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Acceptance of Educational Use of Tablet Computers: A Critical View Of The FATIH Project

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Abstract

In Turkey, various ICT tools were integrated into the educational environments through the FATIH Project introduced by the Ministry of National Education while studies concerned with the effective use of ICT in the educational processes began to increase in number and tablet computers were given to students and teachers within the framework of the project. Despite the effort put into the technological infrastructure, in-service training for the teachers and fulfilling other components of the project in order to help the FATIH Project reach its aim, the distribution of the tablet computers was the only action taken in terms of the services intended for the students. The attitudes of the students regarding the project need to be determined in order to ensure sustainability and help the project reach its aims. In this regard, the Technology Acceptance Model (TAM) becomes prominent. According to TAM, the students' beliefs will affect the behavior of the students positively as a result of thinking that using the tablet computers is easy and beneficial while this effect will cause the students to adopt the use of the tablet computers. The study was carried out with 2023 secondary school students who were enrolled in FATIH Project pilot schools in the central province of Bartın province in the spring semester of 2014-2015 academic year. In the end of this study, the secondary education students' acceptance levels of the educational use of the tablet computers used in the FATIH Project were examined in accordance with TAM and the scale for the acceptance of the tablet computers used in the FATIH Project in terms of educational use was developed. In addition, it has been achieved that giving tablet computers to students, training with FATIH Project technologies and increasing class level negatively affects students' acceptance of educational use of tablet PC in the FATIH Project.

Keywords

FATIH Project
Tablet computer
Technology acceptance model
TAM
Scale development

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Introduction

The information and communication technologies (ICT) which are constantly changing and evolving show their influence in almost every field. The educational environments are among the fields the ICT affect. In addition, it is seen that laptop computers, tablet computers, smart boards, smart phones and similar technologies are being added into the education processes. As a result of the addition of the technology into the education, positive changes are expected to occur in the education processes and the effectiveness of the school is expected to increase (Karataş & Sözcü, 2013). In this aspect, studies and projects concerned with the inclusion of ICT in the educational environments are being conducted globally and especially in countries such as USA, Portugal, Thailand and South Korea (Teo, 2011; Pamuk, Çakır, Ergun, Yılmaz, & Ayas, 2013). In Turkey, the movement Increasing Opportunities and Improving Technology (FATIH) was actualized in 2012 by the Ministry of National Education and practices concerned with the more effective use of the ICT in the education processes by the integration of ICT into the schools have begun.

The aim with the FATIH Project which is planned to be completed within a 5 year period is to establish countrywide equal opportunities in all schools in pre-school, primary, middle and high school levels in terms of the education processes while improving the technologies used in the schools and ensuring the more effective use of ICT in the teaching-learning process (Ministry of National Education [MNE], 2012). On the other hand, providing the hardware and software infrastructure, providing and managing the educational e-content, ensuring effective ICT use in educational curriculums, carrying out the in-service training of the teachers; ensuring the conscious, secure, manageable and measurable use of ICT constitute the components of the FATIH Project (MNE, 2012). The schools are being given interactive whiteboards, wired internet and various ICT tools while on the other hand the students and teachers are provided with tablet computers step-by-step. As a result of the application put through the Prime Ministry Communication Center (PMCC/BiMER), the information was obtained that until 9th October, 2015, a total of 882500 -and counting- tablet computers were distributed to the students and teachers within the framework of the FATIH Project while 275406 -and counting- educational technology components (e.g. Interactive White Board) were installed and 150600 -and counting- classrooms were provided with the network infrastructure (MNE, 2015).

In order to ensure the FATIH Project will reach its aim, providing the schools with the technological infrastructure, administering tablet computers to the students and the teachers, actualizing the project components while on the other hand determining the attitudes of the teachers and students, which are involved in the study, towards the project play a prominent role in the project continuing reliably while reaching its aim and ensuring sustainability (Pamuk et al., 2013). In addition, although providing the teachers with in-service training is one of the components of the project, there is no other activity than providing the students with tablet computers (Salman, 2013; Kalelioğlu & Akbaba Altun, 2014). When the practices carried out within the framework of the FATIH Project are examined in general, it is seen that although the project has different dimensions, the focus is substantially on hardware (Altın & Kalelioğlu, 2015). However, determining the habits and expectations of the students and teachers who will be in interaction with the FATIH Project is the key in reaching the aim with the tablet computer use (Akbaba Altun, Avcı Yucel, & Ergün, 2015). Therefore, it is important that the tablet computers given to the students are accepted and embraced in educational sense. Especially the way the students use the tablet computers in the education process, as they will be constantly interacting with them, and the acceptance status of these technologies are very important in ensuring the activeness of the students in the lessons (Tekerek, Altan, & Gunduz, 2014). In the previously conducted studies the emphasis is put on the students' adapting to the project and researching the effects of the tablet computers on the students while it is also suggested to conduct new studies in this field (Kırali, 2013; Salman, 2013; Yörük, 2013; Işık & Çukurbaşı, 2012). The technology acceptance model becomes prominent in the examination of the acceptance status of the students for the tablet computers given to them within the framework of the FATIH Project.

The Technology Acceptance Model (TAM) is described as the users' willingness to use the technology in cases where it is designed to support a situation or task (Teo, 2011). TAM's general aim is to explain the components that shape the technology acceptance (Davis, Bagozzi, & Warshaw, 1989). At the same time TAM is a model which aims to determine the factors affecting the technology acceptance of the learners and reveal the decisions accordingly (Çakıroğlu, 2013). The model consists of four elements: perceived ease of use, perceived usefulness, intention to use and the attitude towards use (Figure 1). In the model, the beliefs regarding technology are described alongside the fact that in cases where the technology in question is easy to use and beneficial, it will affect the attitude of the students in a positive manner and as a result of this effect the students will adopt to using technology (Ilgaz, 2008).

