

Educational Need of Adults in the Frame of Digital Divide* (Sakarya City Arifiye District Sample)

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ABSTRACT This study is realized with the aim of determining educational needs for computer technologies to prevent digital divide of adults. The sample consisted of 330 people. According to the findings, it has been determined that the adults have different levels of information on computer technologies. Educational needs show difference according to age, educational level and income level. As age and income level increases, it has been reached as a result that need for education of computer technology also increases. As educational level decreases, the result that need for education increases has been reached. In the light of these results, it has been determined that giving computer courses from information and communication technologies and production of projects on these subjects will not be adequate to prevent digital divide. It is observed that it is necessary to develop projects related to adult education by local authorities to prevent digital divide.

INTRODUCTION

A rapid change is a matter of fact on information and communication technologies in 21st century. The countries which present this change and have individuals keeping up with this change (Kotkin 2000) are named as developed countries. For this reason, individuals who use information and communication technologies (ICT) effectively, and know reaching information in a rapid way are needed (Seferoglu and Akbiyik 2007) and the countries give great importance to ICT usage to keep in pace with the development as socially and economically in the world (Livingstone and Helsper 2007). On the other hand, the difference between the countries which are well developed in ICT field and the developing countries increase more and more everyday (Ege 2008).

Digital Divide and Educational Needs

As inequalities in access to information and communication technologies and the usage of these technologies have been at different dimensions between the countries. It is observed that there are inequalities between different parts of a country in the frame of access to information and communication technologies and using these technologies. Inequalities in using and access to ICT are stated as “digital divide” in literature (Atkinson et al. 2008; Underwood 2007; Saleh 2009; Seferoglu et al. 2008; Aytun 2005; Geray 2003). Digital divide is defined by OECD (2001)

as: “differences between individuals, household, enterprises and geographical regions at different socio-economical levels in the frame of access to ICT and internet usage opportunities”. Compaine (2001) and Hargattai (2003) defined digital divide as the difference between the ones who can access information and communication technologies and can use them and the ones who cannot access these technologies and cannot use them.

Three indicators of digital divide in literature are stated as (1) access, (2) usage and (3) ICT literacy (Yildiz and Seferoglu 2013; Hohlfed et al. 2008; Tien and Fu 2008; Geray 2003; OECD 2001). These terms can be defined as: (1) *Access*, the people’s reaching software, hardware and internet support related to information and communication technologies (Hohlfed et al. 2008); (2) *usage*, people’s owning skills and ability of benefiting from information and communication technologies (Solomon et al. 2003); (3), *ICT literacy*, information and point of views of these people while using these technologies and reaching information (Van Dijk and Hacker 2003).

Computer forms an important part of information and communication technologies. Especially, rapid access to information and communication in a rapid way as individually and massively has been provided for by the way of computer and entrance of internet into the human life. Using these technologies have been inevitable for people living in this country with a mindset of using the technologies, so as not to fall

behind the developed world. In the literature, many academicians have conducted researches on ICT access, use and literacy (Gurcan 2015; Karabacak and Eksioglu 2015; Atkinson et al. 2008; Underwood 2007; Saleh 2009; Seferoglu Avci and Kalayci 2008; Kalayci and Seferoglu 2012; Yildiz and Seferoglu 2013; Yildiz and Seferoglu 2014a; Aytun 2005; Geray 2003). The study made by Gurcan (2015) in Turkey is one of the most comprehensive research in this area. Gurcan has addressed digital divide in Turkey from a broader perspective in his study. He evaluated the current status of the digital divide in Turkey, Turkey's global position and the policies in order to reduce the digital divide in Turkey. Gurcan stated that digital divide can change according to such demographic characteristics as age, education level, gender and income level while the most important reasons for digital divide are high price of access services and devices. Karabacak and Eksioglu (2015) discussed the relationship between digital divide and demographic characteristics of prospective teachers in their study.

Prevention of digital divide which is explained as the difference between access and usage of information and communication technologies among people is possible by abolishing the inequalities in access, usage and literacy of these technologies. Many countries developed several policies and projects with the aim of taking precautions. Fatih Project which started in 2012 at K12 schools in Turkey is a good example of these projects. In the context of digital divide, students learning at K12 schools are targeted with Fatih Project with an aim of eradicating the differences relating to access and usage of information and communication technologies among them. However, studies related to eliminating digital divide among adults are few. In this regard, several courses at the public education centres only address a few of the population living in a location. In this context, Ministry of National Education cannot reach an adequate number of adults with its studies to prevent digital divide. Development of several projects by local authorities gained great importance in relations to this situation.

