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Measuring Technology Acceptance level of Turkish pre-service English teachers by using technology acceptance Model

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The aim of this study is to investigate technology acceptance of prospective English teachers by using Technology Acceptance Model (TAM) in Turkish context. The study is based on Structural Equation Model (SEM). The participants of the study from English Language Teaching Departments of Hacettepe, Gazi and Başkent Universities. The participants are 213 pre-service English teachers. In order to collect data, Computer Attitude Scale (CAS), developed by Selwyn (1997), was used. As a first step in the study, prospective English teachers' general attitudes towards technology were assessed. The results indicated that prospective English teachers had positive attitudes towards technology and technology use in lessons. As a next step, an ANOVA test was used to compare participants from different grade levels in terms of their attitudes towards technology use. The results indicated that first grade prospective English teachers have relatively lower levels of positive attitudes towards technology. Then, the model fit indices were calculated and the scale was subjected to factor analysis. As a result, the model that was constructed within the scope of the study was found to be perfect based on the results of a number of fit test indices and reasonable based on few fit test indices. Therefore, the model was found to be meaningful and usable. The results indicated that four of the hypotheses formed within the scope of the study were proven and one of them was rejected. Overall, it must be noted that there is a strong positive correlation between attitudes towards computer use and behavioral intention to use computers.

Key words: Technology use, prospective English teachers, computer self-efficacy, TAM model.

INTRODUCTION

The issue of technology acceptance has been on the agenda of researchers as educational technologies have kept on evolving. The main objective is to integrate technology into classroom settings so that the teaching and learning process can be facilitated. According to literature, the level of technology use is closely related to teachers' technology acceptance (Aypay et al., 2012). In this case, it is vital that students in language classes be

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provided with the necessary technology. However, the level of technology application does not seem to be adequate for the time being. Now that they are teachers who are supposed to initiate technology use in classes (Zhao et al., 2001), it is important to investigate prospective English teachers' attitudes towards technology and the factors that shape prospective English teachers attitudes (Teo et al., 2007). According to Teo et al. (2007), teachers' attitudes towards technology and their willingness to use technology are important determinant of successful technology use in classroom. According to Wong et al. (2012), the integration of technology into language classess highly depends on teachers' willingness and effective teachers are needed for efficient educational technology use.

In this study, Technology Acceptance Model (TAM), put forward by Davis (1989), was used in order to investigate the factors that affect technology use of pre-service English teachers. According to Technology Acceptance Model, perceived ease of use and perceived usefulness are the most important factors that determine technology use. Perceived usefulness can be defined as the extent to which technology increases occupational competence. Perceived ease of use denotes an effortless use of technology on the part of teachers (Davis, 1989). Therefore, as sub-dimensions of technology acceptance model, perceived ease of use and perceibed usefulness are the most important factors influencing teachers' attitudes to use technology and a bulk of research has been carried out since this model was proposed (Teo and Noyes, 2011; Venkatesh and Davis, 2000; King and He, 2006). According to literature, studies that have been carried out in different countries accentuate the role of teachers (Almekhlafi and Almeqdadi, 2010; Rasimah et al., 2011; Wong and Teo, 2009). This again demonstrates the importance of teacher attitudes towards technology use in classes.

TAM has become one of the most widely used models in technology embedded education research (Kılıç, 2014). What makes the TAM model widespread is its understandability and simplicity (King and He, 2006). There are a number of studies that focus on the TAM in order to investigate the relation between users' beliefs and their intentions to use technology (Teo, 2009, 2010; Teo and Noyes 2011; Venkatesh and Davis, 2000). As we can understand from the literature, technology acceptance model can be used to measure attitudes towards instructional technology use. Therefore, the aim of the present study is to measure technology acceptance of pre-service English teachers in Turkish context.

RELATED LITERATURE

Wong et al. (2012) carried out a study in order to find evidence for and support the technology acceptance model (TAM) in an educational context and secondarily to explore the role of gender and computer teaching efficacy as external variables in technology acceptance in Malasian context. They found that the model was adequately explained by the data. The model accounted for 36.8 percent of the variance in intention to use computers among student teachers. Sumak et al. (2011) found that perceived usefulness and perceived ease of use were factors that directly affected students' attitude, and perceived usefulness was the strongest and most significant determinant of students' attitude toward using technology in learning. Hişmanoğlu (2012) carried out a study in Turkish context in order to investigate the perceptions of prospective EFL teachers in the distance higher education system toward ICT implementation in teaching English as a foreign language. Hişmanoğlu's study (2012) found that training that will enable teachers to become competent in and receptive to ICT is quite critical.

Teo (2009) carried out a study based on technology acceptance model and investigaged teacher candidates in Singapore. The study found that technology acceptance of teachers increased their effective technology use in their lessons. In a similar vein, using technology acceptance model, Dikbaş et al. (2006) investiaged perceptionts of teachers about using technology in lessons. The authors found that perceived ease of use and perceived usefulness are important predictors of effective technology use.

