Demographic Factors Affecting Internet Using Purposes of High School Students

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ABSTRACT

This study aimed at determining the impact of demographic factors on the Internet usage purposes of high school students. The population of the study consisted of students between 9th and 12th grades from the Anatolian high schools, science high schools, social sciences high schools, sports high schools and fine arts high schools in Turkey. The sample was chosen through the stratified and cluster sampling procedure. The students were chosen randomly depending on the regions of their school attendance. The sample for this research numbered 3170 students. The research was conducted in the second term of the 2014-2015 academic year. The data were obtained through online forms and the bases of participation are honesty, sincerity, and volunteerism. The data collection tool is a questionnaire and a demographic information form prepared by the researchers. Chi-square Automatic Interaction Detector (CHAID) analysis was conducted through SPSS in order to determine the demographic factors affecting the purposes of internet usage among high school students. The results of this research show that 9th grade students in Turkey mostly use the Internet to do homework while students from other grades mostly use the Internet for social networking. The male students use the Internet for playing video games more frequently in comparison with female students. Also, socioeconomic status affects the purpose of Internet usage. Hence it is suggested that teachers talking to male students might use the examples of computers and games and with female students they might relate the topics to social media.

Keywords: *Internet Using Purposes, CHAID Analysis, High School Students.*

INTRODUCTION

In recent years, the Internet has facilitated daily life in many aspects and it has become increasingly widespread. Internet usage has increased in areas such as: health, shopping, education, banking, transportation and personal data investigation. Mobile devices play an important role in this significant increase in Internet usage. By the first 3 months of 2015, 74% of the internet users in Turkey accessed the Internet through mobile phones or smart phones (TÜİK, 2015), an increase from 58% in 2014. Thus, it can be said that smart phones have become more prevalent for Internet access and quite a number of people living in Turkey access the Internet through PDAs.

Internet usage has increased among the entire population as well since it has the lion's share especially among the teenagers in Turkey (TÜİK, 2013). Since today's youth is composed of digital natives, it is necessary to understand them, review their needs in education and use new pedagogical approaches (Bilgiç, Duman, & Seferoğlu, 2011). Internet has some advantages such as the variety of knowledge presentation or the speed and convenience of information access. The Internet has acquired a stronger position than other tools with these advantages (Ekiz, Bayam, & Ünal, 2003). When

this strong position of the internet is considered, it can be referred that it is one of the most important tools enabling enhancement of the digital natives' learning capacity.

The teacher-student relationship has been reshaped as a result of Internet use in education (Akkoyunlu, 2002). To manage this relation properly and make the Internet beneficial for students, it is very important to know, understand and explain the purposes of internet use by students. By identifying the Internet use purpose correctly, communication resources can be used more effectively and student motivations can be increased. In addition, if the purposes of high school students' Internet use are identified, this information could be used as a tool for improving education. The variables affecting Internet use among them should be determined. As a result of that study, several researches could be conducted on designing the best educational environment for the students depending on the primary purposes of their internet usage. For instance, the study by Noh et al. (2013) on Facebook indicates that Facebook could have a position in the future design of curriculum. DeWitt et al. (2013) also posit in their study on the impact of YouTube on education that YouTube could be used in the performing arts education. With the contribution of these studies, curriculum specialists, teachers and other partners could be advised based on the Internet usage purposes of the students. Therefore, it is important to examine and show the purposes of the internet usage of the high school students in Turkey.

While some researchers have studied problematic Internet usage at high school level (Derin, 2013; Gençer, 2011; Gürcan, 2010; Ha et al., 2007; Isarabhakdi & Pewnil, 2016; Kim, Nam, Oh, & Kang, 2016; Özgün, 2011; Seo, Kang, & Yom, 2009; Sinkkonen, Puhakka, & Meriläinen, 2014; Şahin, 2014; Toraman, 2013; Wang et al., 2011), other scholars examine how much time is spent on the Internet (Çevik, 2016; Kelleci, Güler, Sezer, & Gölbaşı, 2009). Although there are some studies on the Internet usage habits of high school students (Ak, 2014; Kahraman, Altun-Yalçın, & Çevik, 2011; Nachmias, Mioduser, & Shemla, 2000; Ogur, 2016; Tsai & Tsai, 2010), it is observed that the level of examining the purposes of the internet usage by these studies is not adequate. As a result, identifying the Internet usage purposes of the students and the factors affecting them carry are of utmost importance. Through this identification, methods used frequently by the students could be determined and used for improving education. As Sheikh-Abdullah (2016) states, teachers should benefit from technology to contribute to the learning environment.