Aim of the Study

In the light of the explanations above, this research has been conducted with the aim of determining educational need of adults for computer technologies, so as to prevent digital divide.

Sub-problems

1. What is the information level of adults in relation to computer technologies?
2. Questions on Educational need of adults on computer technologies;
 - a. Does it show any difference according to gender?
 - b. Does it show any difference according to age?
 - c. Does it show any difference according to educational level?
 - d. Does it show any difference according to the income of the family?

The Importance of the Study

The usage of ICT by only new generations in a country must not be regarded as significant to prevent digital divide in a country. Digital divide will be prevented in a more rapid way by the usage of these technologies by all individuals living in the borders of this country. Because of this reason, instead of giving education to only young people, all society living in the borders of this country should gain the skills of using these technologies. It is not a true approach to expect all of these from the government. In this context, local authorities should have responsibilities. As this research will determine whether the adults have educational needs related to computer technologies taking place in ICT and making proposals to local authorities, it is stated as an important research.

METHODOLOGY

The study has been realized with survey model from quantitative research methods.

Population and Sample of the Research

The sample in this research was gotten from Ari-fiye district place in the borders of Sakarya Municipality. It was established from 300 people who were formed according to easy sample method.

Data Collection Instruments and Collection of the Data

In the research, "Computer Technology Usage Level" scale which has been developed by the Karabacak and Eksioglu (2015) has been used by taking "Computer Usage Scale from Digital

Technologies” into account which has been developed by the same researchers as a data collection instrument. “25” questions which have been prepared according to five point Likert took place in the scale. The scoring of the questions taking place in the scale is as “never=1” point, “Rarely=2” points, “Partly=3” points, “Extensively=4” points, “Completely=5” points. In the determination of arithmetical averages of these points, score gaps of “1.00-1.79” for “never”, “1.80-2.59” for “rarely”, “2.60-3.39” for partly, “3.40-4.19” for extensively and “4.20-5.00” for completely have been taken into account. At the results of reliability study for “25” statements, “Cronbach’s Alpha” value has been determined as “0.984.

As seen in Table 1, at the result of validity study, sample measurement competence value

Table 1: (KMO) Sample Measurement and Barlett’s Test Results of the Scale

KMO Sample Measurement Competence Value	0.778
Barlett Test Approximate Ki-Square Value	18431,373 sd=300, p=0.000

(KMO) of the questionnaire has been determined as “0.737”. As this value is higher than “0.70”, the number of samples is accepted as satisfactory. Also result of Barlett’s Test has been found as “ $p=0.00<0.05$ ”. This demonstrates that there is a meaningful difference between the sample number and item number in the questionnaire.

The results related to factor analysis of validity study of the scale took place in Table 2. As seen in the table, the scale explains 74.652 percent of what the researcher wants to measure. As this value is higher than 0.40, it shows that the questionnaire can measure the requested feature at a higher level. It has been determined by the result of the factor analysis that item load values of every item in the scale has been between “0.295-0.932”. As this value provided the requirement of higher than “0.30” as Buyukozturk (2006) stated as acceptable, twenty-five items have been used in the scale just as original.

Collection and Analysis of the Data

The data have been collected by making face-to-face interviews with the individuals taking place in the sample. The data collected have been transferred to SPSS 17.00 program in the com-

