothesis was accepted (See Figure 2 and Table 4).

H9 supposed that FC positively affects IU. Path coefficient between FC and IU was statistically significant, but negatively. And this hypothesis was rejected (See Figure 2 and Table 4).

5.3. Modified Research Model

In the hypothesized research model, hypotheses H7 and H9 were rejected. In spite of FC had significantly impacts on PU and IU, these effects were negatively instead of positively as expected. These results do not seem consistent to the logic. After the modification of error covariance, these effects of FC on PU and IU were insignificantly with T values of -1.71 and -1.64. Hence these relations were crossed out from the hypothesized research model and a modified research model was designed for recalculation (See Figure 3 and Figure 4).

Figure 3: The Modified Research Model

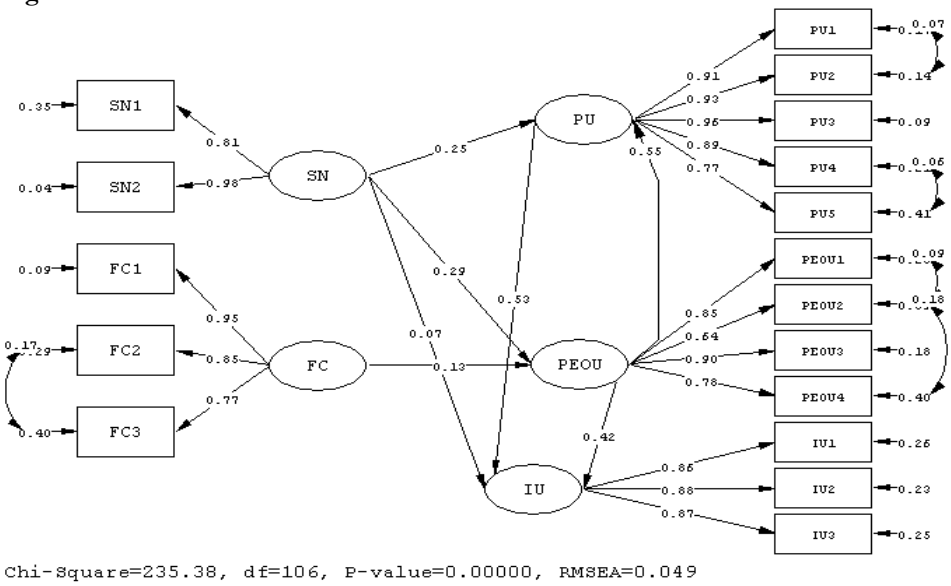
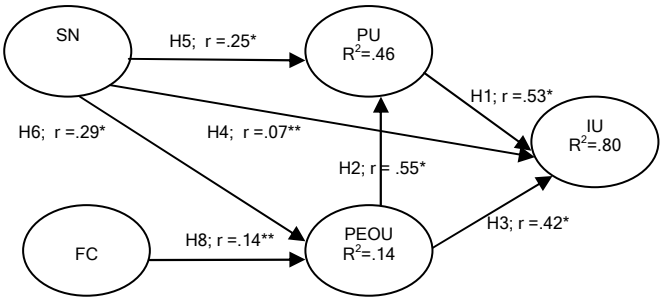


Figure 4: The Modified Model Test Results



*p < 0.01; **p < 0.05; Chi-square = 235.38; df = 106; Chi-square/df = 2.22; p< 0.000; RMSEA= 0.049

After modification, new structural research model was reanalyzed with Lisrel software. Results of this analysis presented an acceptable fit of data. The modified model had a Chi-square of 235.38 (p= 0.000) with 106 degrees of freedom (df). The ratio of chi-square/df of the measurement model was 2.22. The root mean square error of approximation (RMSEA) of the measurement model was 0.049, and the root mean square residual (RMSR) was 0.035, indicating an acceptable fit (GFI = 0.95, AGFI = 0.93, NFI=0.99, CFI=0.99) (see Figure 3, Figure 4 and Table 5).

The results of the structural equational model analyses are shown in Table 5, Figure 3 and Figure 4. All of the path coefficients obtained from these analyses

were statistically significant (*p< 0.01 and **p< 0.05). These results of the modified model analyses also showed that SN and FC explained significantly 14% of the variance of PEOU. SN and FC had a direct effect on PEOU. SN and PEOU had a direct impact on PU and explained 46% of the variance of PU. PEOU also mediated a relationship between SN and PU. 80% of the variance of IU was explained by SN, PEOU and PU. SN showed a mediating impact on IU through PEOU and PU. FC also had a mediating effect on IU through PEOU.

Table 5: The Results of the Analysis of the Modified Model

Hypothesized Paths		t Values	Standardized Path Coeffic.	Results
H1	Perceived usefulness (PU) - Intention to use (IU)	12.75*	0.53	Supported
H2	Perceived ease of use (PEOU) - Perceived usefulness (PU)	12.54*	0.55	Supported
H3	Perceived ease of use (PEOU) - Intention to use (IU)	10.35*	0.42	Supported
H4	Subjective norm (SN) - Intention to use (IU)	2.30**	0.07	Supported
H5	Subjective norm (SN) - Perceived usefulness (PU)	6.13*	0.25	Supported
H6	Subjective norm (SN) - Perceived ease of use (PEOU)	5.26*	0.29	Supported
H8	Facilitating conditions (FC) - Perceived ease of use (PEOU)	2.42**	0.14	Supported