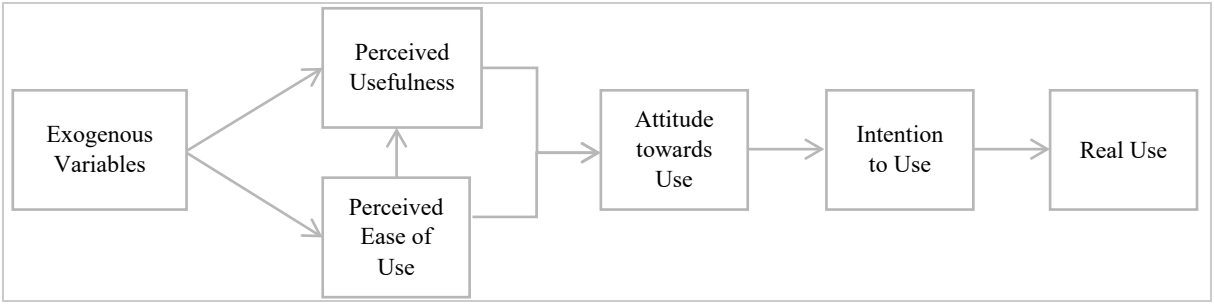

Figure 1. Technology Acceptance Model (Davis, 1993)

In the previously conducted studies it is stated that the perceived usefulness and perceived ease of use according to TAM are the effective and most important factors in the acceptance of technology by the individuals (Davis, 1989; Davis et al., 1989). Perceived usefulness is described as the belief that the individual's performance will be increased through the use of a certain technology while perceived ease of use is described as the belief that the effort spent while using the technology will be a small amount (Davis, 1993). At the same time, perceived usefulness is affected by perceived ease of use. In the model, features of the technology, the development process and exogenous variables such as usage information affect the intentions of the individuals regarding perceived usefulness and perceived ease of use (Venkatesh & Davis, 2000). In addition these two factors together affect the attitude towards use. The attitude towards use affects intention of use. The individual's behavior of using the technology is formed as a result of the intention of use (Davis, 1993). That is to say, the individual adopts to that technology.

Due to the fact that the tablet computers are portable devices which allow instant communication, an active and individual learning experience and cost saving, they are considered to be very useful for the education process (Saran, 2013). The tablet computers are being used in the FATIH Project due to these reasons. Determining the educational effect of the tablet computers on the students and at what levels the student-teacher-content interaction will take place are important aspects also for revealing the effectiveness of FATIH Project (Işık & Çukurbaşı, 2012). However while there were many studies in the literature which dealt with the FATIH Project, tablet computers and TAM separately and in detail, the amount of studies which analyzed the educational adoption status of the tablet computers by the students within the FATIH Project were rare. The acceptance of the tablet computers by the secondary education students was examined by Güngören, Bektaş, Öztürk, and Horzum (2014) by using TAM as base and the Tablet Computer Acceptance Scale was developed. In their study, they used this scale as the data collection tool and examined the relations between the self-efficacy, anxiety, technology acceptance and readiness of the secondary education students regarding the tablet computers, included the tablet computer acceptance of the students within the framework of the study and added the readiness variable to the model (Horzum, Öztürk, Bektaş, Güngören, & Çakır, 2014). As a result of the study, a model which includes six variables for the tablet computer readiness of the students was created and the model was stated to have identified the tablet computer acceptance of the students. Ursavaş, Şahin, and Mcllroy (2014) however concluded that the perceived usefulness factor affected the perceived ease of use significantly and that it was the most effective factor which affected the attitude towards use.

In a study carried out by İslamoğlu, Ursavaş, and Reisoğlu (2015) in which they examined 120 studies conducted between the years 2011-2014 regarding the FATIH Project, they stated that the partner attitudes were taken into consideration more often and a scale in accordance with the technology acceptance model was only developed in a study conducted in 2014. This study was observed to be a scale development study regarding the acceptance of the interactive boards used within the framework of the FATIH Project (Tosuntaş, Karadağ, & Orhan, 2015). In the master's thesis which was conducted to determine the effect of the tablet computers distributed as part of the FATIH Project on the learning and productivity of the lesson, five point likert type scale Tablet-Computer Student Opinions Questionnaire was applied to 118 high-school students (Kırali, 2013). In the conclusion of the study it was seen that in relation to the tablet computer use in the lessons and its effect on the students' success, the tablet computer use in the classrooms made it easier for the students to learn while increasing their motivation levels and it was easier, more fun and interesting to learn with a tablet computer and the success rates of the students increased upon using tablet computers. In another study where the benefits of the information technologies used as part of the project, the students and teachers partaking in the FATIH Project and the knowledge and skills of the students and teachers using these technologies in the lessons were examined, the workgroup consisted of 180 high-school students and 50 teachers (Salman, 2013). In the scope of the study, a five point likert scale consisting of 27 items aimed at the expectations of the teachers and students from the project was used. As a result of the study it was seen that e-content made teaching easier and the use of technology increased the interest in the lessons.

As a result of a study where the attitudes of the secondary education students towards the tablet computer use was examined, it was observed that the students used the tablet computers effectively and the tablet computers attracted the students' attention however the students required assistance regarding how to use the tablet computers more productively (Tekerek et al., 2014). In a study conducted by Ayvacı, Bakırcı, and Başak (2014), the researchers stated that the tablet computers were dysfunctional, inadequate in doing homework, missing the stylus and teaching with the help of the tablet computers caused the student-student and student-teacher interaction to be disrupted. On the other hand low student motivation and distraction was among the other results.

When the previous studies and the literature were examined, it was seen that the students' adoption of using the distributed tablet computers caused them to use these technologies effectively in the education process and the distribution was important in terms of the success of the project and the students. Therefore determining the acceptance statuses of the students for the educational use of the tablet computers distributed as part of the project is considered to be important. In this sense, the aim of the study was to develop a scale in order to determine the acceptance status of the students for the educational use of the tablet computers distributed as part of the FATIH Project and to examine the educational use of the tablet computers used within the framework of the FATIH project in terms of several variables.