Table 2: Factor Analysis Results of the Scale

Item	Item load values	Factor	Load after rotating
1	I use the computer keyboard with all its features	.906	.952
2	I use the mouse in the computer with all its features	.879	.937
3	I know to keep the information in the computer	.893	.945
4	I know to transfer the information in the computer	.932	.965
5	I can use word program in the computer	.866	.931
6	I can use excel program in the computer	.673	.820
7	I can use power point program in the computer	.604	.777
8	I know to load any program in the computer	.873	.934
9	I know to move any program from the computer	.866	.931
10	I can format the computer and reload it again	.295	.543
11	I can use the computer with all its features	.902	.950
12	I can connect to internet from the computer whenever I need it	.781	.884
13	I know to download and protect the information from internet	.903	.950
14	I can gain information from internet on any subject in a short time.	.861	.928
15	I use computer with education aim (educational programs, etc)	.737	.859
16	I use computer with the aim of keeping information in it	.776	.881
17	I use computer with the aim of entertainment (playing games, music, etc.)	.615	.784
18	I use computer to follow the news from internet (newspaper, magazine, etc)	.632	.795
19	I use computer with the aim of communication from internet (mail, chat, etc)	.768	.876
20	I use computer with the aim of following social media (twitter, facebook)	.676	.822
21	I use computer with the aim of taking course from internet	.360	.600
22	I use computer with the aim of making research from internet	.868	.932
23	I use computer with the aim of making shopping from internet	.369	.608
24	I use computer with the aim of following announcements from internet	.489	.700
25	I can use computer comfortably whenever I need it	.848	.921
Total percentage of explained variance		73.487	

puter; firstly distribution determination statistical procedure has been realized. According to the distribution determination statistical procedure, as skewness (-0.849) and kurtosis (-0.603) values have been between “-1.5 and +1.5”, (Tabasnick) it has been determined that the data demonstrated a normal distribution. After it has been determined that the data demonstrated a normal distribution, frequency distribution related to independent variables has been taken. Firstly, descriptive statistics (average, Standard deviation and relative change coefficient) for dependent variables, then t-test which has been used for comparing two independent groups, one-way variance analysis (One Way ANOVA) procedures have been realized. Multiple comparison (TUKEY) statistical procedure which has been used for determining the source of difference in case of determining meaningful relationships in one way variance analysis has been realized. “ $p < 0.05$ ” meaningful level has been taken into account in all statistical procedures.

RESULTS

Table 3 shows that 44.4 percent of the sample is formed of females, 55.6 percent of them is formed of males. 22.1 percent of the samples has been younger than 30 years' old, 33.5 percent of them between 30-45 years' old, 36 percent of them between 45-60 years' old, 8.5 percent of them

Table 3: Information related to demographic features of the sample

Variables	f	%	Valid %
<i>Gender</i>			
Female	147	44,4	44.4
Male	184	55.6	55.6
Total	331	100	100
<i>Age</i>			
Less than 30	73	22.1	22.1
Between 30-45	111	33.5	33.5
Between 45-60	119	36,0	36.0
More than 60	28	8.5	8.5
Total	331	100	100.0
<i>Income Level</i>			
Less than 2000	21	6,3	6.3
Between 2001-4000	136	41.1	41.1
Between 4001-6000	100	30.2	30.2
More than 6000-6001	74	22.4	22.4
Total	331	100	100.0
<i>Educational Situation</i>			
Elementary	90	27.3	27.3
Secondary	97	29.5	29.5
University	129	39.2	39.2
Master/doctorate	13	4,0	4.0
Total	329	100	100

above 60 years' old. Monthly income of 6.3 percent of the sample has been less than 2000 TL, 41.1 percent of them between 2001-4000 TL, 30.2 percent of them between 4001-6000 TL, 22.4 percent of them above 6001 TL. 27.3 percent of the sample have been graduated from elementary school, 29.5 percent of them from secondary school, 39 percent, 22 percent of them from university, 4 percent of them from master's degree. 59.5 percent of the individuals in the sample has 3 or less people in their family, 40.5 percent of them has 4 or more than 4 members in their families.

Findings Related to First Sub- problem

When descriptive statistics in Table 4 were examined, it was discovered that average related to the general of the scale has been “3.080”, standard deviation has been “1.159” and relative change coefficient has been “37.641”. According to these data, it can be said that the totality of the sample can use computer technologies at medium level. As relative change coefficient has been higher than “25%”, it can be stated that there is not a common idea between the individuals in the sample. When the data gained have been examined at item base, it has been determined that the individuals taking place in the sample participated in the statements such as “I can gain information from internet on any subject in a short time.” ($\bar{X}=3.927$), “I can use computer comfortably whenever I need it” ($\bar{X}=3.776$), “I can connect to internet from the computer whenever I need it” ($\bar{X}=3.775$), “I use computer with the aim of following social media (Twitter, Facebook)” ($\bar{X}=3.677$), “I use computer with the aim of making research from internet (learning the subject you are interested in, etc.)” ($\bar{X}=3.595$), I use the mouse ($\bar{X}=3.650$) and keyboard ($\bar{X}=3.405$) with all its features”. It has been discovered that the individuals taking place in the sample participated in the statements below less, such as “I use computer with the aim of taking course from internet” ($\bar{X}=2.024$), “I use computer with the aim of making shopping from internet.” ($\bar{X}=2.160$) and “I use computer with the aim of following announcements from internet” ($\bar{X}=2.407$), I can format the computer and reload it again ($\bar{X}=1.59$) item never realizes.