There are other studies that focus on teachers' technology use in classes in Turkish context. Aypay and Özbaşı (2008), for example, worked on teachers' attitudes towards computers and found that demographic background, experience, motivation, and teaching methods influence teachers' technology use. Another striking finding of their study was that teachers with low technological self-efficacy avoid using technology in classes; teachers with moderate technology self-efficacy tend to use technology moderately. This finding emphasizes the fact that self-efficacy is a very important predictor of technology use on the part of teachers. Studies also found that institutional and occupational opportunities and the availability of computers at schools contribute to teachers' willingness to integrate technology into their lessons (Altun, 2003; Aşkar and Usluel, 2003; Aypay, 2010; Demiraslan and Usluel, 2005; Uşun, 2004).

There are a number of other studies that report that perceived usefulness and perceived ease of use impact attitude toward technology use and behavioral intention to use technology (Rasimah et al., 2011; Teo, 2011; Wong and Teo, 2009; Sumak et al., 2011). Most of these studies re-discovered the impact of perceived usefulness on intention to use and perceived ease of use influence intention to use indirectly through attitudes (Wong et al., 2012). We can understand from the stated studies that there is ample evidence that support the Technology Acceptance Model in related literature.

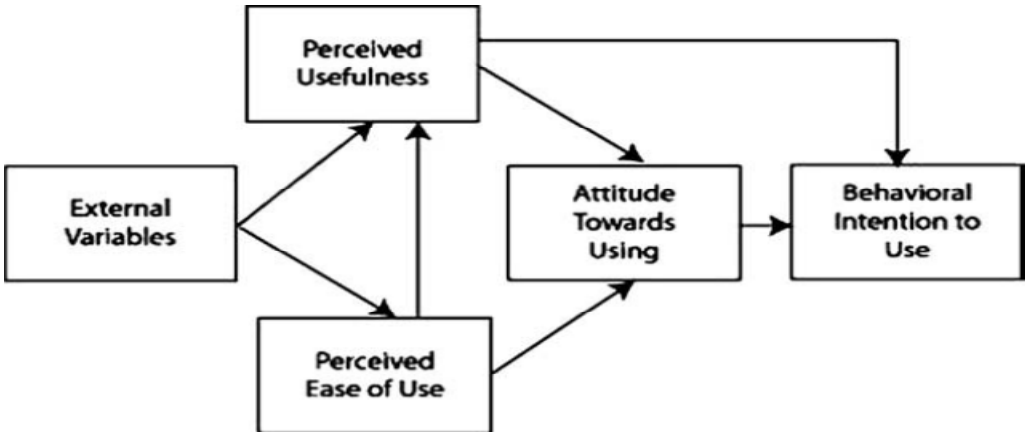


Figure 1. Technology Acceptance Model (TAM) (Davis, 1989).

Theoretical background

Technology Acceptance Model (TAM) was introduced by Davis (1989). It provided a theoretical context that explained the relationship of attitude-intention-behaviour (Figure 1). TAM model basically puts forward that perceived usefulness and perceived ease of use are the fundamental determinants of technology acceptance. The main claim of the TAM is that technology users' beliefs and their attitudes affect the intention to use a specific piece of technology. User attitudes to technology are determined by perceived usefulness and perceived ease of use.

As of the 1970s, researchers have made an attempt to account for conditions and factors that are related to faciliatation of technology use in business life (Legris et al., 2003). Most of the efforst were placed on developing and testing models that could help in predicting technology usage. One of the most popular of these models is Technology Acceptance Model (TAM). Up to now, TAM has been used in a huge number of studies and it has been scientifically proven to be highly successful in predicting technology acceptance (Legris et al., 2003).

The TAM model dates back to Ajzen and Fishbein's (1980) theory of reasoned action (TRA). TRA was interested in how beliefs and attitudes influence individuals' intentions to perform. TAM was developed by by Davis (1989) as a theoretical extension of TRA.

The sub-dimensions of technology acceptance model are computer self-efficacy, perceived usefulness, perceived ease of use, attitudes towards computers, and behavioral intention to use computers and the model claims that each of these sub-dimensions affects each other and they collectively affect behavioral intention to use computers. According to Technology Acceptance Model, perceived usefulness and perceived ease of use sub-dimensions are the most important sub-dimensions that predict technology use.

According to technology acceptance model, there is a causal relationship among perceived ease of use, perceived usefulness, attitudes towards computer, and behavioral intention to use computers. Together with perceived usefulness, perceived ease of use affects teachers' willingness to integrate technology into their lessons. The technology acceptance model is given in Figure 1.