Method

In this study, it was developed a scale in order to evaluate the acceptance of the educational use of the tablet computers given to the students as part of the FATIH Project and examined the educational use of the tablet computers distributed to the students within the framework of the FATIH Project in terms of several variables.

Participants

Participants of the study consisted of 2023 high-school students living within the city boundaries of Bartın and were selected through the convenience sampling method. Research group was formed by 987 female (f=48.8), 1036 male (51.2%); 626 (30.9%) students who were given a tablet computer, 1397 (69.1%) students who were not given a tablet computer but have been educated in the classrooms where the technological infrastructure has been developed within the scope of the project; 1104 (54.6%) students studying with the help of FATIH Project technologies and 919 (45.4%) students who were not studying with the help of FATIH Project technologies. 544 students (26.9%) studied in the

9th grade while 620 (30.6%) in the 10th grade, 481 (23.8%) in the 11th grade and 378 students (18.7%) in the 12th grade. 321 (15.9%) of the students attended the multi-program high-school while 1061 (52.4%) attended the Anatolian high-school, 396 (19.6%) attended the religious vocational high-school and 245 (12.1%) attended the vocational and technical Anatolian high-school.

Data Collection Tool

In the development process of the Acceptance of the Educational Use of the Tablet Computers used in the FATIH Project Scale, TAM, which was designed by Davis (1993), was taken as the base. During the development of the scale, the literature was reviewed primarily and an item pool in accordance with the factors was created. 18 items consisting of positive and negative significations formed the item pool. For the level of participation, 5 point likert type ratings such as agree strongly, agree, partly agree/partly disagree, disagree and strongly disagree were used. Following these steps, the validity and reliability practices were carried out. The developed scale is provided in Appendix-1.

Processes

The content, face and construct validity aspects were examined in terms of the scale development practices. Expert opinions were taken from 13 academicians working at the Computer and Instructional Technologies Education, Educational Sciences and Turkish Language Education departments in order to assess the content and face validity of the scale. In the light of the expert opinions, one item was removed from the perceived usefulness and intention of use factors while three items in the perceived usefulness and perceived ease of use factors were edited. The state of the scale after the content and face validity changes consisted of 4 items of perceived usefulness, 3 items of perceived ease of use, 4 items of attitude towards use and 5 items of intention of use, and in total of 16 items.

The scale was applied to the participants in order to actualize the content validity and reliability analyses. Exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) were applied to the collected data for construct validity purposes. 300 students who received their education in the spring term of the 2014-2015 academic year constituted the sample group for EFA. These students were randomly selected from the participants of the study. 162 (54%) female and 138 (46%) male students were in the group and 198 (66%) of these students attended 10th grade while 47 (15,7%) attended 11th grade and 55 (18,3) attended 12th grade. 83 (27,7%) of the students participating in the study were given tablet computers within the scope of the FATIH Project while 217 (72,3%) of the students were still not given a tablet computer although they were taught in the classrooms where the technological infrastructure was built within the scope of the project. As part of the CFA, the data was collected from 2049 students as previously stated in the participants section. The data of 26 students were taken out of the overall data due to having marked a single agreement level or lack of marking the answers for every item. As a result, the processes were carried out with the data of the 2023 participants. As part of the validity and reliability practice, the construct validity of the scale was tested through the application of EFA and CFA to the data. In this study, the analyses were carried out by using SPSS 21 and LISREL 8.71 software. The LISREL 8.71 software was used for the CFA and acceptance of the educational use of the tablet computers while the SPSS 21 packaged software was used for the Cronbach alpha internal consistency factor of the scales, edited items total correlation values and the total item correlation values of the 27% top and 27% bottom groups.

Findings

Development of the Scale of Acceptance of Educational Use of Tablet Computers Used in FATIH Project

Exploratory factor analysis was applied to the data in order to calculate the load values of the 16 items in the scale and reveal the factor structures. The exploratory factor analysis, which involved the use of the SPSS 21 packaged software, was performed through the use of the principal components analysis technique and varimax perpendicular rotation technique.

In order for the exploratory factor analysis to be performed, the Kaiser-Meyer-Olkin (KMO) test was examined primarily. As a result of the analysis, the KMO value was found to be .92. Due to the fact that the KMO value was greater than .70, the sample congruity was determined to be enough for performing the exploratory factor analysis (Bryman & Cramer, 1999). Bartlett's Sphericity Test was examined in order to determine the congruity of the collected data for the exploratory factor analysis. As a result of the examination the data ($\chi 2$= 4080.14, p= .000) was determined to be suitable for performing exploratory factor analysis (Bryman & Cramer, 1999).

As a result of the exploratory factor analysis, a structure with 16 items accumulating in 4 factors and with an eigenvalue greater than 1 was found. In consequence of the analysis, the explained variance in the 4 factor design was found to be 77,10%. The factor load values of the items found in the 4 factors and their corresponding factors are presented in Table 1.

Table 1. The Main Components Analysis Result of the Scale of Acceptance of Educational use of the Tablet Computers

Factor	Item	Factor Loads			
Perceived Usefulness	M2	.853			
	M1	.802			
	M3	.805			
	M4	.590			.474
Perceived Ease of Use	M6		.785		
	M7		.771		
	M5		.766		
Attitude towards Use	M11			.811	
	M10			.688	
	M8			.685	
	M9			.603	
Intention to Use	M14				.839
	M12				.807
	M16				.641
	M15				.605
	M13				.531

The analysis result on the basis of the factors is as follows:

The load values of the 4 items accumulating under the "Perceived Usefulness" factor vary between .590 and .853 while the variance explained by the factor is 22.09%. The load values of the 3 items accumulating under the "Perceived Ease of Use" factor vary between .766 and .785 while the variance explained by the factor is 16.96%. The load values of the 4 items accumulating under the "Attitude towards Use" factor vary between .603 and .811 while the variance explained by the factor is 17.61%. The load values of the 5 items accumulating under the "Intention to use" factor vary between .531 and .839 while the variance explained by the factor is 20.43%.