Findings Related to Second Sub- problem

According to the Gender

When t-test results according to the gender from Table 5 have been examined, as “ $p=0.00$ ”

Table 4: Descriptive statistics

Item	N	ss	X	V%
1 I use the computer keyboard with all its features	331	3.405	1.408	41.338
2 I use the mouse in the computer with all its features	331	3.650	1.545	42.324
3 I know to keep the information in the computer	331	3.190	1.389	43.549
4 I know to transfer the information in the computer	331	3.323	1.413	42.504
5 I can use word program in the computer	331	3.060	1.352	44.162
6 I can use excel program in the computer	331	2.426	1.145	47.214
7 I can use power point program in the computer	331	2.831	1.528	53.979
8 I know to load any program in the computer	331	3.018	1.284	42.537
9 I know to move any program from the computer	331	2.952	1.271	43.066
10 I can format the computer and reload it again	331	1.459	.666	45.614
11 I can use the computer with all its features	331	3.184	1.191	37.389
12 I can connect to internet from the computer whenever I need it	331	3.755	1.505	40.069
13 I know to download and protect the information from internet	331	3.311	1.347	40.687
14 I can gain information from internet on any subject in a short time.	331	3.937	1.564	39.741
15 I use computer with education aim (educational programs. etc)	331	3.335	1.601	47.999
16 I use computer with the aim of keeping information in it	331	3.024	1.467	48.496
17 I use computer with the aim of entertainment (playing games. music. etc.)	331	3.199	1.391	43.488
18 I use computer to follow the news from internet (newspaper, magazine. etc)	331	3.311	1.434	43.319
19 I use computer with the aim of communication from internet (mail. chat, etc)	331	3.109	1.349	43.377
20 I use computer with the aim of following social media (twitter, facebook)	331	3.677	1.561	42.464
21 I use computer with the aim of taking course from internet	331	2.024	.812	40.136
22 I use computer with the aim of making research from internet	331	3.595	1.450	40.330
23 I use computer with the aim of making shopping from internet	331	2.160	1.085	50.231
24 I use computer with the aim of following announcements from internet	331	2.408	1.101	45.720
25 I can use computer comfortably whenever I need it	331	3.776	1.495	39.585
Total	331	3.080	1.159	37.641

and “ $t=4.205$ ” values have been taken, it was discovered that there is a meaningful difference between males and females. When averages according to the gender have been examined from the same table, it was seen that the average of males has been “3.309”, the average of females has been “2.777”. According to these statistical results, it has been determined that the females need more education than men.

According to the Age

One way variance analysis results taken from the data from the sample have been given in the table. When the Table 6 was examined, it was discovered that there are meaningful differences according to age ($p=0.000$ and $F=18.311$), edu-

cational situation ($p=0.000$ and $F=101.787$) and income situation ($p=0.000$ and $F=100.828$).

According to multiple comparison (TUKEY) test according to age in Table 7, the findings below has been reached; 45 years old and above were different from the age groups below 45 years old. When averages related to every age group has been examined, it was discovered that the individuals less than 30 years old have “3.509” average, the ones between 30-45 have “3.310”, the ones between 45-60 have “2.865” and the ones more than 60 years’ old have “1.880” average.