According to Social Cognitive Theory of Bandura (1997), self-efficacy refers to the confidence levels of individuals in dealing with different tasks and their ability to influence events that are influential in their lives. The literature indicates that individuals who have high levels of self-efficacy view challenging tasks as "meaning challenges" (Tsai et al., 2011: 223). Facilitating conditions refer to the type of support that the individuals get with theaim of affecting their use of technology (Venkatesh et al., 2008). As for facilitating conditions on the part of teachers, training programs, knowledge, supporting services could be counted (Aypay et al., 2012). In a study that was carried out in Taiwan, facilitating conditions were found to be one of the critical factors that influence behavioral intention to use technology in classes (Lu et al., 2005).

In short, there are four important factors related to technology acceptance: the perceived ease of use of technology; the perceived usefulness of technology; the attitudes toward the use of technology; and the frequency of use of technology. This means that when people believe that technology is easy to use and will be beneficial to them in their professional practices, they develop positive attitudes toward its use. In turn, when teachers have positive atittudes towards technology use, they will have more intention to use technology in their classes.

Research questions

1. What are the pre-service teachers' beliefs regarding:

a) perceived usefulness
b) perceived ease of use
c) facilitating conditions
d) computer attitudes
e) technological complexity
f) computer self-efficacy
g) behavioral intention to use technology

2. Are there differences among the grade levels in terms of the following:

a) perceived usefulness
b) perceived ease of use
c) facilitating conditions
d) computer attitudes
e) technological complexity
f) computer self-efficacy
g) behavioral intention to use technology

3. Does attitude toward computer use (ATCU) significantly and positively influence pre-service English teachers' behavioral intention to use computers (BI)?

4. Does perceived ease of use (PEU) significantly and positively influence pre-service English teachers' attitude toward computer use (ATCU) and perceived usefulness (PU)?

5. Does perceived usefulness (PU) significantly and positively influence pre-service English teachers' behavioral intention to use computer (BI) and pre-service English teachers' attitude toward computer use (ATCU)?

METHODOLOGY

The study is based on survey method and structural equation model.

Participants

The total number of the participants of the study is 213. All the participants are pre-service English teachers form two major universities in Ankara. The number of the participants from Hacettepe Unviversity English Language Teaching Department is 147 (69.0%), and the number of the pre-service teachers from Gazi University English Language and Teaching Department is 66 (31.0%). The number of female students is 166 (77.9%), and the number of male students is 47 (22.1%). The number of participants in the 1st grade is 49 (23.0%); 2nd grade, 60 (28.2%); 3rd grade, 50 (23.5%), and 4th grade, 54 (25.4%).

Data collection tool

As data collection tool, Computer Attitude Scale (CAS), developed by Selwyn'in (1997), was used. The instrument consists of 22 items in total. CAS measures technology acceptance in relation to 5 interrelated variables: (1) Perceived usefulness (PU), (2) Perceived ease of use (PEU), (3) Facilitating conditions (FC), (4) Attitude toward Computer Use (ATCU), (5) Technological complexity (TC), (6) Computer Self-efficacy (CSE), (7) Behavioral Intention to Use Technology (BI). Participants responded to the Computer Attitude Scale using a five-point scale of strongly disagree (1), disagree (2), neutral (3), agree (4), and strongly agree (5).

Perceived usefulness (PU) can be defined as the extent to which a person believes that using a particular technology will improve his or her job performance (Davis et al., 1989). Davies (1989) makes the point that most people decide on whether to use technological device or not in their professional lives based on their belief that it will decrease time for doing the job, or achieving more efficiency and accuracy. Perceived ease of use (PEU) is mainly related to the effort that is needed in using a particular technology (Davis et al., 1989). It is quite likely that people may perceive computers as highly versatile while at the same time think that they are too difficult to use. Therefore, it can be speculated that high level of PU promotes positive attitudes. Facilitating conditions refer to factors that are present in the environment that exert an influence over a person's desire to perform a task. In general, attitudes are defined as the way an individual responds to and is disposed towards an object. In the context of technological acceptance, Attitudes toward Computer Use (ATCU) play a major role and there is evidence that computer attitudes are major predictors for future computer use (Myers and Halpin, 2002). Behavioral intention (BI) is one of the major variables of TAM. As was stated, TAM includes two behavioral beliefs, PU and PEU, and the model hypothesizes that these influence an individual's intention to use computers. That is to say, BI paves the way for the actual use of technologies (Teo et al., 2008). In the present study, the descriptive analyses have been carried out for all the stated variables. For the model employed, the variables that are peculiar to TAM were included. These are PEU, PU, ATCU, and BI.

Data analysis

The statistical analysis consists of two stages. The first stage includes descriptive statistics of the measurement items. The second stage involves testing the proposed research model and assessing the contributions and significance of the manifest variables.

RESULTS

Research question 1: What are the perceptions of pre-service English teachers on (a) perceived usefulness, (b) perceived ease of use, (c) facilitating conditions, (d) computer attitudes, (e) technological complexity, (f) computer self-efficacy, and (g) behavioral intention?