In the light of these data the exploratory factor analysis values of the Acceptance of Educational use of Tablet Computers Scale are observed to be acceptable values.

The Exploratory Factor Analysis Results for Acceptance of Educational Use of Tablet Computers

Acceptance of the Educational Use of the Tablet Computers used in the FATIH Project Scale's confirmatory factor analysis was performed through the Lisrel 8.71 software. The values obtained through the confirmatory factor analysis for the scale which contained 16 items were observed as $\chi 2$=1104,01 (df=95, p<.000), $\chi 2$/df=11,62, RMSEA= 0.072, S-RMR = 0.024, GFI=0.94, AGFI=0.91, CFI=0.99, IFI= 0.99, NNFI=0.99. In respect to these values, Sümer (2000) and Şimşek (2007) state that the RMSEA value being .08 or lower indicates a decent congruity. Bryne (1998) however states that the RMR and SRMR values need to be .10 or lower in order to be considered as a decent congruity. In addition, it is emphasized that the IFI, CFI, NFI and NNFI being greater than .90 indicates a decent model. On the other hand, Büyüköztürk, Akgün, Demirel, and Özkahveci (2004) state that the AGFI needs to be .80 or greater and the GFI needs to be .85 or greater in order to indicate a decent rapport. When this aspect is taken into consideration, all of the values can be acknowledged as expressing a decent rapport. The $\chi 2$/df value of the data is expected to be 3 or lower. However the size of the sampling can affect this value (Jöreskog & Sörbom, 1993). In this study, 2023 people represent the sampling size. Therefore due to the fact that the $\chi 2$ value is used for small sampling sized, this value was not taken into consideration for this study. The path diagram for the confirmatory factor analysis which was performed is as in Figure 2 and Figure 3.

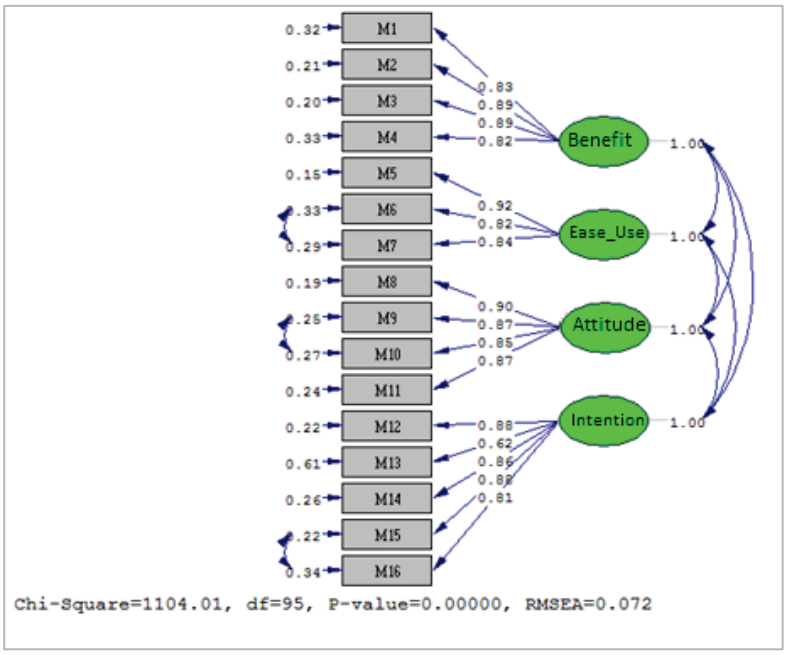

Figure 2. The Confirmatory Factor Analysis Path Diagram for the Acceptance of the Educational Use of the Tablet Computers used in the FATIH Project Scale (Standard Parameters)

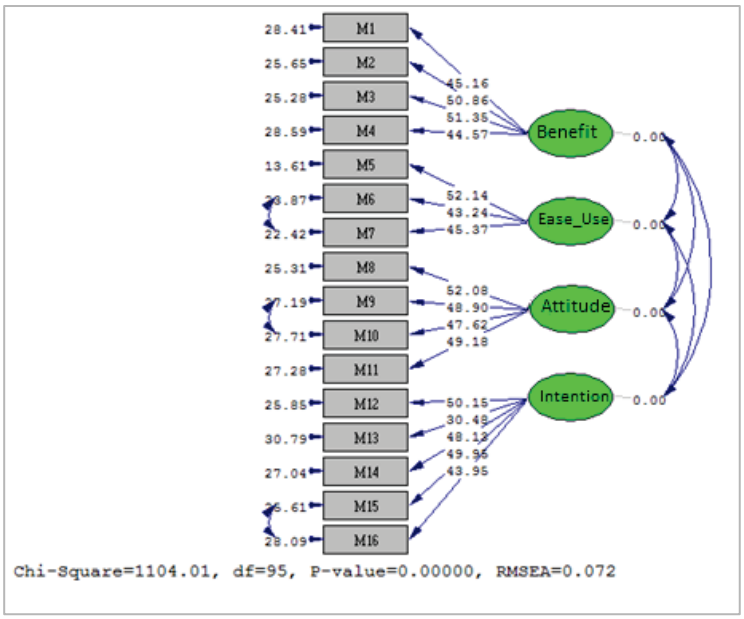

Figure 3. The Confirmatory Factor Analysis Path Diagram for the Acceptance of the Educational Use of the Tablet Computers used in the FATIH Project Scale (t Values)

The values regarding the items which were generated as a result of the confirmatory factor analysis are presented in Table 2.