When the conducted studies on the university students' Internet usage are examined, it is observed that university students use the internet for research, doing homework, accessing information, communication/social networking and trading purposes (Akkoyunlu & Yılmaz, 2005; Atav, Akkoyunlu, & Sağlam, 2006; Li & Kirkup, 2007; Odell, Korgen, Schumacher, & Delucchi, 2000; Okay, 2010; Öztürk & Akgün, 2012; Ruzgar, 2005; Simsim, 2011; Uçak, 2007).

The findings of the literature show that the teenagers usually use the Internet for social networking and communication. However, the studies investigating the purposes of the internet usage of the high school students are quite restricted and it has been observed that there are not adequate numbers of Turkey-wide studies in terms of sampling. In this context, analyzing the purposes of Internet usage of the high school students, the relationship between these purposes and the demographic variables, and determining important factors affecting the purposes of Internet usage are the objectives of this research. This study aims at answering the following research question: "What are the demographic factors affecting internet using purposes of high school students?"

METHODOLOGY

Research Design

This research aims at determining the impact of demographic factors on the Internet using purposes of high school students. General screening model based on quantitative data is used in this study in order to identify attitudes, opinions, behaviors or characteristics of the sample (Creswell,

2013).

Survey design aims at determining the characteristics of a group. It aims at describing a condition from the past or a still present condition, as it is. The advantage of survey design is to reveal comprehensive information from quite a large sample. The research data are reported through tables which include frequencies, percentages and more (Büyüköztürk, Kılıç-Çakmak, Akgün, Karadeniz, & Demirel, 2013; Karasar, 2014). It aims at defining the individual or object mentioned in the research as in their own conditions and as they are. There is no effort to change them (Karasar, 2014).

Population and Sample

The population of the study consists of students between 9th and 12th grades from the Anatolian high schools, science high schools, social sciences high schools, sports high schools and fine arts high schools in Turkey. Nomenclature of Territorial Units for Statistics is used for choosing the sample. Since the student ratios are determined according to the regions and types of schools, stratified sampling method was applied. In addition, since the school is chosen so as to choose the student, cluster sampling method is used too. The sample of study comprised 3170 students.

Student distribution according to demographic variables are as follows: Gender (48.5% boy, 51.5% girl), grade (43.3% 9th grade, 26.1% 10th grade, 17.2% 11th grade and 13.3% 12th grade), school type (78.6% Anatolian high school, 6.8% science high school, 3.2% social science high school, 4.6% fine arts high school, 6.8% sport high school), the educational status of the father (1.8% not graduated from any school, 27.6% primary school, 19.2% secondary school, 31.9% high school, 17.5% bachelor's degree and 2% postgraduate); the educational status of the mother (8.7% not graduated from any school, 35.9% primary school, 19.7% secondary school, 24.9% high school, 9.3% bachelor's degree and 1.5% postgraduate), the number of individuals in the family (14% 3 or less, 65.2% 4-5 people, 14.3% 6-7 people, 6.5% 8 or high), living with elder family members (15,8% yes, 84,2% no), living house status (22.4% rent, 75% owner, 2.6% housing), family monthly income (6.4% 800 TL or less, 16.3% 800-1000 TL, 19.1% 1001-1500 TL, 17.2% 1501-2000 TL, 12.8% 2001-2500 TL, 12.1% 2501-3000 TL, 16.2% 3001 TL or high), the daily average duration of the internet usage (16.1% less than 1 hour, 50.2% 1-2 hour, 22.1% 3-4 hour, 11.7% 5 hour or high), playing any instrument (31.2% yes, 68.8% no) and the place of the residence (9.7% dormitory, 89% with own family, 0.7% with friends, 0.6% other).