When we examine Table 1, we can see the mean scores for perceived usefulness (12.50), perceived ease of use (15.41), facilitating conditions (10.22), attitudes towards computer use (15.94), technological complexity (9.72), computer self-efficacy (15.85), and behavioral intention (8.40). As we can understand from mean scores, the participants have positive perceptions about the

Table 1. Descriptve statistics about the variables.

Variables	M	Mod	Median	sd	Range
perceived usefulness	12.50	15.00	12.00	2.43	9.00
perceived ease of use	15.41	16.00	16.00	3.05	13.00
facilitating conditions	10.22	9.00	10.00	2.67	12.00
attitudes toward computer use	15.94	20.00	16.00	3.25	13.00
technological complexity	9.72	8.00	9.00	3.89	16.00
computer self-efficacy	15.85	20.00	16.00	3.24	12.00
behavioral intention	8.40	9.00	9.00	1.08	4.00

variables.

Research question 2: Are there differences among the grade levels in terms of (a) perceived usefulness, (b) perceived ease of use, (c) facilitating conditions, (d) computer attitudes, (e) technological complexity, (f) computer self-efficacy

In order to determine whether there are differences between various grade levels of pre-service English teachers in terms of (a) perceived usefulness, (b) perceived ease of use, (c) facilitating conditions, (d) computer attitudes, (e) technological complexity, (f) computer self-efficacy, ANOVA was carried out. The results are presented in Table 2.

When we examine Table 2, we can understand that there are no statistically significant differences among different grades in terms of perceived usefulness ($F_{3.205}$=2.527, p>.05). As for perceived ease of use (PEU), the results in Table 2 indicate that there is a statistically significant difference among grade levels (F3.205=4.693, p<.05). In order to find out which grade levels differ in terms of perceived ease of use, post hoc test was applied and the results indicated that 1st grade ($\bar{X}$=14.10) and 2nd grade ($\bar{X}$=15.85) pre-service English teachers and 1st ($\bar{X}$=14.10) and 4th grade ($\bar{X}$=16.25) pre-service English teachers differ in terms of their perceptions about perceived ease of use. As we can understand from the mean scores presented, the mean scores increase as the grade level increases.

As for facilitating conditions, there are statistically significant differences among grade levels ($F_{3,205}$=2.662, p<.05). Post hoc tests indicate that there are statistically significant differences between 1st grade ($\bar{X}$=9.29) and 4th grade ($\bar{X}$=10.65) pre-service English teachers. Statistically significant differences were also observed in terms of attitudes toward computer use ($F_{3,205}$=5.379, p<.05). The results of the post hoc test indicated that there are statistically significant differences between 1st grade ($\bar{X}$=14.52) and 4th grade ($\bar{X}$=17.02) pre-service English teachers. As for technological complexity, no statistically significant differences were found among grade levels ($F_{3,205}$=0.630, p>.05). Finally, statistically significant differences were found among grade levels in terms of computer self-efficacy ($F_{3,205}$=4.838, p<.05). The results of the post hoc test indicated that there are statistically significant differences between 1st grade ($\bar{X}$=14.42) and 4th grade ($\bar{X}$=16.75) pre-service English teachers. Finally, as for behavioral intention to use technology in their future teaching career, there are difference between grade levels ($F_{3,205}$=22.721, p<.05). Behavioral intention to use technology also increases as grade level increases. This indicates that pre-service English teachers develop positive intention to use technology in their classes.

As we can understand from the results of ANOVA and subsequent post hoc tests, there are statistically significant differences between grade levels in terms of perceived ease of use, facilitating conditions, attitudes toward computer use, and computer self-efficacy. Mainly, differences are between first grade and fourth grade pre-service English teachers. It may be speculated that the process of instruction from the first year through the fourth year makes significant changes in the teachnological acceptance of pre-service English teachers.

The model

Goodness-of-fit of the model

Figure 2 shows the relationships among the variables of technology acceptance model. According to the figure:

1. the variables that are shown in circle are implicit variables
2. the variables that are shown in small rectangles are observed variables
3. one-way arrows indicate one way relations

In the first place, a confirmatory factor analysis was carried out in order to ascertain the relationship among the variables shown in the figure above. As is known, confirmatory factor analysis is used to prove whether the model is supported by the collected data by showing the interrelations among variables. Figure 3 presents the

Table 2. ANOVA results for grade level.