R^2	Perceived usefulness (PU)	Perceived ease of use (PEOU)	Intention to use (IU)
	0.46	0.14	0.80

*p < 0.01; **p < 0.05; Chi-square = 235.38; df = 106; Chi-square/df = 2.22; p< 0.000; RMSEA= 0.049

6. DISCUSSION AND CONCLUSIONS

With increasing global competition, IT literacy has become a key factor for both occupational and personal successes. An individual's technology acceptance is a crucial factor in determining the success or failure of a computer systems project. Given that the academician is the key to effective use of information technologies in the university educational system, it is important to understand academicians' IU towards IT and the factors that influence these intentions. Examining SN and FC of academicians could answer some questions relating to acceptance and usage of technology in teaching, learning and their academic studies. The purpose of this study is to examine academicians' acceptances towards ITs. This study extends the technology acceptance model (TAM) framework, with SN and FC acting as external variables.

Seven of the nine hypotheses of the initial research model were approved by data. H7 and H9 were rejected: FC had significantly but negatively effect on PU and IU; these results were not in the directions of expectations. This output also

does not seem appropriate to the common sense. After modification, these relationships were insignificantly, and were crossed out from the hypothesized research model and a modified research model was designed for reanalyzing. The values of goodness-of-fit for modified structural equation model improved.

As expected, PU has a direct influence on IU. This result is consistent to the prior researches (Agarwal and Prasad, 1999, p.377; Davis et al., 1989, p.330; Venkatesh, 2000, p.357; Venkatesh and Davis, 2000, p.197).

PEOU showed a significant influence on an academician's IU IT. This direct relationship between PEOU and IU was consistent to the previous studies (Agarwal and Karahanna, 2000, p.683; Agarwal and Prasad, 1999, p.377; Chau et. al. 2001, p.709; Hong et al., 2001, p.115; Venkatesh, 2000 p.357; Venkatesh and Davis, 2000, p.197).

PEOU had a direct positive affect on PU, and also PEOU had a mediating impact on IU through PU. This result impacts that the easier the use of IT is perceived to be, the more likely academicians will perceive their usefulness. These findings approved the earlier studies (Agarwal and Prasad, 1999, p.377; Burton-Jones and Hubona, 2006, p.712; Davis et al., 1992, p.330 and Shang et al., 2005, p.408). These direct and mediating impacts of PEOU and PU on IU strengthened IU, and this situation was a consistent result to the TAM model (Taylor and Todd, 1995; Schillewaert et al, 2005, p.325).

Among the variables within the TAM, PU, rather than PEOU, had a greater effect on IU. But PEOU additionally had a fortified mediating effect on IU via PU. SN had a significant direct influence on PU, PEOU and IU, and mediating effect on IU through PU and PEOU. These results were consistent to the previous studies (Mathieson 1991, p.184-185; Taylor and Todd 1995, 168-170; Venkatesh and Davis 2000, p.197) in predicting an individual's IU technology. The direct impact of SN on IU was lower than the ones on PEOU and PU. This showed that the mediating effects of SN were considerable.

FC indicated a direct influence on PEOU. This results support the previous studies related to FC, PEOU and IU (Frambach and Schillewaert, 2002, p.167; Groves and Zemel, 2000, p.57; Schillewaert et al., 2005, p.325; Venkatesh, 1999, p.253).

As not expected, FC did not had any impact on PU and IU. This result did not support the prior studies on the subject of FC, PU and IU (Groves and Zemel, 2000, p.57; Daughtery and Funke, 1998, p.37-38; Farquhar and Surry, 1994, p.22; Lim and Khine, 2006, p.120). Nonetheless FC had a mediating effect on IU through PEOU.

Our study attempted to build up an extended TAM model with the traits of SN and FC in order to investigate the acceptance of IT from the view point of academicians in the one of the countries of Turkish World.

It can be said that this extended model, if you compare with the results of literature (Legris et al., 2003, p.191,200 and 201), is highly successful in explaining IU IT with the rate of 0.80. This study showed that the core TAM relations resulted in just as well in a Turkish environment as they did in Western countries. On the other hand, the model approved that SN made a valuable contribution in explaining of the variances of TAM. FC also backed the model but at the lower level than SN. These findings demonstrated that SN and FC are potential variables that may be used to extend the TAM for research on IU towards IT. But the highly low value for the PEOU with 0.14 indicates that it needs to be taken into account by the researchers and educational managers in order to increase this explaining rate finding out the new indicators affecting the factors of this extended model. The means of PU, PEOU, IU of the academicians are generally high and very high (X>4.05). But these means are weak for SN and FC with 3.69 and 3.14 respectively. These results indicate that the variable to be taken into account firstly is FC (support from management).

One of the limitations of this study is the sample being drawn just only from the State Universities being fifteen years or more. Another limitation is that the state universities in the research had been drawn from the ones that we had been able to reach the e-mails of their academicians. For future research new established and foundation universities also should be included into the sample, and it should be taken into account individual differences, and other stakeholders such as managers, students, employers and investors. This research should be repeated for diverse cultures and sectors to be able to have more reliable results related to the validity of model.

This research showed that managers should strategize academicians to meet better FC and SN, and work with the co-workers pioneering in the subject of IU IT to be able to increase their employees' levels of technology acceptance. This study reveals that educational managers can use this research model as a helpful tool in better understanding stakeholders' behaviors towards technology acceptance and additionally they should also consider deeply investigating each of the variables in the technology acceptance process one by one.

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