Data Collection Tools and Data Analysis

The research was conducted in the second term of the 2014-2015 academic year. The data were obtained through online forms. The data collection tool is a questionnaire and a demographic information form, prepared by the researchers to enable students to express their Internet usage purposes. To develop the questionnaire, the first step was an exploration and review of the literature. Then, identified possible internet usage purposes are sent to two domain experts, who have a Master's degree in computer and instructional technologies. The questionnaire was finalized following recommendations of the domain experts. In accordance with the domain experts' opinion, the Internet using purposes are determined as playing games, doing homework, surfing the Internet and joining social networks. In addition, an "other" option is presented in the questionnaire.

Chi-square Automatic Interaction Detector (CHAID) analysis was conducted via SPSS to determine demographic factors affecting high school students' purposes in using the Internet. The dependent variable of the analysis is the Internet using purpose and independent variables were the other demographic variables.

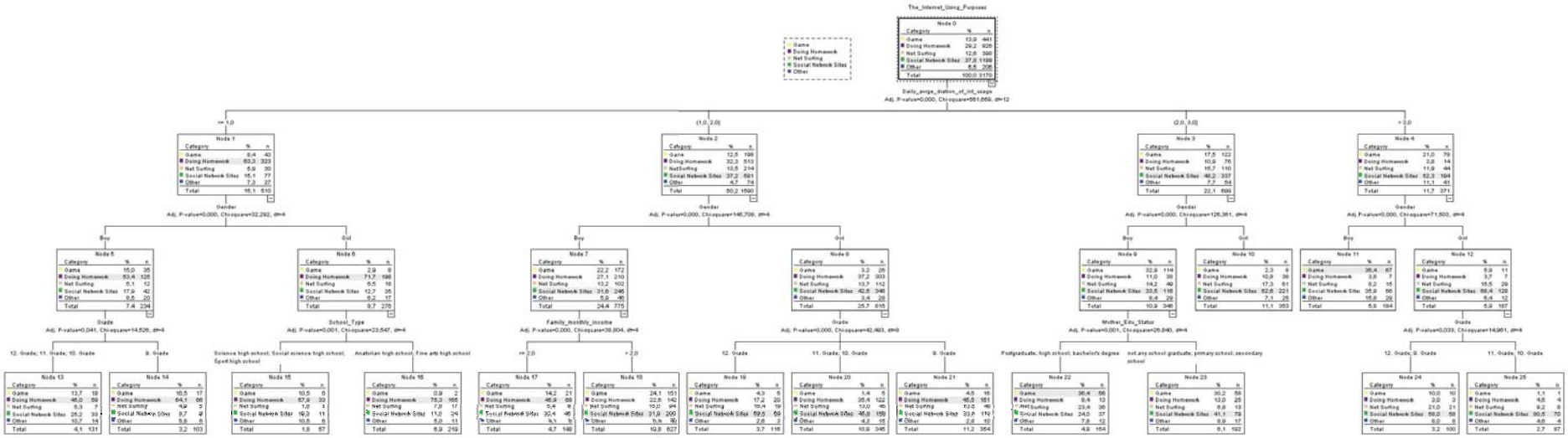
CHAID analysis is an algorithm developed by A. Hartigan in 1975. This technique improved on the Kass (1980) studies (Linoff & Berry, 2011). CHAID as a decision tree method is used to classify the data. This analysis merges categories which do not cause statistically significant difference on the dependent variable by using chi-square analysis. Then optimal separation categories are chosen and analysis is conducted with this category.