Variables	Status	N	M	F	Sig.
perceived usefulness	1ST grade	48	11.94	2,527	.059
	2nd grade	60	12.65		
	3rd grade	50	12.18		
	4th grade	51	13.16		
perceived ease of use	1ST grade	48	14,10	4,963	.002
	2nd grade	60	15,85		
	3rd grade	50	15,26		
	4th grade	51	16,25		
facilitating conditions	1ST grade	48	9,29	2,662	.049
	2nd grade	60	10,48		
	3rd grade	50	10,34		
	4th grade	51	10,65		
attitudes toward computer use	1ST grade	48	14,52	5,379	.001
	2nd grade	60	15,92		
	3rd grade	50	16,24		
	4th grade	51	17,02		
technological complexity	1ST grade	48	9,88	,630	.596
	2nd grade	60	9,45		
	3rd grade	50	10,28		
	4th grade	51	9,33		
computer self-efficacy	1ST grade	48	14,42	4,838	.003
	2nd grade	60	16,05		
	3rd grade	50	16,06		
	4th grade	51	16,75		
Behavioral intention	1ST grade	48	7,65	22.72	.000
	2nd grade	60	8,15		
	3rd grade	50	9,10		
	4th grade	51	8,74		

results of confirmatory factor analysis and standardized path co-efficients.

When we examine goodness-of-fit index (Table 3), we can see that all the indices for goodness except RMSEA and AGFI are almost perfect. For NFI, NNFI, RFI, and CFI indices, the values .95 and above indicate a perfect fit, and values .90 and above indicate good fit. Depending on this, we can say that the values obtained in this study are almost perfect. For RMR and SRMR, however, values .05 and below indicate perfect fit. The values obtained in this study are .037 and 0.046, respectively, and this indicates perfect fit. Similarly, the fact that the ratio of the chi-square value is below 3 indicates perfect fit. Although RMSEA value (.062) is slightly below perfect fit value (.05), this is an acceptable situation in terms of model fitness (<.08). According to GFI and AGFI, the values that are below perfect fit value (.93 and .89, respectively) also indicate good fitness.

As a result, the model that was formed among latent and observable variables within the scope of the study has perfect fit based on the majority of goodness-of-fit indices, acceptable for few goodness-of-fit indices. Therefore, the model can be used for further analysis. The LISREL results of structural equation model (SEM) tests of the model are presented in Figure 2.

Figure 4 presents the standardized path analysis results

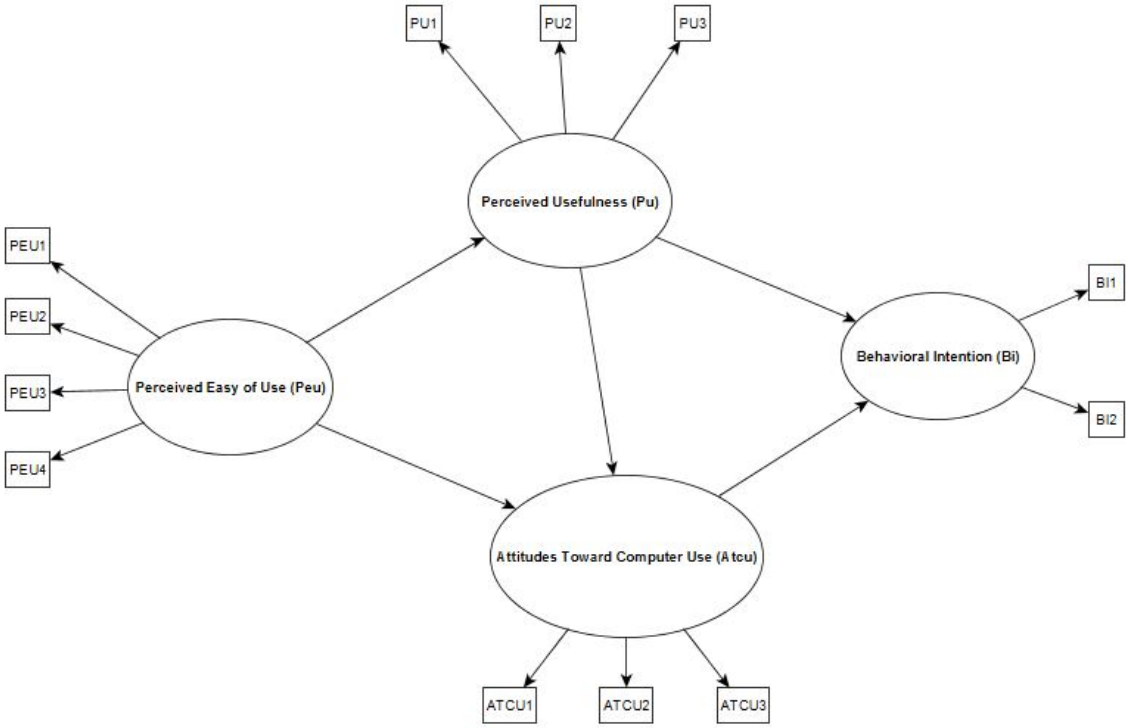
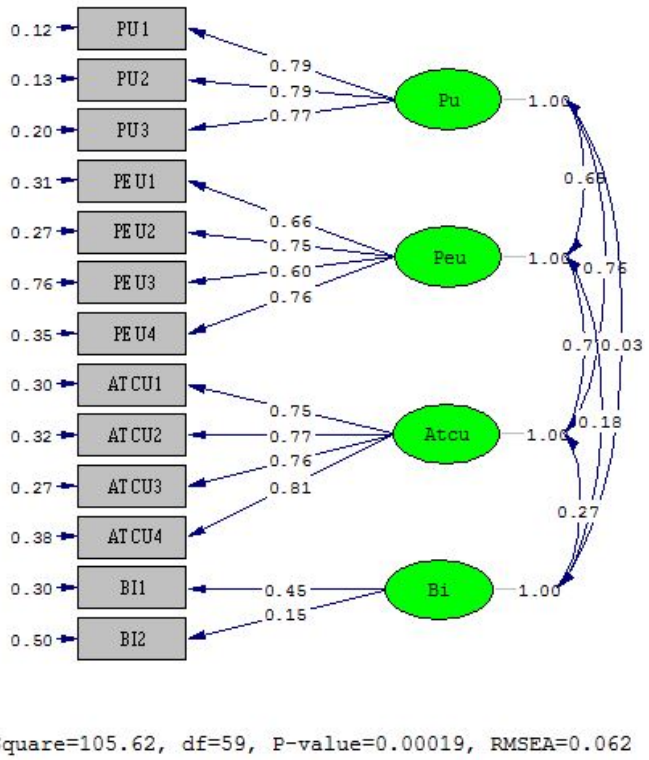