Table 2. Results of the Confirmatory Factor Analysis

	SS	TD	R^2		SS	TD	R^2
M1	,83	45.16	.68	**M9**	.87	48.90	.75
M2	.89	50.86	.79	**M10**	.85	47.62	.73
M3	.89	51.35	.80	**M11**	.87	49.18	.76
M4	.82	44.57	.67	**M12**	.88	50.15	.78
M5	.92	52.14	.85	**M13**	.62	30.48	.39
M6	.82	43.24	.67	**M14**	.86	48.13	.74
M7	.84	45.37	.71	**M15**	.88	49.95	.78
M8	.90	52.08	.81	**M16**	.81	43.95	.66

Cronbach α, Omega (ω) and average explained variance (AEV) were calculated for the reliability analysis of the factors in the scale's model (Table 3). In reliability practices, the Cronbach α parameter is calculated for all scales and factors. Cronbach α is often used in cases where the answers are collected from the rating scale (Büyüköztürk, Kılıç Çakmak, Akgün, Karadeniz, & Demirel, 2014). In addition, for the congenereous measurements (in cases where the factor loads are not equal) the Omega ω parameter must be provided (McDonald, 1985). For the whole of the scale, the Cronbach α value was .95 and the Omega (ω) value was .97.

Table 3. The α, ω and AEV Values of the Scale Factors

	α	ω	OAV
Perceived Usefulness	.91	.92	.73
Perceived Ease of Use	.91	.90	.74
Attitude	.93	.93	.76
Intention to Use	.91	.91	.66

The Cronbach α value for the Perceived Usefulness Factor was found as .91, the Omega (ω) value was .92 while the AEV value was .73; the Cronbach α value for the Perceived Ease of Use factor was found as .91, the Omega (ω) value was .90 while the AEV value was .74; the Cronbach α value for the Attitude Factor was found as .93, the Omega (ω) value was .93 while the AEV value was .76; the Cronbach α value for the Intention to Use Factor was found to be .91, the Omega (ω) value was .91 while the AEV value was .66. In accordance with these values, the α and ω reliability of the factors in this scale and the average explained variances can be stated as high (Büyüköztürk et al., 2014; McDonald, 1985; Fornell & Larcker, 1981).

In order to ensure reliability between the factors of the scale, inter factor correlation matrix and AEV values were used. The findings related to the distinguishing reliability are presented in Table 4.

Table 4. The Distinguishing Reliability of the Scale

	Usefulness	Ease of Use	Attitude	Intention
Usefulness	**.86**			
Ease of Use	.83	**.86**		
Attitude	.84	.82	**.87**	
Intention	.80	.82	.80	**.81**

As it is seen in Table 4, the inter factors correlation values were left as they are for the testing of the distinguishing reliability of the scale while the square roots of the AEV values were written in bold at the points where they intersected with the factors. The results of the analysis revealed that the AEV values of the factors had greater value than the correlation values concurring with other factors. Therefore it can be said that the scale's inter factors distinguishing reliability is ensured (Fornell & Larcker, 1981).

The Acceptance of Educational Use of the Tablet Computers used in the FATIH Project Model

The items in The Acceptance of Educational Use of the Tablet Computers used in the FATIH Project Scale were analyzed with the Lisrel 8.71 software and the structural equation modeling was actualized. The obtained values upon actualizing the structural equation modeling were found as $\chi 2$=1117.45 (df=97, p<.000), $\chi 2$/df=11.52, RMSEA=0.072, S-RMR = 0.02, GFI=0.94, AGFI=0.91, CFI=0.99, IFI= 0.99, NNFI=0.99. The path diagram relative to the structural equation modeling is presented in Figure 4 and Figure 5.

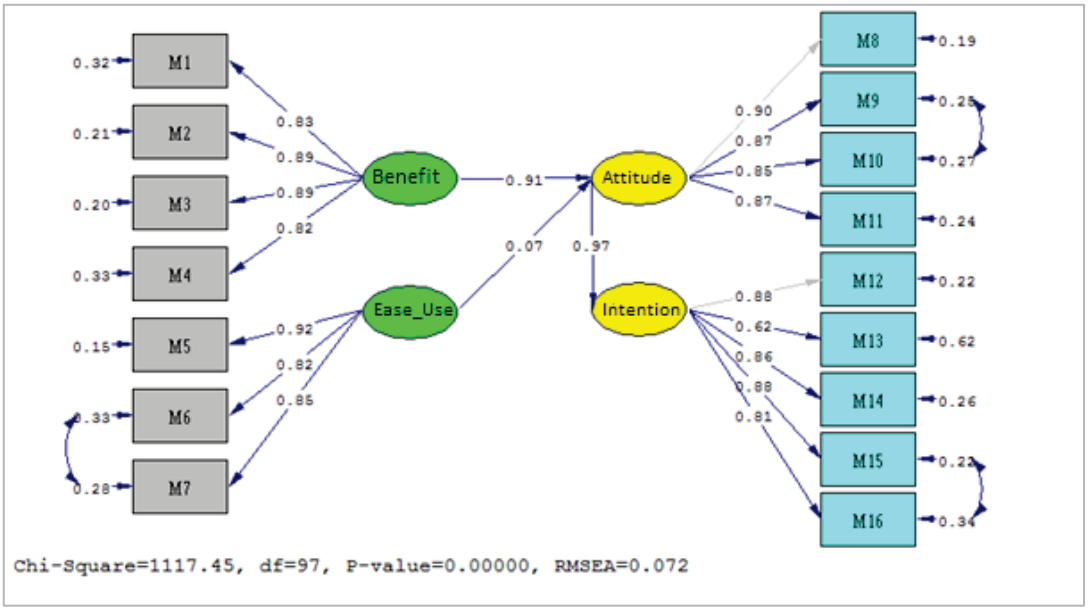

Figure 4. The Path Diagram for The Acceptance of Educational Use of the Tablet Computers used in the FATIH Project (Standard Parameters)