When the sample size is big, the principle of homogeneity can be violated. Therefore, the process of making predictions which randomly constructed a regression equation may not be realistic. Because The regression analysis assumes that the variances for the subset of dependent variables are homogeneous (Alpar, 2013). For this reason, splitting the whole to the sub-groups and continue examining it becomes a more realistic approach. Thus, the homogeneity requirement can be fulfilled (Kayri & Boysan, 2007). In addition, in a classical regression equation, the assumptions of normality, linearity, homogeneity of variances and additivity should be provided (Tabachnik & Fidell, 2012). Because CHAID analysis splits the population child node through a strong algorithm, the regression equation of this analysis does not create normality, linearity, homogeneity of variances and additivity assumption. In addition, both the continuous variable and the categorical variable can be examined by CHAID analysis. As a result of this specification, CHAID analysis is a semi-parametric analysis (Kayri & Boysan, 2007; Linoff & Berry, 2011).

To identify demographic factors affecting the Internet using purposes of high school students, CHAID analysis is conducted through SPSS.

RESULTS

Results of the CHAID analysis which is used to identify demographic factors affecting the internet using purposes of high school students are presented in the Figure 1.



When Figure 1 is examined, it can be seen that the Internet using purposes of high school students is the dependent variable and the other demographic variables are the independent variable. Independent variables do not reveal the differences between groups, who do not take part in Figure 1.

The daily average duration of Internet use seems to be a dominant variable by having an influence on the internet using purposes of high school students when Figure 1 is examined ($\chi^2(12) = 561.659$, $p = 0.000$). Some 63.3% of the students who use the Internet for less than 1 hour per day, use it for doing homework. Some 37.2% of the students using the internet for 1-2 hours, 48.2% of the students using the internet for 2-4 hours and 52.3% of the students using the internet for more than 4 hours use the internet for joining social networking sites.

Gender seems to be the dominant variable affecting the internet using purposes of students who use the internet for less than 1 hour ($\chi^2(4) = 32.292$, $p = 0.000$). According to this result, 71.7% of female students and 53.4% of male students use the internet to do homework. When female students and male students are compared, it can be argued that female students using the Internet for less than an hour spend more time using the Internet for doing homework.

Grade variable seems to be a dominant variable influencing internet usage of male students who use internet less than an hour ($\chi^2(4) = 14.5263$, $p = 0.041$). According to this result, 64.1% of 9th grade male students using internet less than an hour, 45% of the other grades' male students use internet for doing homework. Compared with other grades' students, 9th grade male students spend more time using the Internet for doing homework.

School type variable is a dominant variable affecting the internet using purpose of female students who use Internet less than an hour ($\chi^2(4) = 23.547$, $p = 0.001$). According to this result, 75.3% of the students attending Anatolian high schools and fine arts high schools and 57.9% of female students attending social science high schools and sports high schools use the Internet for doing homework. Compared with female students who are attending other types of schools, female students attending Anatolian high schools and fine arts high schools spend more time using Internet for doing homework.

Some 50.2% of the students use the Internet for 1-2 hours daily. Gender variable is the dominant variable having an effect on the internet using purpose of students who use the internet for 1-2 hours ($\chi^2(4) = 145.708$, $p = 0.000$). According to this result, 42.5% of female students and 31.6% of male students use the Internet to join social networking sites. When compared with male students, it was found that female students using the internet for 1-2 hours spend more time using it for joining social networking sites. When other purposes are examined, 22.2% of male students use the Internet to play games (the ratio for female students is 3.2%).

Monthly income variable is a dominant variable affecting Internet using purposes of male students who use the Internet for 1-2 hours ($\chi^2(4) = 38.804$, $p = 0.000$). While 45.9% of male students whose families earn 1000 TL or less monthly income use the internet to do homework, 31.9% of male students whose families earn higher than 1000 TL monthly income use the Internet for social networking. It can be said that monthly income affects Internet using purposes. While male students whose families have 1000 TL or less monthly income use the internet mostly to do homework, male students whose families have higher monthly income use the Internet for social networking.

Grade variable has been observed as a dominant variable having an effect on the internet using purpose of female students who use the internet for 1-2 hours ($\chi^2(8) = 42.493$, $p = 0.000$). While 45.5% of female students in 9th grade use the Internet to do homework, 45.8% of female students in 10th and 11th grade and 59.5% of female students continuing to 12th grade use the internet to join social networking sites. It can be said that while female students continuing to 9th grade use the Internet mostly for doing homework, female students continuing 10th grade or higher use the Internet mostly to join social networking sites. The 12th grade student ratio is statistically significantly different among the female students who use the internet to join social networking sites in comparison with 10th and 11th grade female students.