Figure 2. The relationships among the variables of technology acceptance model.



Chi-Square=105.62, df=59, P-value=0.00019, RMSEA=0.062

Figure 3. The results of confirmatory factor analysis to investigate the interrelations among latent and observable variables.

Table 3. The goodness-of-fit indices of the model.

$\chi^2/_{sd}$	RMSEA	NFI	NNFI	CFI	RMR	SRMR	GFI	AGFI	RFI
1.790	.062	.97	.98	.99	.037	.046	.93	.89	.96

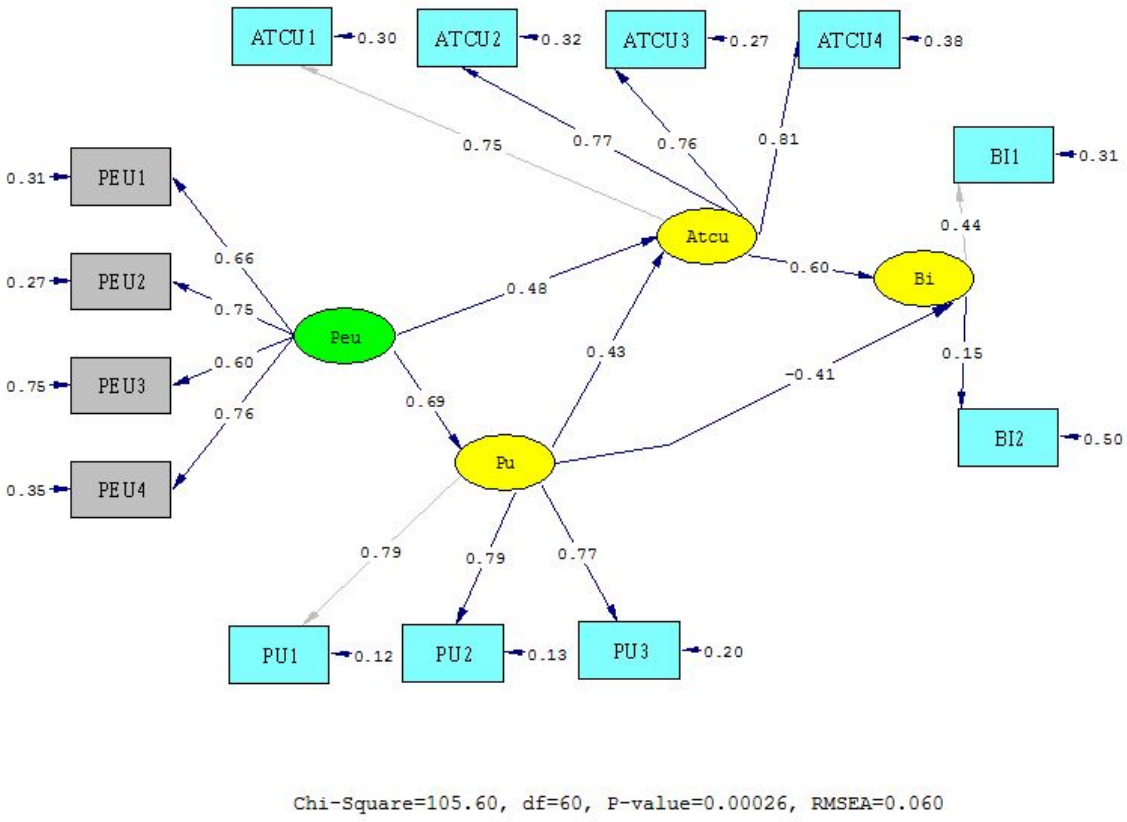


Figure 4. The results of the path analysis among the latent and observable variables of the model.