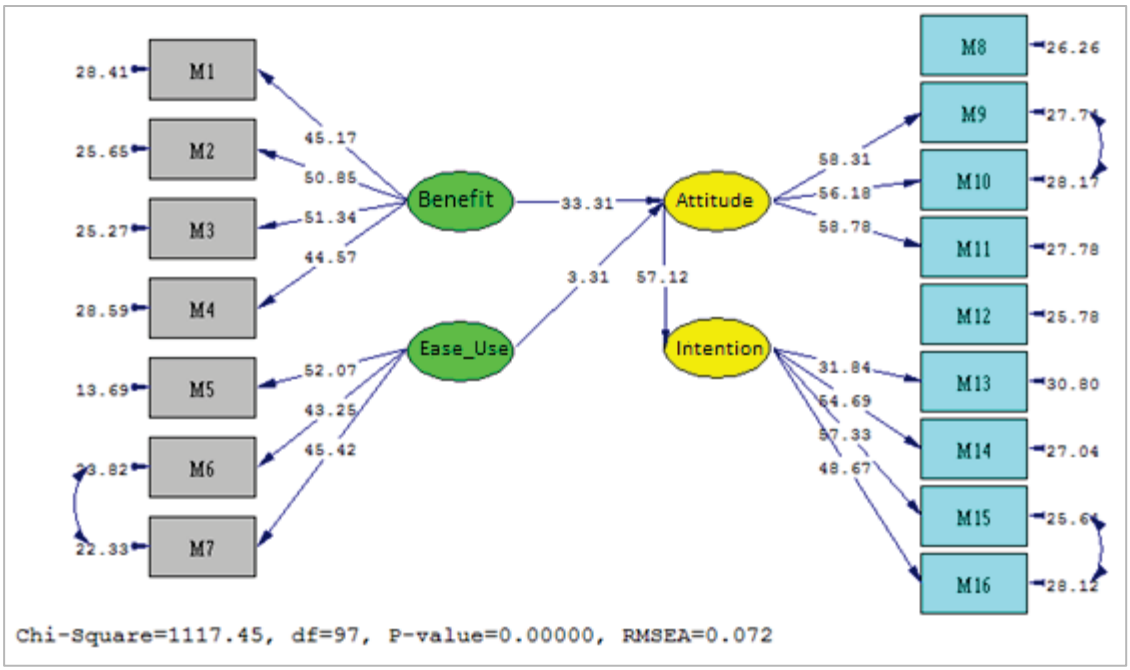

Figure 5. The Path Diagram for The Acceptance of Educational Use of the Tablet Computers used in the FATIH Project (t Values)

As a result of the structural equation modeling, the standard analyses of four items in the Perceived Usefulness Factor were found to be varying between .83 and .89, the standard analyses of three items in the Perceived Ease of Use Factor were found to be varying between .82 and .92, the standard analyses of four items in the Attitude Factor were found to be varying between .85 and .90, and the standard analyses of five items in the Intention to Use Factor were found to be varying between .62 and .88. Following the standard analyses, the t values between items and between factors were observed. Jöreskog and Sörbom (1993), in relation to the t values, stated that the significance of no red arrow was that all of the items were significant at the .05 level. The fact that there was no red arrow on the t values indicated that all of the items were significant at the .05 level.

The Multiple Regression Analysis Results Related to the Acceptance of Educational Use of the Tablet Computers used in the FATIH Project

The multiple regression analysis related to the acceptance of educational use of the tablet computers used in the FATIH Project was performed for all of the dimensions in the model. The multiple regression analysis results for the Perceived Ease of Use factor are presented in Table 5.

Table 5. The Multiple Regression Analysis Results related to the Perceived Ease of Use Factor

Variables	B	β	t	p	R	R^2	ΔR^2	F
Fixed	10.159	-	22.11	.000	.310	.096	.094	53.643
Gender	.276	.040	1.793	.073				
Tablet Ownership	-.759	-.101	-3.962	.000				
FATIH Project	-1.154	-.165	-6.293	.000				
Class	-.621	-.191	-8.833	.000				

According to the results of the analysis performed, tablet ownership, having been educated with the assistance of FATIH Project technologies, and the class differences explain 9% of the total variance of perceived ease of use for using the tablets with educational purposes (F=53.643, p<0.01). While the original contributions of the tablet ownership (β=.-.101, p<.01), having been educated with the assistance of FATIH Project technologies (β=.-.165, p<.01) and the class level (β=.191, p<.01) to the model were significant, the gender's original contribution to the model was insignificant. The multiple regression analysis results relative to the Perceived Usefulness factor are presented in Table 6.

Table 6. Multiple Regression Analysis Results related to the Perceived Usefulness Factor

Variables	B	β	t	p	R	R^2	ΔR^2	F
Fixed	12.086	-	18.663	.000	.379	.144	.142	84.786
Gender	.330	.033	1.521	.128				
Tablet Ownership	-1.398	-.128	-5.174	.000				
FATIH Project	-1.914	-.189	-7.405	.000				
Class	-1.148	-.243	-11.582	.000				

According to the results of the analysis performed, tablet ownership, having been educated with the assistance of FATIH Project technologies, and the class differences explain 14% of the total variance of perceived usefulness for using the tablets with educational purposes (F=84.786, p<0.01). While the original contributions of the tablet ownership (β=.-.128, p<.01), having been educated with the assistance of FATIH Project technologies (β=.-.189, p<.01) and the class level (β=.243, p<.01) to the model were significant, the gender's original contribution to the model was insignificant. The multiple regression analysis results relative to the Attitude factor are presented in Table 7.

Table 7. Multiple Regression Analysis Results related to the Attitude Factor

Variables	B	β	t	p	R	R^2	ΔR^2	F
Fixed	12.565	-	18.766	.000	.360	.129	.128	74.918
Gender	.094	.009	.419	.675				
Tablet Ownership	-1.447	-.130	-5.180	.000				
FATIH Project	-1.809	-.267	-6.767	.000				
Class	-1.103	-.103	-10.758	.000				

According to the results of the analysis performed, tablet ownership, having been educated with the assistance of FATIH Project technologies, and the class differences explain 13% of the total variance of attitude towards using the tablets with educational purposes (F=74.918, p<0.01). While the original contributions of the tablet ownership (β=.-.130, p<.01), having been educated with the assistance of FATIH Project technologies (β=.-.267, p<.01) and the class level (β=.103, p<.01) to the model were significant, the gender's original contribution to the model was insignificant. The multiple regression analysis results relative to the Intention factor are presented in Table 8.