It has been observed that gender is a dominant variable affecting the internet using purposes of students who use the internet for 2-4 hours daily ($\chi^2(4)=126.361$, $p = 0.000$). It can be said that 62.6% of female students and 33.5% of male students use the internet to join social networking sites. Compared with

male students, female students who use the Internet for 2-4 hours spend more time using the Internet for joining social networking sites.

Mother's educational status variable is a dominant variable affecting the internet using purposes of male students who use the Internet for 2-4 hours ($\chi^2(4) = 26.840$, $p = 0.001$). It can be said that while male students whose mother's educational status is high school or higher use the Internet mostly to play games (36.4%); ones whose mother's educational status is lower than high school use the internet mostly to join social networking sites (41.1%).

Gender variable is a dominant variable influencing internet using purposes of the students who use the Internet more than 4 hours ($\chi^2(4)= 71.503$, $p = 0.000$). While 68.4% of female students in this category use the internet to join social networking sites, 36.4% of male students use the Internet to play games. Accordingly, male students using the Internet more than 4 hours daily use the internet mostly to play games; on the other hand most of the female students use the Internet for joining social networking sites.

Grade variable is a dominant variable having an effect on the internet using purpose of female students who use internet more than 4 hours ($\chi^2(4) = 14.961$, $p = 0.031$). It was found that 58% of female students in 9th and 12th grade using the Internet more than 4 hours, and 80.5% of female students in the 10th and 11th grade who use internet more than 4 hours use it mainly to join social network sites.

DISCUSSION

This study examined the demographic variables which best describe the internet using purposes of high school students. The daily average duration of internet usage variable is the dominant variable affecting their Internet use purpose. It has been observed that students who spend an hour or less on the Internet per day use it to do homework and the ones who spend more than an hour use the Internet to join social networking sites. This result conforms with other findings in the literature (Anunobi, 2006; Bashir, Mahmood, & Shafique, 2008; Gençer, 2011; Toraman, 2013; Yılmaz, 2012). Nachmias et al. (2000) found that high school students primarily use the internet for communication while their following purpose is obtaining information. However, this study is not an updated study since it was conducted sixteen years ago; there could be some differences today.

The 9th grade male students who spend an hour or less on the Internet use it mostly for homework. Female students, who spend an hour or less attending Anatolian high schools and fine arts high schools, use the Internet for doing homework when compared to the female students from other school types. According to these results, it can be said that the principal purpose of teenagers who use the Internet for an hour or less is to do homework. This result is similar to other results in the literature (Atav et al., 2006; Gençer, 2011; Okay, 2010). According to Tsai and Tsai (2010), male students use the Internet mostly for researching purposes whereas female students use it for communication. Although internet use was evaluated generally, the purposes of internet usage with respect to time spent on the internet was not examined. Therefore, this might explain the differences between their findings and the findings of the present study.

Students spending 1 or 2 hours daily on the Internet use it mostly to join social networking sites. It can be said that female students, who use the internet for 1 or 2 hours a day, use it to join social networking sites more than male students. Nevertheless, it can be said that male students use the internet mostly to play games in comparison with the female students when the other purposes are examined. Studies in the literature show that male students use the Internet to play games in comparison with female students (Gençer, 2011; Kahraman et al., 2011). According to Li and Kirkup (2007) whose study examined individuals aged between 18 and 25, male students use the Internet mostly to play games. In this respect, the current findings correspond with the literature.

Out of male students with a daily internet usage of 1 or 2 hours, most of the male students with monthly family income of 1000 TL or less use the Internet for doing homework whereas male students whose monthly family income exceed 1000 TL use the Internet for social networking. It can be said that Internet use is related to socioeconomic status. This result is similar to Toraman's (2013) study. According to Toraman (2013), as level of family income is higher, the level of social networking usage gets higher. Debell and

Chapman (2006) also found that Internet use increases with rising family income.