Table 4. The goodness-of-fit indices of the model.

$\chi^2/_{sd}$	RMSEA	NFI	NNFI	CFI	RMR	SRMR	GFI	AGFI	RFI
1.760	.060	.97	.98	.99	.037	.046	.93	.89	.96

among the latent and observable variables of the model. The goodness-of-fit indices are given in Table 4.

When we examine the values in Table 4, we can see that the results of confirmatory factor analysis are very close. The chi-square value for the whole model decreased slightly and this produced better results in terms of goodness fit compared to cofirmatory factor analysis. It is evident that the fit indices are equivalent to the results of confirmatory factor analysis and therefore what was said about CFA is valid for structural equation model. In other words, the analysis of the model through SEM revealed that the data fit of the model was found to be perfect based on most of the fit indices and good based on few fitness indices. The t-values for the path analysis values and the significance of the relationamong the latent and observable variables of the Structural Equation Model are presented in Figure 3.

Research question 3: Does attitude toward computer use (ATCU) significantly and positively influence pre-service

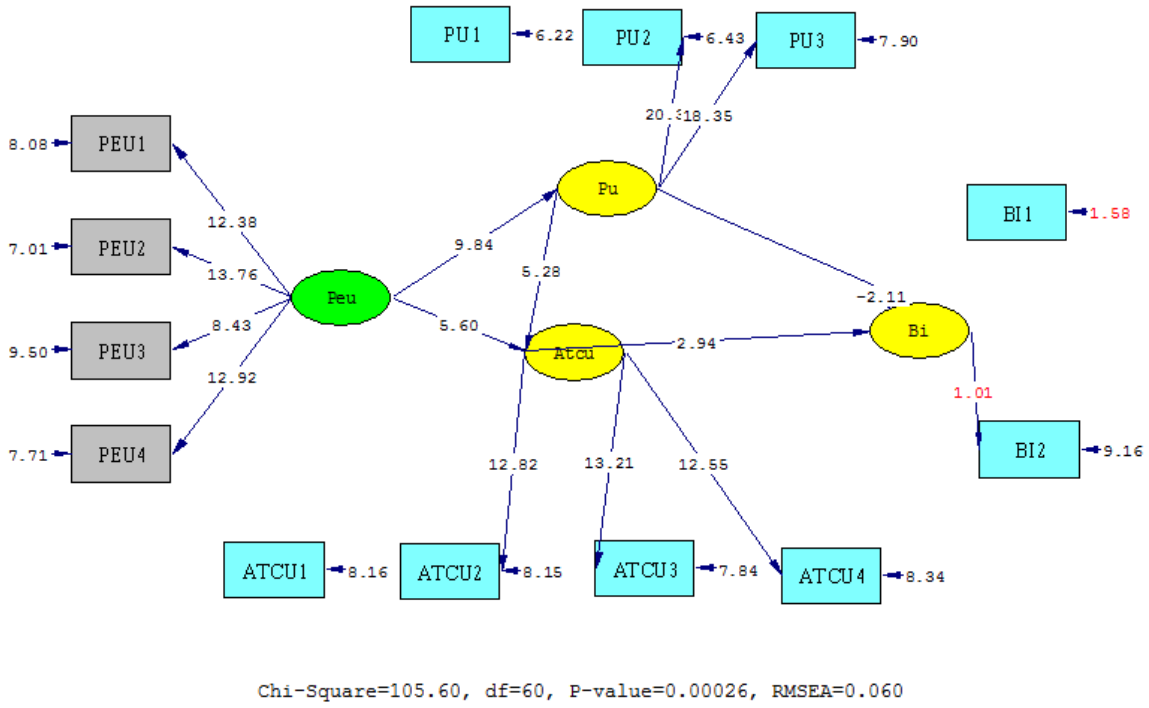


Figure 5. The t-values for the path analysis values and the significance of the relation among the latent and observable variables of the Structural Equation Model.

English teachers' behavioral intention to use computers (BI)?

Based on Figure 5, it can be said that there is uni-directional positive relation between perceived usefulness and computer use (*t=5.28, p<.05).* Therefore, perceived usefulness is a predictor of attitudes towards computer and has a significant impact on it.

Research question 4: Does perceived ease of use (PEU) significantly and positively influence pre-service English teachers' attitude toward computer use (ATCU) and perceived usefulness (PU)?

Based on the figure, it can be said that there is uni-directional positive relation between perceived usefulness and behavioral intention to use computers (*t=-2.11, p<.05.)*. However, the relation was found to be negative. In addition, it can be said that there is unidirectional positive relation between perceived ease of use and perceived usefulness (*t(13)=9.84, p<.05).* Perceived ease of use is a predictor of perceived usefulness and has a significant impact on it. We can say that perceived ease of use (PEU) has a considerable influence on attitudes to computer use and perceived usefulness.