Table 8. Multiple Regression Analysis Results related to the Intention Factor

Variables	B	β	t	p	R	R^2	ΔR^2	F
Fixed	15.606	-	19.829	.000	.353	.125	.123	71.978
Gender	-.249	-.021	-.949	.344				
Tablet Ownership	-1.293	-.328	-3.937	.000				
FATIH Project	-2.573	-.314	-8.178	.000				
Class	-1.117	-.121	-9.271	.000				

According to the results of the analysis performed, tablet ownership, having been educated with the assistance of FATIH Project technologies, and the class differences explain 12% of the total variance of intention to use the tablets with educational purposes (F=71.978, p<0.01). While the original contributions of the tablet ownership (β=.-.328, p<.01), having been educated with the assistance of FATIH Project technologies (β=.-.314, p<.01) and the class level (β=.121, p<.01) to the model were significant, the gender's original contribution to the model was insignificant.

The ANOVA Results related to the Acceptance of Educational Use of the Tablet Computers used in the FATIH Project

The fact that whether a differentiation regarding the educational use of the tablet computers used in the FATIH Project in terms of the school type existed was tested through ANOVA. The obtained results are presented in Table 9.

Table 9. The ANOVA Results Related to the Educational Use of the Tablet Computers

	School Type	N	$\bar{X}$	SS	Source of Variance	df	Squares Mean	F	p
Perceived Ease of Use	Multi Program	321	13.69	2.46	Among Groups	3	367.8	31.8	.000*
	Anatolian	1061	11.70	3.67	Intergroup	2019			
	Religious	396	11.59	3.45	Total	2022	11.56		
	Voc. Tec. Ana.	245	12.40	3.13					
Perceived Usefulness	Multi Program	321	17.97	3.58	Among Groups	3	1262.4	53.6	.000*
	Anatolian	1061	14.36	5.22	Intergroup	2019			
	Religious	396	14.02	4.97	Total	2022	23.53		
	Voc. Tec. Ana.	245	15.77	4.42					
Attitude Towards Use	Multi Program	321	18.01	3.72	Among Groups	3	1246.1	50.1	.000*
	Anatolian	1061	14.69	5.27	Intergroup	2019			
	Religious	396	13.78	5.29	Total	2022	24.86		
	Voc. Tec. Ana.	245	15.96	4.63					
Intention to Use	Multi Program	321	21.85	4.75	Among Groups	3	2104.2	62.6	.000*
	Anatolian	1061	18.24	6.09	Intergroup	2019			
	Religious	396	16.04	6.12	Total	2022	33.59		
	Voc. Tec. Ana.	245	19.50	5.09					

As a result of the ANOVA that was performed, a significant difference was found among the groups in terms of the acceptance of the educational use of the tablet computers. Scheffe test was applied in order to determine which groups were the cause of this difference. According to the Scheffe test results, in all sub-dimensions, multi program high-schools in comparison to other school types, vocational and technical high-schools in comparison with religious vocational and Anatolian high-schools, and the Anatolian high-schools in comparison to religious vocational high-schools, submitted positive opinions at significant levels $p<.05$. The information derived from these results can be interpreted as the educational use of the tablet computers occurring mostly in multi program high-schools and the least in religious vocational high-schools.

Results, Discussion and Suggestions

As a result of the study, a scale was developed with the aim of analyzing the status of the acceptance of the secondary education students regarding the educational use of the tablet computers provided with the FATIH Project. The scale which contained the 4 dimensions of the technology acceptance model consisted of 5 point likert type 16 items. The educational use of the tablet computers provided through the FATIH Project was examined in terms of several variables after the scale development process. In this regard, the acceptance status of the students was analyzed in terms of the school types.

Upon the examination of the congruity indexes of the Acceptance of Educational Use of the Tablet Computers used in the FATIH Project Scale in terms of the analyses performed through the structural equation modeling the values were observed to be $\chi2=1117.45$ ($df=97$, $p<.000$), $\chi2/df=11.52$, RMSEA=0.072, S-RMR = 0.02, GFI=0.94, AGFI=0.91, CFI=0.99, IFI= 0.99, NNFI=0.99. Sumer (2000) and Şimşek (2007) state that the RMSEA value being .08 or lower indicates a decent congruity. Bryne (1998)

however states that the RMR and SRMR values need to be .10 or lower for a decent congruity. In addition, it is emphasized that IFI, CFI, NFI and NNFI values higher than .90 indicate a decent model. On the other hand, Büyüköztürk et al. (2004) emphasize that an AGFI value at .80 or greater; GFT value .85 or greater indicate a decent congruity. As part of the collected data, the $\chi 2/df$ value is expected to be 3 or lower. However the size of the sampling affects this value (Jöreskog & Sörbom, 1993). In this study, the sample size is represented by 2023 participants. Therefore due to the fact that the $\chi 2$ value is used for smaller sampling group sizes, this value was not taken into consideration for this study. When the congruity indexes of the developed scale are considered from the aspect of this data, all values are observed to be indicating congruity.

Cronbach α, Omega (ω) and average explained variance (AEV) were calculated for the reliability analysis of the factors in the scale's model. The Cronbach α value for the whole of the scale was found as .95, and the Omega (ω) value was found as .97. The Cronbach α value for the Perceived Usefulness Factor was .91, the Omega (ω) value was .92 and the AEV value was .73; the Cronbach α value for the Perceived Ease of Use Factor was .91, the Omega (ω) value was .90 and the AEV value was .74; the Cronbach α value for the Attitude towards Use Factor was .93, the Omega (ω) value was .93 and the AEV value was .76; the Cronbach α value for the Intention to Use Factor was .91, the Omega (ω) value was .91 and the AEV value was .66. In accordance with these values, the α and ω reliability and average explained variance of the factors in the scale are observed to be high (Büyüköztürk et al., 2014; McDonald, 1985; Fornell & Larcker, 1981).