The 9th grade female students with a daily Internet usage of 1 or 2 hours use the internet mostly for doing homework whereas female students in other grades use the Internet mostly to join social networking sites. As the age of the female students with a daily internet usage of 1 or 2 hours increases, they tend to use the Internet mostly for social networking. This result is similar to the Öztürk and Akgün (2012) study results. On the other hand, Tsai and Tsai (2010) state that female students use the Internet mostly for communication, while Çam and İşbulan (2012) reported that senior students show addiction to Facebook more than students from other grades. As a result, it can be argued that as the grade increases, the Internet usage for social networking also increases. Accordingly, the results obtained from this study are consistent with the results in the literature.

It has been observed that female students with a daily Internet usage of 2 to 4 hours, in comparison with the male students, use the internet mostly to join social networking sites. Gençer (2011) also indicates that students use the Internet mostly for communication. When other purposes are examined, 32.9% of male students use the Internet for playing games whereas this ratio is 2.3% among female students. Kahraman et al. (2011) indicate that 33% of male students in the study group follow online games. In addition, Ogunlade, Faith, Ogunlade, and Amosa (2015) who investigated university students stated that 84.7% of them use the Internet for social networking rather than doing homework. Thus it can be claimed that the results of this study are consistent with the other results in the literature.

Male students with a daily Internet usage of 2 to 4 hours, whose mothers' educational status is high school or higher, use the internet mostly to play games whereas male students whose mothers' educational status is lower than high school use the Internet mostly to join social networking sites. So it can be said that both mother's educational status and the purpose of Internet usage is related to socioeconomic status. Debell and Chapman's (2006) study reveals that as the education level of parents increases, internet usage among the students also increases. These results are compatible with the findings of Özgür (2016). According to this study, the mother's education level and the Internet parenting style is related. However, there is no relation between the father's education level and the internet parenting style. The present study suggests that mother education level impacts on the internet usage purposes of the male children using the Internet for 2-4 hours a day. It can be argued that this impact originated from the internet parenting style.

Female students with a daily Internet usage of higher than 4 hours use the Internet mostly for social networking whereas male students in this category use it for online games. Makas (2008) indicates that adolescents use the Internet most frequently for educational and social purposes and the Internet plays an important role in their life. These results are consistent with the results of Kahraman et al. (2011). In the present study, female students in the 10th and 11th grades with a daily Internet usage exceeding 4 hours use the Internet mostly for social networking sites unlike the 9th and 12th grade female students. Seo et al. (2009) showed that 52% of the students aged between 12 and 17 use the Internet for games and 14% of them use the Internet for communication. Thus the present findings are consistent with the literature.

CONCLUSION

By knowing the purposes of internet usage by the students and being able to categorize them based on particular groups with particular purposes educators will be able to provide higher quality of education to them. Since the teacher-student relationship has been transformed as a result Internet use in education (Akkoyunlu, 2002), the relationship can be reformed according to the results of this study. This study shows that the major variable affecting the purpose of Internet usage is the duration of Internet usage. A secondary significant variable is gender. The following variables important for this research are: grade, type of school, mother's education level and the family income. Consequently, in high school, social media practices could contribute to the way the lessons are taught to the female students in the higher grades. Naimie, Siraj, Ahmed-Abuzaid, and Shagholi (2010) suggest using new teaching styles to increase student motivation.

Research by Ahmad (2014) reports that most teachers use information and communication technologies for Internet surfing, sending e-mails and preparing PowerPoint presentations. As a result, some advice on changing teaching styles should be presented to the teachers based on the findings of this research.

Teachers are advised to include computer games in the teaching environment for the male students who spent more time on the Internet. In addition, content on social media could be created for the female students. Furthermore, the teachers could be advised about the way they talk to the students and relate the topics taught. For instance, while talking to male students, teachers might use examples from computers/games and while interacting with female students, they might relate the topics to social media. Further research should look into the usage of social networking sites and computer games in education. This would ensure improving the content used in education. Other studies can be conducted on the relation between student success and the purposes of internet usage. Moreover, the purposes of the internet usage could be examined in detail through qualitative research.

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