According to the Educational Situation

When multiple comparison (TUKEY) test results according to educational situation were examined from Table 8, it was observed that there is a meaningful difference between the averages of the groups at “ $p<0.05$ ” meaningful level. When the averages of the groups were examined, it was discovered that the average of ele-

Table 5: t-test results

Variables	N	X	ss.	t	df	p
Gender						
Female	147	2.777	1.323	4.205329		.000
Male	184	3.309	.975			

Table 6: One Way Variance Analysis (One-way ANOVA) results

Dependent Variables		Squares Total	Sd	Square mean Ort.	F	p
Age	Between the groups	65.097	3	21.699	18.311	.000
	In the groups	387.514	327	1.185		
	Total	452.611	330			
Educational situation	Between the groups	251.354	4	62.838	101.787	.000
	In the groups	201.257	326	.617		
	Total	452.611	330			
Income situation	Between the groups	217.492	3	72.497	100.828	.000
	In the groups	235.119	327	.719		
	Total	452.611	330			

Table 7: Results of multiple comparison (TUKEY) according to age

Age	N	X	ss	Age	Average difference	Standard Error	P
Less than 30	73	3.509	.441	Between 30-45	.199	.164	.621
				Between 45-60	.644*	.162	.000
				More than 60	1.629*	.242	.000
Between 30-45	111	3.310	1.186	Less than 30	-.199	.164	.621
				Between 45-60	.445*	.144	.011
				More than 60	1.430*	.230	.000
Between 45-60	119	2.865	1.293	Less than 30	-.644*	.162	.000
				Between 30-45	-.445*	.144	.011
				More than 60	.985*	.229	.000
More than 60	28	1.880	.896	Less than 30	-1.629*	.242	.000
				Between 45-60	-1.430*	.230	.000
				More than 60	-.985*	.229	.000
Total	331	3.073	1.171				

Table 8: Results of multiple comparison (TUKEY) according to educational situation

Educational situation	N	X	ss	Age	Average difference	Standard Error	P
Elementary	90	1.780	1.162	Secondary	-1.513*	.115	.000
				University	-2.013*	.108	.000
				Master/Doctorate	-2.814*	.233	.000
Secondary	97	3.248	.751	Elementary	1.513*	.115	.000
				University	-.500*	.106	.000
				Master/Doctorate	-1.301*	.232	.000
University	129	3.741	.460	Elementary	2.013*	.108	.000
				University	.500*	.106	.000
				Master/Doctorate	-.800*	.229	.005
Master/Doctorate	13	4.541	.021	Elementary	2.814*	.233	.000
				University	1.301*	.232	.000
				Master/Doctorate	.800*	.228	.005
Total	329	3.072	1.171				

mentary education graduates have been “1.780”, the average of secondary education graduates have been “3.248”, the average of university graduates have been “3.741” the average of master/doctorate graduates have been “4.541”. According to these data, it can be stated that as educational level decreases, educational need for computer technologies increases.

According to Family Income

When multiple comparison (TUKEY) test results according to family income were examined from Table 9, it was found that there is a meaningful difference between the ones who have 4001 TL and above monthly income and the ones who have 4000 TL and below monthly income at

Table 9: Results of multiple comparison (TUKEY) according to family income

<i>Family income</i>	<i>N</i>	<i>X</i>	<i>ss</i>	<i>Age</i>	<i>Average difference</i>	<i>Standard Error</i>	<i>P</i>
Less than 2000	21	1.118	.221	Between 2001-4000	1.393*	.199	.000
				Between 4001-6000	2.553*	.204	.000
				More than 6001	2.765*	.210	.000
Between 2001-4000	136	2.512	1.216	Less than 2000	1.393*	.199	.000
				Between 4001-6000	1.160*	.112	.000
				More than 6001	1.372*	.123	.000
Between 4001-6000	100	3.671	.481	Less than 2000	2.553*	.204	.000
				Between 2001-4000	1.160*	.112	.000
				More than 6001	-.212	.130	.365
More than 6001	74	3.883	.415	Less than 2000	2.765*	.210	.000
				Between 2001-4000	1.372*	.123	.000
				Between 4001-6000	.212	.130	.365
Total	331	3.080	1.159				

“ $p < 0.05$ ” meaningful levels. When the averages from the table were examined, it was discovered that the average of the ones who have monthly income less than 2000 TL have been “1.118”, the average of the ones who have monthly income between 2001-4000 TL have been “2.512”, the average of the ones who have monthly income between 4001-6000 TL have been “3.671” and the average of the ones who have monthly income more than 6001 TL have been “3.883”. Therefore, just as it has been in educational situation, as income level increases, educational need for computer technologies changes vice versa.