As a result of the study, the Acceptance of Educational Use of the Tablet Computers used in the FATIH Project Scale was developed to be used with the secondary education students and in the analyses the scale was observed to be valid and reliable. The developed scale consists of a total of 16 items. 4 (1, 2, 3, 4) of the items belong to the Perceived Usefulness sub-dimension while 3 items (5, 6, 7) belong to the Perceived Ease of Use, 4 items (8, 9, 10, 11) belong to the Attitude towards Use and 5 (12, 13, 14, 15, 16) belong to Intention to Use. The scale was developed with secondary education students in mind. It is suggested to continue the process of the scale development with other educational levels.

Multiple regression analysis was performed for all of the sub-dimensions in the model regarding the acceptance of the educational use of the tablet computers used in the FATIH Project. As a result of the analysis, tablet ownership, having been educated with the assistance of the FATIH Project technologies and the class level were found to have an original contribution to the model which was significant and in the opposite direction. In this aspect, owning a tablet computer, being educated with the assistance of the FATIH Project technologies and an increase in the class level were found to be affecting the status of the acceptance levels of the tablet computers used in the FATIH Project negatively. This can be caused by the fact that the components of the FATIH Project could not yet been completed. Especially due to the educational e-content not being completely available, the tablet computer and the interactive white board still not being able to work in collaboration and the communication opportunities between teacher-student tablet computers being limited are considered to be facts that can negatively affect the status of acceptance of the educational use of the tablets provided with the FATIH Project. On the other hand, the students stated that using the tablet computers in the classrooms and the teaching-learning process reduced the teacher-student communication while experiencing headaches and eye tiredness as a result of the tablet computer and interactive white board use within the classroom (Duran & Aytaç, 2016). Yalçın İncik, and Akay (2015), in their study, stated that the communication levels of the teachers with the students will decrease due to the technologies in the FATIH Project and performing effective activities will not be possible due to the insufficient technology knowledge of the teachers. In addition, other negative student opinions such as the fact that tablet computers distract the students from the lessons, the limits on the internet access of the tablet computers decrease the motivation of the students and the tablet computers not making it easier for them to learn were also found in the literature (Altın & Kalelioğlu, 2015). In another study conducted by Varank, Yeni, and Gecü (2014), the students stated negative opinions in terms of the educational use of the tablet computers provided with the FATIH Project under the topics of time management, the tablet computers not being effective, inexperienced students, educational approach and technical problems. In the study conducted by Pamuk et al. (2013) the students were noted to say that they are not able to use the tablet computers provided by the FATIH Project in the classroom and they are confronted with problems when they attempt to use them.

In general, the acceptance status of the students regarding the educational use of the tablet computers of the FATIH Project in the process while they do not possess the tablet computers are considered to be high due to the fact that they do not have an opinion or experience regarding the tablet computer use. In the process following the distribution of the tablet computers, the acceptance status of the students regarding the educational use of the tablet computers provided by the FATIH Project are believed to be growing in the negative direction due to reasons such as the fact that the tablet computers have restrictions on the internet access, various limits occurring during the lessons (e.g. decreasing communication) and other negative situations observed as a result of the literature review. The negative effect in the acceptance statuses of the students are noted to be increasing with the lessons applied with the assistance of the tablet computers in the FATIH Project. Similar negative effects were observed in higher levels in the higher grades due to the fact that the grades also increase with the increase in the amount of lessons. Therefore as a result of the findings reached through the multiple regression analysis, the study was observed to be consistent with other studies in the literature. In addition, the original contribution of the gender of the students was insignificant. Therefore it can be said that the gender of the students did not affect the status of acceptance of the educational use of the tablet computers provided with the FATIH Project. Also in some other studies in the literature, a statistically significant difference could not be found between the gender and the attitude towards using tablet computers (Dündar & Akçayır, 2014; Tekerek et al., 2014).

Within the scope of analyzing the secondary education students' educational use of the tablet computers provided by the FATIH Project in terms of several variables, with the help of the ANOVA analysis performed with the basis as high-school, in general the students in multi program high-schools were found to be the accepting the technology the most while the students in religious vocational high-schools were the least accepting technology. After the religious vocational high-schools, Anatolian high-schools are the second less accepting high-schools in terms of the educational use of the tablet computers. Also in the study where the study group consisted of students from the Anatolian high-school and religious vocational school and the opinions of the students regarding the educational use of the tablet computers were examined, the students were observed to be mostly stating negative opinions regarding the in-class use of the tablet computers provided with the FATIH Project (Duran & Aytaç, 2016). In some other studies conducted at the high-school level, the students shared negative opinions for the major part regarding the use of the tablet computers in the FATIH Project (Altın & Kalelioğlu, 2015; Pamuk et al., 2013).

In the scope of the study, the data collection was performed with a variety of schools such as Anatolian high-school, vocational high-school, religious vocational high-school and multi program high-school. For future studies, the addition of other types of high-schools such as science and teacher training high-schools into the sampling of the study and the comparative examination of the findings is suggested. On the other hand, the least acceptance of the educational use of the tablet computers provided with the FATIH Project was seen at the religious vocational high-schools. In this sense, it is suggested to conduct new studies with the aim of increasing the acceptance levels of the students in the religious vocational high-schools. In addition, the scale may be used in studies where the effects of the possible variables that may affect the students' acceptance of the educational use of the tablet computers are examined. In conclusion, the scale was developed for the secondary education students. It is suggested to conduct studies regarding the use of the scale in other education levels within the scope of the FATIH Project.

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