Research question 5: Does perceived usefulness (PU) significantly and positively influence pre-service English teachers' behavioral intention to use computer (BI) and pre-service English teachers' attitude toward computer use (ATCU)?

Based on the figure, it can be said that there is unidirectional positive relation between perceived ease of use and behavioral intention to use technology in lessons (*t=5.60, p<.05).* Perceived ease of use is a significant predictor of behavioral intention to use technology in lessons. Moreover, it can be said that there is unidirectional positive relation between attitudes towards computers and behavioral intention to use technology in lessons (*t=2.94, p<.05).* Attitudes towards computers are a significant predictor of behavioral intention to use technology in lessons.

DISCUSSION

The present study was intended to measure pre-service English teachers' technology acceptance by using Technology Acceptance Model (TAM). The results found sound evidence to support the tenets of the TAM model. In the first place, descriptive statistics indicated that the participants have positive perceptions about *perceived ease of use, facilitating conditions, attitudes towards*

computer use, technological complexity, computer self-efficacy, and *behavioral intention to use technology*. This finding is in line with with other research studies (Abdullah et al., 2006; Kılıç, 2014; Cakir and Solak, 2014).

Descriptive statistics also indicated that there are statistically significant differences between grade levels in terms of *perceived ease of use, facilitating conditions, attitudes toward computer use,* and *computer self-efficacy*. Mainly, differences were found to be between first grade and fourth grade pre-service English teachers. It was speculated that the process of instruction from the first year through the fourth year makes significant changes in the technological acceptance of pre-service English teachers. A similar finding was also voiced by Adalıer (2012), who worked on Turkish and English language teacher candidates' in Cyprus, and found that pre-service teachers differed in their attitudes to technology use in terms of grade level as opposed to other variables like department, age, gender and socio-economic level.

As is hypothesized by the model, the study found that perceived usefulness positively affects prospective English teachers' attitudes towards technology, perceived ease of use positively affects perceived usefulness, perceived ease of use positively affects attitudes towards technology use, and finally and most importantly attitudes towards computer use positively affect behavioral intention to use technology in classes. Interestingly, *perceived ease of use* was not found to affect behavioral intention to use computers in lessons. This finding is not in line with the general research findings. Current research suggests positive and strong relationship among perceived usefulness, perceived ease of use, and attitude toward computer use (Moran et al., 2010; Pynoo et al., 2011; Rasimah et al., 2011; Teo, 2011; Sumak et al., 2011). Therefore, it is important that TAM model can be used to measure technology acceptance of pre-service teachers.

The results of the present study suggested that there is a relationship between attitudes towards instructional technology use and behavioral intention to use technology. This finding is supported by other research studies. Teo et al. (2008), for example, found that despite the fact that perceived usefulness, perceived ease of use and computer attitudes had a different interactional pattern for Malasian and Singaporean pre-service English teachers, there was no difference in the way the dependent variable (BI) had been treated by the participants. The results of this study also indicated that both Singaporean and Malaysian pre-service teachers would most likely integrate technology into their teaching-learning process. Kiraz and Özdemir (2006) also revealed in Turkish context that computer attitudes influence the behavioral intention to use instructional technology use in the classroom. The close relationship between attitudes to instructional technologies and intention to use them has also been pointed out by Teo (2008).

Conclusion

The results of the study indicate that teacher educators need to understand the dimensions that influence pre-service teachers' attitudes towards computers to design teacher-training curricula in a way that will prepare teachers to face the challenges in the information age (Fisher, 2000). Since attitude toward computer use has been found to predict behavioral intention to use computers both in related literature and in the present study, a sound understanding of preserviceEnglish teachers' computer attitudes will shed light on future computer use by in-service teachers. The inadequacy of Turkish pre-service education programs in equipping students with positive attitudes and necessary skills has been voiced by some researchers in the Turkish context (Inan et al., 2004; Yildirim and Kiraz, 1999). Teachers play a crucial role in the implementation of instructional technologies in schools and their attitudes have proved to be significant predictors of technology use; teachers' attitude towards the use of ICT for educational purposes is one key factor for the success of the ICT utilization in schools. Therefore, pre-service education programs in Turkey must be empowered to include more education on the use of instructional technologies in their future careers.

The present study was carried out with pre-service teachers selected from three universities in Turkey. Now that some studies pointed out that research context makes a difference in results (Teo et al., 2008), future studies should be carried out in a wider context in order to facilitate comparison. In addition, the present study did not include an external variable. Future studies can include an external variable like motivation. Although the self-efficacy variable was not included in the model employed in the present study, the literature clearly shows that when teachers know how to use computers or become more comfortable with using them they are more likely to develop positive attitudes towards them as well (Teo, 2009). Furthermore, longitudinal studies can be designed to determine the stages of attitudinal changes pre-service teachers go through. Therefore, teacher education programs must attact more importance to the element of technology in their programs.

Conflict of Interests

The author has not declared any conflict of interest.

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