DISCUSSION

According to the research findings, it was discovered that the females have low scores more than males in the usage of computer. In other words, computer knowledge of females is lower than that of males. These findings show a parallelism with the researches which demonstrate that there are meaningful differences according to the gender in digital divide (Gurcan 2015; Sen and Akdeniz 2012; Yang and Chen 2010; Ege 2008; Kilic and Yildirim 2008; Jackson and Fri 2008; Deryakulu 2007). Therefore, according to the results taken, it could be said, that females have more educational need than their male counterparts.

There is a relationship between the age of the individuals and computer knowledge according to the results reached. As the age of the individuals increase, the result that knowledge of the individuals related to the computer decreases

is taken. In other words, age and computer knowledge exhibit a negative relationship. It was discovered that there are meaningful differences between the adults who are 45 years old and above and the adults below 45 years old. This result shows that the adults who are 45 years old and above need more education than the adults below 45 years old. As it has been thought that Gurcan (2015), Yildiz and Seferoglu (2014a), Sen and Akdeniz (2012), Ege (2008) and Atkinson et al. (2008) reached the results that there is a meaningful relationship between age and digital divide, it should not be forgotten that educational plans should be made according to age.

The result that there is a meaningful relationship between educational situation and computer knowledge has been reached. It has been determined that the need for computer education and educational situation changes vice versa. In other words, as educational level decreases, the need for computer knowledge increases. When the results of Gurcan (2015), Sen and Akdeniz (2012) and Pick and Azari (2008) are taken into consideration that educational level has been mostly effective in digital divide, if the usage of these technologies can be provided better for the people whose educational situation are lower, extension of digital divide related to educational situation can be prevented.

Lastly, the research has been able to prove that there is a meaningful relationship between income level and computer knowledge level. As income level increases, need for education decreases. As the ones whose income have been lower than 2000 TL need education, the ones

whose income level have been between 2001-4000 TL need less education.

CONCLUSION

The results below have been reached in the research which was carried out with the aim of determining the educational need of adults living in Sakarya city, Arifiye district in relations to computer technology usage taking place in ICT for preventing digital divide.

It was discovered that the individuals living in this city used computer at medium level, but these individuals did not demonstrate a homogenous distribution on the subject. The fact that these adults could not carry out the act of formatting and resetting computer because it required some expertise in that regard has been established. These individuals use computers with the aim of taking educational courses, gathering of information from the internet and doing their shopping online. They could use the computer with the aim of gathering information from internet, following social media and making research from internet. Also their skills of using the mouse and keyboard were extremely high.

According to the results taken, it could be said, that females have more educational need than their male counterparts.

There is a relationship between the age of the individuals and computer knowledge according to the results reached. As the age of the individuals increase, the result that knowledge of the individuals related to the computer decreases is taken.

The result that there is a meaningful relationship between educational situation and computer knowledge has been reached. It has been determined that the need for computer education and educational situation changes vice versa.

Lastly, the research has been able to prove that there is a meaningful relationship between income level and computer knowledge level. As income level increases, need for computer education decreases.

RECOMMENDATIONS

According to Gurcan, ICT and internet access, which lead to fundamental changes in many areas especially general operation in social, cultural and economic areas, highly provide access

to information. That the individuals who can not use ICT effectively are deprived of knowledge is a foregone conclusion. Therefore, some studies should be also carried out for adults rather than resolving only the youth's this problem. From this point of view, legal regulations and projects which resolve the needs for adults' ICT access and use should be carried out.

As the adults need computer literacy education, it is only natural for one to expect this education from the institutions which are related to the Ministry of National Education. Local authorities and institutions should develop projects on this subject. In the context of the developed projects, it is so important that age factor should be taken into consideration with regards to the education which should be given to adults. Giving education to the individuals above 45 years old should be made a priority, as this can prevent numerical divide, especially since those individuals below 45 years old have qualifications on computer literacy. Also, all the individuals whose educational situation and income level are low should be given priority. Similar researches can be conducted with adults who live in different geographical regions of Turkey.

LIMITATIONS

This research is limited with educational need of computer technologies taking place in ICT and Sakarya city Arifiye district.

NOTE

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